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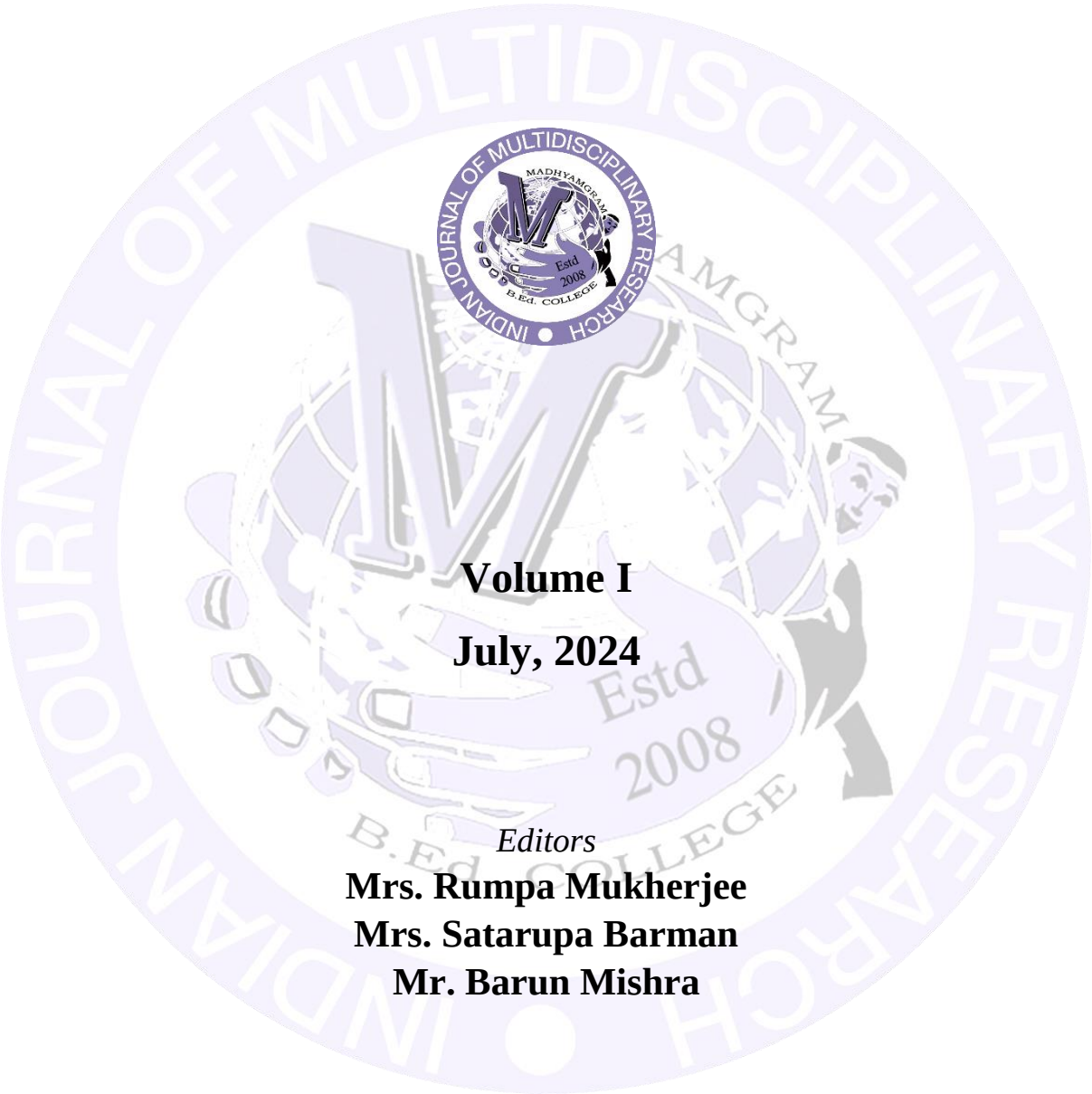

Volume I

July, 2024

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About the Journal

Indian Journal of Multidisciplinary Research (IJOMR) is an online, national, blind peer reviewed, multidisciplinary journal published yearly in English by Madhyamgram B.Ed. College, Kolkata. It aims to provide on online platform to promote excellence and advancement in different research fields like English, Education, Philosophy, Sociology, Geography, Psychology, History, Science, Mathematics etc. All research articles submitted to the journal will be blind peer reviewed by the members of the editorial board that includes professionals from different universities, colleges and academic research institutes.

Aims of the Journal

1. To publish original quantitative and qualitative research and reviews in multidisciplinary areas.

2. To disseminate information relating to current research topic on all the aspects of science, social science and education across the multidisciplinary community.

3. To foster among the readers a comprehensive understanding of complex issue, see connections between different academic disciplines & prepares for real world-problem solving.

4. To develop social, physical, intellectual, emotional and moral capacities of human beings in an integrated manner.

Scope of the Journal

The journal covers the following areas: Education, Sociology, Psychology, History, Geography, Philosophy, English, Science, and Mathematics.


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Foreword

It is with great pleasure and pride the first volume of the journal of Madhyamgram B.Ed. College, namely *"Indian Journal of Multidisciplinary Research"* has been introduced. This publication stands as a testament to the scholarly dedication and intellectual curiosity of research scholars and eminent faculty members of higher education institutions. In today's rapidly evolving world, the pursuit of knowledge transcends disciplinary boundaries. This journal exemplifies our commitment to foster a culture of interdisciplinary research where diverse perspectives converge to explore and address the complex challenges facing our society. Within these pages, you will find a rich tapestry of research articles spanning a wide spectrum of disciplines- from sciences to humanities, from technology to the arts. Each contribution not only reflects the rigorous academic standards upheld at Madhyamgram B.Ed. College but also demonstrates the innovative spirit and critical thinking nurtured within our academic community. I extend my heartfelt gratitude to all the authors, whose insightful contributions have enriched this volume. Their dedication to advancing knowledge and pushing the boundaries of their respective fields is truly commendable.

I would also like to acknowledge the esteemed editorial team and reviewers for their meticulous efforts in ensuring the scholarly excellence of this journal. Their commitment to maintain the highest standards of academic integrity and quality is invaluable.

I encourage readers, students, faculty, researchers, and all passionate learners to immerse you in the wealth of knowledge presented in this journal. It may inspire you to embark on your own intellectual journeys and contribute meaningfully to the global dialogue of ideas.

With best wishes for continued success in all your scholarly endeavours.

Dr. Rupkumar Panda
Principal/Editor-in-Chief, IJOMR
Madhyamgram B.Ed. College, Kolkata


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Editor's Note

Dear readers,

Heartfelt welcome to the inaugural issue of *'Indian Journal of Multidisciplinary Research (IJOMR)'*. It is with great pleasure that on behalf of Madhyamgram B.Ed. College, we introduce the first volume of Indian Journal of Multidisciplinary Research (IJOMR). It is an online multidisciplinary, blind peer-reviewed, refereed journal dedicated to fostering academic excellence and innovation across a broad spectrum of disciplines. Our journal encompasses a diverse array of fields including English, Education, Philosophy, History, Geography, Sociology, Psychology, Science, and Mathematics. Our aim is to foster collaboration and exchange of ideas among researchers from diverse backgrounds, ultimately contributing to the advancement of educational practices and policies.

Our inaugural edition is particularly robust in its exploration of educational paradigms, with articles spanning various levels and aspects of education. The breadth of topics covered in this issue underscores our commitment to a holistic approach in academic discourse and research dissemination. This first issue features eleven meticulously selected articles, each contributing valuable insights and knowledge in their respective fields like Teacher Education, Mathematics Education, Medical Education, Technology Education, Primary Education, Secondary Education, Higher Secondary Education etc. In addition to these educational studies, we are proud to present articles in Philosophy, Psychology and Sociology. These articles delve into critical analysis and theoretical explorations that enrich our understanding of human behaviour, societal structures and existential inquiries.

We hope that this journal will create opportunities for bringing the Indian research work at a global level and will give a highly readable and valuable addition to the scientific literature. It is to be noted that our journal can be seen at present in our journal website (www.ijomr.org).

The successful launch of IJOMR by Madhyamgram B.Ed. College is the result of the unwavering support and hard work of many individuals and teams. We extend our sincere gratitude to the learned members of the Advisory Board, Editorial Board and the Panel of Reviewers for their invaluable contributions to this issue. We extend our thanks to all the contributors for their scholarly work. At last we express our special gratitude to Mr. Saibal Chakraborty, Secretary of our College, Dr. Rupkumar Panda, Principal of Madhyamgram B.Ed. College, and Members of the Working Committee whose unwavering support and efforts have been instrumental in bringing this journal to fruition. Any suggestion for improvement will be thankfully accredited.

The opinions and contents of the manuscript published in IJOMR are under exclusive responsibility of the author(s).

With warm regards,
Editors of IJOMR

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A Comparative Study of Subject-centred Approach and Broad-fields Approach to Teaching and Their Implementation at Primary Level in India

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Abstract:
This article fundamentally focuses on the source of interest, attraction and motivation for the learners at the primary level. The main concern is the source of variety for children at the primary level. An appropriate source of this variety lies in divergent way of curriculum transaction. Usually, subject-centred curriculum approach is adopted in learning situation. But, topical approach or Broad-fields approach makes learning more diversified to add interest in learning. This article encapsulates the role of the teachers at the primary level to incorporate integration approach in the teaching-learning situation. This study also explores the nature of broad-fields approach to teaching, benefits and limitations of implementing broad-fields approach to teaching in Indian Classrooms.

Keywords: *Subject-centred approach, Broad-fields approach, Divergence, Interdisciplinary, Team-teaching.*

Introduction

Modern psychological perspective in the course of educational scenario entails rapid transformation of the acquisition ability of children. It is especially influenced by the tendency of the children to handle with multifarious gadgets at home as well as at school for example, mobile phones, computers and tablets etc. This usage leads to greater brain activity and the ability of recognizing different objects and activities at the same time. This is true not only to the learners of higher classes but also to the primary standards. They are mostly tech-savvy and their level of curiosity is greater than the previous generation. It is to keep in mind that the minds of young learners are in flux and ever-changing and constantly adapting to the changing scenario. It is imperative to the teachers to be doubly adaptive and updated to the current scenario in global perspectives. Traditional method of single-subject approach in teaching-learning situations keeps the purpose of learning a subject latent or unclear. As a result, learners do not feel interest at the Primary and Upper Primary levels in the age-group of six to twelve. But, this divergent subject-centred approach can be replaced by Topical approach or Integrative approach that is also known as integrative approach or Broad-fields approach that has been delineated and implemented in Finland. As elaborated in eGyankosh by IG (2012), "the Broad-field approach seeks to bring together into a broad organisation of the subject matter, the knowledge and understandings pertinent to a whole area of study. Under broad-fields approach efforts are made to integrate the subject matter of closely related disciplines." This approach has been adopted for Science Curriculum is the U.S.A. and China (Wang, 2019). In India, the

teaching approach is characteristically subject-centred and curriculum is also framed accordingly. The prevalent system of single-teacher session is also a deterrent to implementation of topical-approach because this approach requires presence of multiple teachers together from different disciplines and highest level of coordination is also a prerequisite for adopting topical approach to teaching.

Objectives of the Study:

a. To explore the nature of Subject-centred Approach and Broad-fields approach to teaching.
b. To find out benefits of broad-fields approach to teaching.
c. To seek limitations of implementing broad-fields approach to teaching in Indian Classrooms.

Subject-centred Approach to Teaching:

At the pre-primary and primary-level the teachers should encourage the learners not to subside their urge to go forward but to carry it forward and facilitate the learning situations by using the learners' curiosity and channelize it with proper activity-orientation. According to NCF 2005 in India, special focus should be given on the integration of subjects rather than doing subject division. Subject division like, Languages, Mathematics, Science, diversify the focus of the learners and thereby they become biased to a specific subject and they either express their disinterest in other subjects or they get afraid of it. On the other hand, subject integration helps the students understand the same topic from different perspectives and this is actually needed in our daily life where the learners find not exactly Languages nor Mathematics but exposure to integrative situations like marketplace, natural scenario, transport and entertainment. These are called combinatorial perspectives where an individual combines all types of ideas and knowledge for a successful communication and optimal outcome thereof. To explain it further, the learners are not guided by the knowledge and proficiency of languages only or numerical ability only or knowledge of science only; what they need to use is an integration of all in real life. Mathematics or Science cannot be understood without proper narration and explanation through languages. So, language and mathematics cannot be actually segregated for real time transaction and communication. This is the utilitarian cause behind the integrated studies right from the basic primary stage for preparing them to be ready for future.

Topical or Broad-fields Approach to Teaching:

The latest trend in the assimilation of lessons and creation of a thematic essence of learning experience largely use the methods by framing concept-maps, by using inquiry method along with project-based learning. This integration is actually possible by the use of language through literature. The totality will create a whole theme of learning perspective and this can be exclusively helpful in creating an acquisition-rich environment for the learners. Integration of lessons involves proper choice of different lessons for different subjects based on the same topic, a focus on an incorporated and holistic idea with proper inbuilt differentiation. If the full session takes too long a time to complete in a single unit, the integrated unit should be divided into blocks for better learning outcome. This integration contributes to greater learner engagement in group-work or pair-work, detection of the zones of difficulty caused by possible complexity of lesson integration. This purposive correlation can also result in the formulation of an interconnected world-view in the learners' concentric concept formation stage.

Benefits of Integrative Topical Approach:

Integrated Learning has diverse learning peripherals, such as, student-involvement in learning sessions, resolving issues and interconnections in learning items. Integrated learning ensures

unification, differentiation, making big ideas lucid and transparent and also converging ideas into respective subjects. It is to be kept in mind that all students, after completing lower primary and upper primary education, may not go for higher studies. It is their Right to Education based on the Fundamental right of all Indian Citizens – "Article 45 originally mandated the State to provide free and compulsory education to children between the ages of six and fourteen years, but after the 86th Amendment in 2002, this has been converted into a Fundamental Right and replaced by an obligation upon the State to secure childhood care to all children below the age of six." (Panday & Roy, 2023). This is clear that people's fundamental right is to be literate and attain working knowledge of different fields to choose their own occupation and academic plans going forward. Thereby, integrative approach at the basic level of education really helps.

Nature of Method-Integrated Learning in Broad-fields Approach:

The learning reaches the level of integration because topical approach integrates different methods together for holistic development of learners. The methods include:

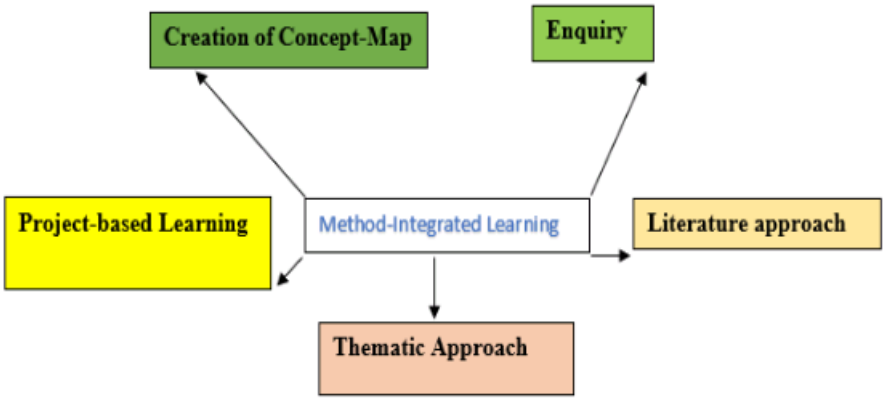

Figure 1: ***Method-Integrated Learning Diagram***

The diagram above makes a branching projection of purpose, method and involvements of Integrative Learning. These are explained below:

Creation of Concept-Map: Concept maps are an effective tool for figuring out how concepts that are taught in class relate to one another. Gaining an understanding of these connections and visualizing them can improve retention and help students learn course material at a much deeper level. Concept maps offer a way to arrange course content in the most practical way and are very customizable.

Enquiry: It is the way to ask questions and it is the best practice to make learners express their curiosity.

Project-based Learning: Kilpatrick formulated the importance of assigning projects for application of learning in the most practicable way. PBL has instructional value because it develops students' ability to think creatively and solve complex or unstructured problems, usually in small groups.

Literature Approach: This approach is an application of narrating stories by converting a learning material into a piece of art. This conversion makes learning interesting to the learners not only by literal conversion but also tonal change in delivery of a lesson.

Thematic Approach: Theme is the concrete essence of a lesson. A lesson usually has different dimensions, for example, social, political, cultural, economic etc. Under each dimension, there

are characters, actions, subjects, objects, process, product etc. Extravagant details may confuse learners. Theme approach ascertains focus on a specific dimension and integrating it with lessons and Learners' experience.

Difference between Subject-based Curriculum and Topic-based Curriculum:

Other than the utilitarian perspective, we, the educators cannot deny the old proverb 'Variety is the spice of life'. We can apply the same in classroom also for making the sessions interactive and interesting. The new breed of trained teachers should be ready to make the variety applicable in classroom by integrating the subjects in the same topic-based teaching-learning sessions to avoid possible monotony arising from disintegrating the subjects and sticking to the unilinear approach. But, the interactive variety in sessions will create interest among the students to learn more and here lies the success of a quality teacher in modern age. Integrative approach is best explained from the curriculum of Finland where topical syllabus designing removes all the monotony of subject-based curriculum. The difference between subject-based curriculum and topic-based curriculum can be exemplified in the following tree-diagrams.

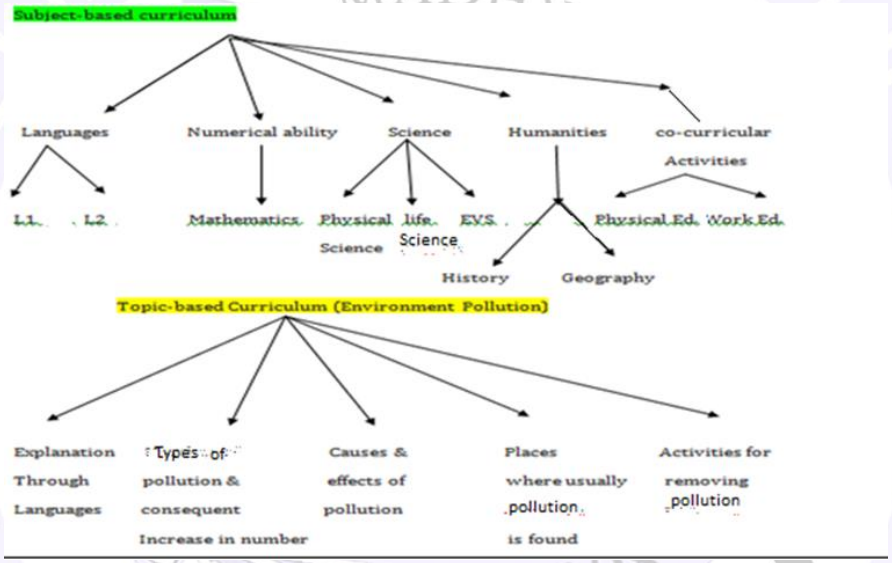

Figure 2: ***Difference between Subject-based and Topic-based approaches***

It is observed in the diagram that in subject-based approach, different subject teachers teach different topics in different sessions and dissect them according to their level of expertise without considering the burden of topics that causes monotony among the learners and thereby removing their interest in learning that is all against the idea of education; whereas, topic based approach focuses on a single topic but analyzes it from different subject-perspectives that supplements knowledge and understanding with a life-like recognition of facts and the objective of the teaching-learning session is more likely to be attained with a higher rate of learning outcome on Environmental Pollution and that is also with adequate variety by rousing learners' interest in the topic of Pollution and it is very much needed in modern learning situations.

Topical Approach and Transversal Competencies in Finnish Education:

Innovation and integration in curriculum-transaction has been explicitly adopted in Finnish Education system where this approach in Finland is specifically known as 'Phenomenal Learning.' In this approach interdisciplinary integration adds variety in teaching-learning situations. Lonka (2018) states, "the society is changing so rapidly that creativity, thinking skills, and more wide-ranging expertise are called for. Holistic and interdisciplinary thinking

is important when solving the ill-structured and wicked problems of our time." The author means to say that interdisciplinary approach can make learning holistic and this type of learning can reach a 'transversal level' according to the author. The following types of learning are possible by adopting Topic-centred approach, as shown in following diagram:

Figure 3: ***Transversal Competencies, Source 'Phenomenal Learning', Lonka, K. (2018)***

Transversal Competencies grow with experiential and applied learning that students learn real-life situations. It does not happen in an idealistic situation on theoretical basis but actually in practical and application basis where learners apply their knowledge and this application plays a Central role in the Finnish National core curriculum.

The Transversal Competencies that Finnish basic education aims to develop are:

1. 'Thinking and Learning to Learn': This is central to process-based learning where learners are oriented in the algorithms in knowledge acquisition, and not just fed with Knowledge. This makes learners independent in learning.
2. 'Cultural Competence, Interaction, and Self-Expression': Topic-based phenomenal teaching approach expose the learners to cultural diversity that urges them to interact in multicultural ambience and share their ideas, knowledge and experience for that leads to construction of knowledge with all uniqueness.
3. 'Taking Care of Oneself and Managing Daily Life': Ground-level learning and pragmatic application of learning make learners self-dependent and this sets a building block in their life for future prospect.
4. 'Multi-literacy': "Multi-literacy is the ability to identify, interpret, create, and communicate meaning across a variety of visual, oral, corporal, musical and alphabetical forms of communication."(Bratitsis, 2022) Learners' exposure to multicultural and pragmatic learning situation creates a sense of linguistic versatility that help them interpret different aspects of their subjects and integrate them with real-life situations, for example, visuals of people belonging to different culture leads to a verbal expression of diversity in the world expressed in form of language. Here, visual stimulus is converted into linguistic expression. At the same time, multicultural learning situations create linguistic diversity in a learning situation.
5. 'Information and Communication Technology (ICT) Competence': Integrative learning approach has a potential to develop the ability to transform knowledge and information into a new entity. The most sensible mode of transformation is digital in nature. This

can be in form of audio-visual multimedia or through a mental-map or Power-point Presentations.

6. 'Working Life Competence and Entrepreneurship': Exposure to pragmatic life-situations by applying intra-subject competency into a constructive version, learners learn to face challenges by solving problems through critical thinking. This develops an entrepreneurial ability in them that bear fruit in near future.
7. 'Participation, Involvement, and Building a Sustainable Future': Theme-based topical learning prepares learners to understand the purpose of learning subjecting knowledge and they apply their realization by participating in problem-solution process and this builds in them an ability to apprehend phenomena and to act accordingly.

Experiential Outcome of Subject-based Teaching and Topic-based Teaching:

Learners have different levels of experience at the Subject- based teaching approach at different subject levels. At the Primary and Upper-primary levels, each teacher provide knowledge on languages, Environmental Education, Mathematics, Social Sciences etc. distinctly. The learners can hardly integrate all these but lack the ability to interconnect these subjects in their daily activities. As found in the Handbook on Education regarding Subject-centred approach to Curriculum, 'The subject-centred curriculum encourages rote memorisation. It does not give real or first-hand knowledge to the students.' Learners are made to learn the concepts formally and the only utility of their learning is materialized in examination only. Subject-based instruction can facilitate students' transfer across schools and help them recognise their areas of strength and weakness. Subject-centred curriculum design, according to some, is not student-centred. The learners get compartmentalised view of education through subject-centred understanding. This fragmented experience in different subject causes liking for and dislike against different subjects that may deter them from applying their knowledge in different needs in their real-life, for example, several cases of dislikes in Science and Mathematics are observed due to difficulty level of subjects or quality of teaching the subjects. It is also true that their liking for specific subject motivates them to study the subject more intensively and gain expertise in individual subjects.

On the other hand, topic-centred broad-field approach is an integrated approach in combination with different subjects together and adoption of different methods together and it requires different subject-experts together to deliver holistic real-life learning experience through team-teaching. This creates a broader perspective of an individual subjects and correlates different aspects of multiple subjects. The learners get an impression of practical application of subjects and no subject-bias develops in them. This is a positive aspect of Broad-field approach that up to a basic level the learners get a holistic view of different subjects together and get a pragmatic view on real-life basis. But, scope is always there for further intensive study at a higher level of education.

Implementational Hurdles of Broad-field Approach in India:

Broad-field approach or Topical approach is seen to have several positive aspects to contribute to real-life education at the primary level but in India there are several obstacles to its successful implementation:

Uniform Government Policy: India is a vast country and uniformity is important is all governmental policies and practices. Any exceptional experimentation or discriminant practice causes social or legal concerns. Curriculum framework is a Governmental task and the practice of Broad-field approach in class-room is not yet recognized.

Lack of Preparation: The teachers need to prepare lesson plans in integrated manner to implement topical-delivery of their lessons. This is a time-taking and exhaustive process. This also works as a potential deterrent to implementation of topical-approach at the Primary Level.

Negative attitude to Team Teaching: Team-teaching or co-teaching is an important prerequisite of successful implementation of Broad-field approach in class-room. Team-teaching is also named as group-teaching or collaborative teaching. This practice necessitates the presence of two or more teachers in classroom or multiple teachers need to work on a single topic as Jayarani (2021) and Kumar (2019) state "Team teaching consists of a group of two or more teachers working purposefully, regularly, and cooperatively to help the students learn effectively." This needs accountability and performance of different teachers together. In many cases, teachers show aversion to teaching in a group together with full compromise. This traditional and conservative attitude leads to popularizing individual subject-teaching and borderlines implementation of Broad-fields or topical approach to teaching.

Conclusion:

Therefore, it is found that a paradigm shift in curriculum transaction goes a long way to make curriculum-transaction learner-friendly making the process of learning a joyful experience as recommended in NEP-2020 in India. Continuous experiments with innovative approached ensures productive learning experience for the new-generation learner. Topic-based integrative approach to teaching opens up a new vista for framing curriculum and executing it in classroom. Subject-centred approach show lots of limitation by making learning prosaic and monotonous and in some way purposeless. This learning-gap can be filled by adopting integrative topic-based approach for teaching for more purposeful and concrete learning experience. Primary education is the fundamental stage of academic development of children. Therefore, the needs for a broader perspective of topical approach works better than compartmentalized subject-centred approach on the young mind for a clear concept-formation but it is also evident that there are several hurdles to successful implementation of Broad-field approach to teaching and these obstacles need to be overcome for the benefit of the learners at the Primary Level.

References

Bratitsis, T. (2022). Cultural heritage redesigned through digital storytelling: *The digital folklore of cyber culture and digital humanities, 16*. Retrieved from https://www.igi-global.com/dictionary/cultural-heritage-redesigned-through-digital-storytelling/19565

Gnanakan, K. (2023). Integrated learning. *Oxford Academics Integrated Learning*. Retrieved from https://global.oup.com/academic/product/integrated-learning-9780198074366?cc=us&lang=en&

GOI (2015). Fundamental Rights. *Wikipedia*. Retrieved from https://en.wikipedia.org/wiki/Fundamental_Rights,_Directive_Principles_and_Fundamental_Duties_of_India

IGNOU (2012). Curriculum Development, Unit 3', 36. *EGyankosh*. Accessed from https://egyankosh.ac.in/bitstream/123456789/46853/1/Unit-3.pdf

Jayarani, B. (n.d.). Team teaching. *Scribed Slide-share*, 1-21. Accessed from https://www.slideshare.net/BeulahJayarani/team-teaching-248436445

Kumar, P. (2019). Attitude of secondary school teachers in Kerala towards team teaching strategy. *International Journal of Humanities and Social Science Invention, 8*(3), 58-62. Accessed from https://www.ijhssi.org/papers/vol8(3)/Series-4/L0803045862.pdf

Lonka, K. (2018). Phenomenal Learning in Finland. *Holistic and interdisciplinary thinking*. Accessed from https://www.theresianum.ac.at/data/files/AHS/03_Berichte/Erasmus_Projekt_2018/phenomenon_based_learning_in_finland.pptx

Markina, E., & Molla, A.G. (2022). The effect of a teacher-centred and learner-centred approach on students' participation in the English classroom. Bellaterra *Journal of Teaching & Learning Language & Literature, 15*(3), 1-22. https://doi.org/10.5565/rev/jtl3.1007

Mohapatra, J. K. (2019). *Constructivism: The new paradigm*. Atlantic Publisher, New Delhi.

Pandey, P., & Rai, S. (2023). Introduction the framers of the constitution of India. *Observer Research Foundation*. accessed from https://www.orfonline.org/research/introduction-the-framers-of-the-constitution-of-india-which-came-into-force-in-1950-put-faith-in-the-state-to-provide-free-and-compulsory-education-for-all-children-up-to-14-years-of-age-article-45

Taubert, J. J. (2023). Why phenomenon-based learning is important? *Education Finland*. Retrieved from https://finlandeducationshop.fi/what-is-phenomenon-based-learning/

Vincent, D. (2024). Broad field curriculum. *Scribed, 4*, 1-23. Accessed from https://www.scribd.com/presentation/658806694/Broad-Field-Curriculum

Wang. W. (2019). Restructuring science curriculum for the twenty first century. *Helsinki Studies in Education, 60*, 1-62. Accessed from https://helda.helsinki.fi/server/api/core/bitstreams/22a8944a-73a7-4213-801e-8f8e6f0e221a/content

NEP 2020: Changing Elementary Education with Integrating Toy Based Pedagogy in Curriculum

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Abstract:
India has been witnessing a transformation with the introduction of NEP 2020 that significantly focused on changing the framework in elementary Education. This article focused on the importance of toys in childhood and how they can be used in the learning experiences of the children in Elementary education period. The toy is the source of happiness for most of the children and it can bring changes the notion of Education in elementary level throughout the country. Educational Psychology has shown that children learn more concretely and vividly when they engage themselves in experiential and concrete experiences and it is more applicable when they play with toys. The New Education Policy focused on using toy based pedagogy to be used in foundational and Elementary stage and how it can be applied in the classroom by teachers. This article has also mentioned some of the toys existed in Indian Context and how it can be a useful learning tool in attaining different skills among children. This paper also focused on the values and the skill competencies among children that can be acquired with playing the toys.

Keywords: *Toy-based Pedagogy, Foundational stage, Play based Experiential learning, Elementary level Education.*

Introduction

India is recently witnessing a breath-taking change in the realm of Education after it embraced the New Education Policy in 2020. It has significantly changed the course of action in Elementary to Higher Level of Education. The National education Policy is a revolutionary step to prepare India to meet the challenging futuristic need of 21st Century's knowledge based society. Being a key component of NEP 2020, its objective is to cater high quality of Education for all the children in country that is perseverant with the values and ethos that is inherent in the Indian Constitution. National Educational Policy 2020 has altered the existing 10+2+3 curriculum to 5+3+3+4 level curriculum that revised the notion of Elementary Education in our Country. Earlier the pre-school stage was not given any importance rather it totally focused on the school level Education starting from age six. As a result the children lack the education at the period of their brain development. Many scientific researchers have already proved that children's brain generally develops rapidly at the age of Three to Five years. This is the first stage of cognitive development when they start to think in complex ways about their self and surroundings. All studies related to early period of child stated that at this period proper care and education can redirect the child to multi-skilled individuals throughout the life-span. National Education policy has changed the primary level into the Foundational and preparatory stages of eight year duration where Elementary education has been kept in primary focus. A

National Curriculum Framework which has been divided in two sub-frameworks for 0-3 years and for 3-8 years children mainly included in the Foundational stage which has been published in the year of 2022 where the quality education, methods, pedagogy and training of teachers at elementary level has been broadly discussed. The agenda of National Curriculum Framework lies in universal access of quality early childhood development and care to ensure foundational literacy and Numeracy by the year 2025 which is a task of sustainable developmental goal. To ensure the success of this goal more students need to take enrolment as well as engage themselves in an active regular elementary school period. It will be possible only if the school time is full of fun, engaging, activity and play based that can attract as well as motivate student to go and participate more in the school activities. Children naturally are more prone to play based activity in early years. Those children who are more exposed to age-appropriate, physical, Educational and social activities through play based method learn better and grow better. Play based pedagogy thus takes a central position as the criteria of teaching children of pre-school stage. This paper mainly intends to show the importance of play based pedagogy and how it can change the scenario of Elementary Education of our country in near future.

Reviews of Related Literature

Researcher here found very few studies discussing about the significance of the toy based pedagogy for child's comprehensive development. Some studies have been discussed below:

Jani and Sethi (2024) in their article *"Toy Based Pedagogy promotes 21st century skills in schools and Beyond: A new path to Education Reform"* addressed to acquire essential toy based pedagogical knowledge in order to enhance the skills like reasoning, communication, critical thinking, creative thinking and cognitive flexibility. The main aim of this pedagogical practice lies in providing fast hand learning experiences towards students and creating a beautiful learning retention for them. Therefore, the researchers stressed on the use of toy based pedagogy very strategically in all levels of school education.

Lone and Kaur (2024) in their article *"Significance of Toy-Based Pedagogy for Elementary Students"* have showed that how elementary school students can be changed with the help of toy based pedagogy. The use of toy based pedagogy in elementary level can be a game changer in the context of Indian Education. The researchers have stressed the chance of exploration for children with the help of toy and play based pedagogy.

Rana and Yadav (2023) in their article titled *"Toy Integrated Pedagogy Helps to Develop Positive Mathematical Beliefs at Elementary Level"* mainly focused on the concept on how toy based pedagogy can influence positive mathematical attitude among students of Elementary level. They wanted to nullify all the mathematical fear and misconception among the students.

Pradhan and Srivastava (2023) in their paper titled *"Toy-Based Pedagogy-Promoting Holistic Development"* mainly highlighted how far the toy based pedagogy ensures the holistic development among children of class 1 and 2. It also enlisted the inevitable roadblocks and suggested required measures for effective implementation of Toy based pedagogy recommended by National Education Policy 2020.

Schoroškienė (2023) in the research paper titled *"Combination of Picture Books and Toys for Development of Children's Literacy: Advantages and Limitations in the Context of Play-Based Pedagogy"* significantly showed how picture textbook can be used with the context of toy based pedagogy. The research article concluded that learning with toys on regular basis can enhance the integrity as well as sometime hinder interaction between teacher and student.

Wadhawan (2022) in his article titled *"NCERT's Toy-Based Pedagogy for an Element of fun in Conceptual Understanding"* specifically points out the importance of toy based pedagogy

in evolving conceptual understanding of students at elementary level. It can qualitatively enhance the cognitive flexibility among learners thus ensure the lifelong learning opportunity for them.

Arora (2020) in her article titled *"Learning with Toys: More Fun and Creativity"* stressed that toys can be promoted to experience experiential learning in various subjects like mathematics, Language learning etc. It can be used as vocational Educational materials to make child competent enough to deal with Elementary level education. The exceptional potential of toy based pedagogy in nurturing child's imagination, social and emotional maturity along with depth in knowledge allures most of the educationists to use this in elementary level.

Önder (2018) in his article *"Contribution of Plays and Toys to Children's Value Education"* researcher has shown the role of toys and play to imbibe values in children mind. Social, Emotional and cultural values are the major areas which can be nurtured with the help of toys and plays. Various traditions across the world have their own tradition for toys and plays which have their own importance in the respective cultures to introduce the children with the culture.

Objectives:

This paper intends to focus on the following topics that are mentioned below:

1. To understand the concept of toy based pedagogy.
2. To know the importance of including toy based pedagogy in elementary education.
3. To know about the specific toys can be used in the pedagogical process.
4. To know the learning outcome of students with this toy based pedagogy.

Critical Analysis:

Play is the core activity that children do at their childhood period. Many studies show that play is interactive reciprocal system which supports learning by pushing children to remain active, engaged and socially participative that paves the path for social constructivism, the renowned theory of Lev Vygotsky. Toy based pedagogy has come to a long way to arrive this position. Archaeology has showed the proof how Harappa Civilization used to make clay toys. So, it has been significant how toys were mediums of joy at that period. It has been observed that when children are playing, there are three main aspects:

- A freedom of choice to decide which kind of play they want to complete that makes them active and consistent with their own choices
- A world of wonder opens up for them. For example child get curious even about small things like how the kite flies or why things get disappeared in any magic that make them think and process their thinking.
- There are lots of amusements when they do play and they don't feel any external pressure from it, thus it can be an extensive tool for them to continue learning.
- A little creativity combined with basic materials combined with basic materials can stimulate learners and facilitate a young child's development across all the developmental goals. To understands the children's world of fantasy and imagination we need to get their word of play and what toys actually mean to them. This article will further analyse each objectives mentioned in the study.

Discussions:

1. The concept of Toy Based Pedagogy:

Toy Based pedagogy is basically constructed on the principle that besides being an integral part and source entertainment or recreation during childhood it has immense potential in

children learning process. It can be an authentic source for mental, physical, social and emotional development and can ignite the mind of children (NCERT, 2022).

As we all know that our government is trying to prepare an effective elementary Education system that can be combined with the 21st Century's skills such as critical thinking, Reasoning, Problem solving, communication and adaptability. According to the recent Handbook published by NCERT 'play based pedagogy is inherent part of play based and experiential learning whereas toys, fields or board games are the instrument on which play based learning operates'. Toy Based Pedagogy is the most vital subset of play based learning goal. Whether it is simple kitchen set based games or interlocking based puzzle game or any soft indigenous toys each toy has immense impact on the learning process of children at the age of three to eight years. There are many scientific evidences that prove children don't need extensive or rich toys even a paper ball can create joy and stress free environment for the children. Thus the method of teaching through toy or game is thus a new guiding light for the elementary level education.

Fig 1: Inter-relationship between Plays and Toys

2. The Importance of Toy Based Pedagogy in Elementary Education:

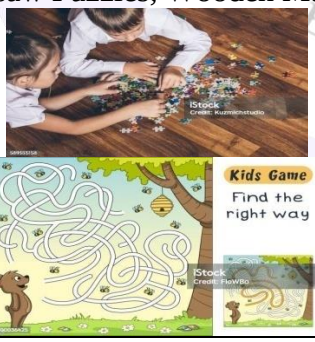
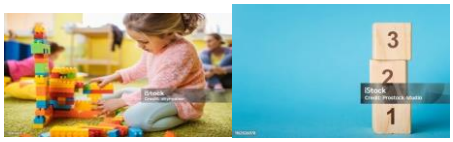
The learning is inherent in the play or toy based experiential activity among the children. The classroom environment should motivate the enthusiasm of using toy and other concrete objects which can be alternative to any toy or game for the child. The consequence of implementing Toy based Pedagogy has lasting impact on the developmental goals of children that are set by psychological construct. Some significant importance are listed below:

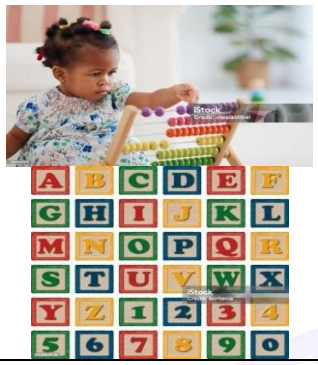
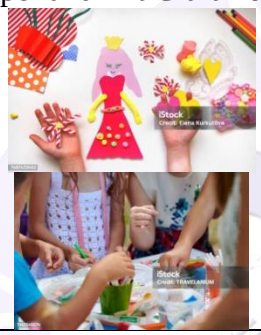
- The improvement of psycho-motor and hand-eye co-ordination while holding toys or any objects.
- It can improve the spatial understanding among the children while they engage spatial based building block games.
- Toy has immense potential in developing cognitive flexibility among learners like puzzle, matching blocks which improve their problem solving and engineering skills.
- Through the language based games like Alphabet Matching or color board child can gain effective knowledge of language.
- A child immensely enjoys when he or she dismantle a toy and rebuilds it. This improves sense of creativity and diversity of thought among the child.
- Play is possibly the most important tool for building social competence among children. It improves the social connectivity and interpersonal relationship among child. It leads them to become cooperative and collaborative. India being a diverse country with numerous culture and language can postulate the sense of 'Unity in diversity' among children.
- Play helps the child to release their stress and got emotionally connected with their peers and surrounding.
- Moreover, children can be independent when they take decision of their own while playing toys and games. This eventually emerges sense of freedom among them.

3. Specific Toys to be Used in Pedagogical Process and the Expected Learning Outcome:

Toys are basically any concrete thing with which a student play. There are no distinct definitions of Toys present in any document. Any object that leads child to a joyful experience can be a toy. National Curriculum framework for Foundational stage (2022) has mentioned usage of extensive indigenous toys for children to get them accustomed to the rich cultural heritage of Indian context.

There are many local toys that are accessible and affordable in our country with the support of basic materials like Clay, wood, bamboo, Grass, Cloth, shell, paper or wrapping paper, metals and glass across different states like Assam, Andhra Pradesh, Gujarat, Odisha etc. Indigenous toys and games such as spinning top (lattoo), kites, pinwheel, phirni are such examples (Kapoor, 2022). There are also many Indian board games that are significant for cognitive development of children at higher level. The Recent framework also promoted the use of traditional and popular toys that are being used across the world like ring block, DIY toys. In this point some specific toys both traditional and indigenous toys are mentioned in a list which the associated learning outcomes to the particular toys have been mentioned with Illustrative examples:

Toys Image & Name	Learning Area	Learning Outcome
Large Coloured and Serial Rings 	Cognitive & Motor Development skill	i. Development of the concept of size and colour ii. Fine motor skill coordination
Teething & Squeezing Toys 	Sensory and Psychomotor Development	i. Development sense of touch ii. Develop Eye-hand Co-ordination iii. Develop grasping skills
Jigsaw Puzzles, Wooden Maze 	Cognitive Problem-solving skills	i. Develop Problem solving skills ii. Development of critical thinking skills iii. Develop thinking ability
Block Building and Construction Set 	Fine Motor skills and Muscle Co-ordination	i. Extend Imagination ii. Develop dexterity and problem solving skills iii. Writing Readiness iv. Spatial awareness v. How things connected with each other

Abacus and Number-Word blocks 	Foundational Numeracy and Literacy	i. Develop number sense ii. Recognize verbal letters iii. Pre- Number and Post-Number counts iv. Develop number and word reading and writing readiness
Paper and Art Craft Toys 	Creative and Aesthetic Development	i. Develops Creative sense ii. Enhances the sense of aesthetic expression. iii. Develops imagination power among children
Doll House, Puppets & Masks, Traditional Indigenous Toys  	Aesthetic and Cultural Development	i. Develops sense of cultural context ii. Develops socio-emotional skills iii. Develop language and communication skills iv. Develops vocabulary sense among the children v. Develops an understanding the world around them vi. Emerges social awareness vii. Sense of Emotional development viii. To gain knowledge related to life skills.
Tri-Cycle, Slides, See-Saw, Balls  	Gross Motor Development	i. Develops gross muscle of child ii. Develops the skill of balancing iii. Muscle strengthening iv. Overall Physical development

4. Learning Outcome of Students with Toy Based Pedagogy:

Toy-Based Pedagogy has immense ability to promote design thinking skills which is strictly important for brainstorming among teachers and students. Toys can be merged with the mapping of concepts that leads to meaningful learning experiences. Thus, going through the details of the learning outcome attached with each type of toys we should introduce the children to use more toys as their learning tools. Toy based pedagogy paves the way of experiential learning that is goal of National Education policy 2020.

The most significant stakeholders of this pedagogical transformation are the elementary level pre-service and in-service teachers. Teachers hold sheer responsibility of transacting curriculum through toy based pedagogy. The primary focus should be the training of teachers about the theoretical concept and probable practical applicability in bringing innovative practice with the help of indigenous and designed based toys in the teaching-learning procedure of Classroom scenario. There are certain aims that lie within the responsibilities of the elementary teachers which are listed below-classroom:

i. First of all, the teachers must have deeper knowledge about the experiential learning experience that toys can provide for children.
ii. They should be trained with hand-on experience on making and using basic materials available and affordable to prepare toys in regular classroom
iii. They must know the ground reality of minimum capacity of Indian primary schools situated in remote place and should take measures according to the situation.
iv. They should aware the parents and the other peer teachers and should collaborate with the administration and the Government in promoting Toy based pedagogy in the elementary level
v. The last and probably the most important step is to clear the misconception and the negative attitude associated with toys and games among teachers and parents and also look after the deleterious addiction of tech-based toys among today's children.

Though our Educational policy aims to inculcate Toys in teaching-Learning Process the ground reality itself gives insight that the majority of pre-school and schools lack suitable toy materials. The readiness level among teachers and parents towards using toys as pedagogical equipment still don't get much practical recognition. This is perhaps the major challenge that is inclined to implement this practice in reality. Sometimes the students got fascinated towards tech-toys and lose track in teaching learning which is also a major drawback now-a-days. More awareness and advocacy program among teachers and parents must be conducted to build consciousness and practical relevance among them which is the most vital step toward coming future.

Conclusion:

A detailed study on the Toy-Based pedagogy shows its profound impact on child's holistic development on a vast aspect. The enormous scope of toys in learning context starts with a step ahead and positive mind-set showcasing our belief and perseverance in Indian rich cultural heritage and influence for future generation. Toys can be a medium through which the children of nation get connected with the diversity and at the same time it tends towards the inculcation of scientific and critical thinking with problem solving skills among the toddlers and children to gain the 21st century knowledge. The toy based pedagogy is one of the ground-breaking steps in the history of elementary level education in India. This will enhance the sense of design based innovation and creativity among children which will surely paves the way of preparing futuristic generation.

References:

Arora, R. (2020). Learning with toys: More fun and creativity. *The New Indian Express*. Retrieved from https://www.newsindianexpress.com/cites/delhi/2020/sep/04/learning-with-toys-more-fun-and-creativity-2192148

Jani, B., & Sethi, J. (2024). Toy based pedagogy promotes 21st century skills in school and beyond: A new path to education reform. *International Journal of Social Science and Human Resources, 7*(4), 2367-2369. DOI : https://doi.org/10.47191/ijsshr/v7-i04-46

Kapoor, D. (2022). Using toys to improve learning. *Teacher Magazine*. Retrieved from https://www.teachermagazine.com/in-en/articles/using-toys-to-improve-learning.

Lone, S. A., & Kour, S. J. (2024). Significance of toy-based pedagogy for elementary students. *Mazedan Educational Reviews and Teaching Methods, 4*(1), 17-21.

Ministry of Education, Government of India (2022). Toy based pedagogy is in alignment with the NEP 2020 and prime minister's vision of "vocal for local"-Dr. Rajkumar Ranjan Singh (Press Release). Retrieved from https://pib.gov.in/PressReelease/framepage.aspx?PRID=1791279

National Council of Educational Research and Training (NCERT). (2022). Toy based pedagogy: A handbook. *Department of School Education & Literacy, Ministry of Education, Government of India*. Retrieved from https://dsel.education.gov.in/sites/default/files/update/toy based pedagogy.pdf

Önder, M. (2018). Contribution of plays and toys to children's value education. *Asian Journal of Education and Training, 4*(2): 146-149.

Padhan, M., & Srivastava, S. (2023). Toy-based pedagogy-promoting holistic development. *Conference: Implementation of NEP-2020, 74*. Retrieved from https://www.researchgate.net/publication/368958649_Toy-Based_Pedagogy-Promoting_Holistic_Development

Rana, R., & Yadav, P. (2023). Toy integrated pedagogy helps to develop positive mathematical beliefs at elementary level. *National Journal of Education, 18*(1), 105-117.

Schoroškienė, V. (2023). Combination of picture books and toys for development of children's literacy: Advantages and limitations in the context of play-based pedagogy. *Educational Role of Language Journal, 2*, 91-103. DOI: 10.36534/erlj.2022.02.09.

Wadhawan, A. (2022). NCERT's toy-based pedagogy for an element of fun in conceptual understanding. *The Times of India*. Retrieved from https://timesofindia.indiatimes.com/education/news/ncerts-toy-based-pedagogy-for-an-element-of-fun-in-conceptual-understanding/articleshow/95784289.cms

Interest of Rural and Urban Students of Secondary Schools in North 24 Parganas towards Learning Geography

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Abstract:
Geography is the compulsory subject in secondary level of education. It provides the knowledge of whole world. It gives information regarding how, why, where, when & what of our surroundings. Students learn in accordance with their needs and interests. Education must have psychological bases (Montessori & Froebel). There are various psychological factors which determines students learning. The present study will focus on the influence of students' interest towards learning Geography. Specifically, the present study investigated urban and rural students' interest towards learning Geography. In this study, analytical survey research design was used and self-developed Questionnaire was presented before 200 students of class IX from urban and rural areas. After collection of data, the analysis was completed based on frequency analysis and t-test. The findings has shown that majority of the students from urban (N = 83) and rural (N = 72) area had moderate level interest towards learning Geography. There is no significant difference between urban and rural students in regard to their interest towards learning Geography also. Thus the study investigated the students' interest in learning Geography. Teacher educator must introduce interactive teaching methodologies, innovative teaching strategies and identify students' learning difficulty to promote interest towards learning Geography.

Keywords: *Interest, Geography, Secondary level, Urban students, Rural students.*

Introduction

Geography is a compulsory subject till the secondary level of education. It not only provides the knowledge of physical environment, space and place but also helps students to know the cultural environment of many natural environment, land and resource availability and how that has influenced man's economic and cultural activities are also known by the subject Geography. Students can connect worlds' physiography, diverse culture and economy by learning Geography at secondary level of education. Students' engagement with the learning environment is very necessary factor in the field of education. Their emotional issues, interests, attitudes contribute to effective learning and academic achievement. Interest is that motivational process which affects students' learning outcomes. According to Renninger & Hidi (2022), "*Interest empowers learning activity and leads Pedagogical and Professional*

paths to get success". At the secondary level, students belong to a transitional stage (Sarif et al., 2020) and their psychological aspects also change abruptly. They are included in the formal cognitive developmental stage also. That is why teachers, educators keep all the views, must create interest towards the subject by effective teaching methodology. Instructional materials which captivate students' interest are effortless to learn because interest enhances educational activities (Meyzilia et al., 2019). Basically Geography makes awareness regarding world and our country also (Mansfield, 2014). Interest productively intensify students' imagination and reflection power. According to Hidi (1990) and Hidi and Anderson (1992), *"Interest is predominantly trussed to the content materials and controls and amplifies learning"*.

The present study has focused on the urban and rural students' interest towards learning Geography. It is speculated that students of rural background experienced lesser education compared to the urban students (Ajai and Imoko, 2014) in this study researcher. The study will search rural and urban students' interest towards learning Geography of North 24 Parganas district, West Bengal and also find out the comparison between students' interest belong to urban and rural area respectively.

Delimitation of the Study

The present study was delimited to 200 secondary school students from urban and rural area of North 24 Parganas district, West Bengal. The study can be further extended to investigate impact of students' interest towards learning Geography. A similar study can further be made at a higher secondary level in any other districts of West Bengal and a further study can be conducted by taking large sample.

Reviews of Related Literature

Review of related literature helps to find out the gaps in the related fields and supports to make tools for the study. Some related literature reviews are discussed following:

Ajai et al. (2014) explored academic achievement and interest in Geometry of urban and rural students. The study sample was made up of 70 urban students and 59 rural students. The study revealed that rural students are better in interest scores than urban students.

Essien et al. (2015) investigated students' interest in social studies and academic achievement in tertiary institutions of cross river state, Nigeria. 753 students were selected randomly as sample of the study. Social studies questionnaire and social studies achievement test were developed to collect the data. The result showed from the study that the relation between students' interest in social science and the academic achievement is quite significant.

Warsani and Ruhimat (2016) examined the effect of Interest and Motivation in learning Geography towards Spatial Intelligence of Senior High School students. By using Quantitative approach with survey method, the study used Questionnaire to collect data from 96 respondents. It was revealed from the result that significant effect of learning interest and motivation exist in learning Geography towards the spatial intelligence.

Sarif et al. (2020) examined on students' interest, learning difficulty and teachers' training method in Geography in secondary schools of Meghalaya. Qualitative research design followed by semi-structured Questionnaire was used to collect the data. Based on the frequency distribution, percentage analysis and content analysis, the findings revealed that maximum number of students had interest in learning Geography in secondary schools of Meghalaya.

Omachonu (2020) explored locational differences in students' interest in English oracy skills. 79 students from urban area and 75 students from rural area are the sample respondents of the

study. Hypotheses were analysed by the ANCOVA. The findings of the study revealed that there exists no substantial difference in the urban and rural students' mean interest score.

Rahman et al. (2021) analysed the increasing students' learning. Interest in Geography through outdoor study method. The study deals with classroom action research method. Senior high school students were the population of this study. The result revealed from the study was that the 'Outdoor Study' strategy was a successful teaching strategy to promote interest in learning.

Morgan and Aboaqye (2022) examined students' interest in Physics by gender, school type and programme of study. Survey method followed by questionnaire on students' interest was made to collect data. The findings of the result were that students' interest in Physics was moderate and male students were more interested in Physics than girls.

Emmanuel et al. (2023) investigated impact of school location and methodology on students' performance in English essay writing. It was a quasi-experimental study includes 300 students as sample respondents. The result of the study manifests that students of urban areas perform better than rural areas.

Objectives:

1. To estimate the interest of urban students towards learning Geography.
2. To estimate the interest of urban boys towards learning Geography.
3. To estimate the interest of urban girls towards learning Geography.
4. To estimate the interest of rural students towards learning Geography.
5. To estimate the interest of rural boys towards learning Geography.
6. To estimate the interest of rural girls towards learning Geography.
7. To compare the interest towards learning Geography between urban and rural students.
8. To compare the interest towards learning Geography between urban boys and rural boys.
9. To compare the interest towards learning Geography between urban girls and rural girls.

Hypotheses:

H_{01} There is no significant difference between urban and rural students in regard to their interest towards learning Geography.
H_{02} There is no significant difference between urban boys and rural boys in regard to their interest towards learning Geography.
H_{03} There is no significant difference between urban girls and rural girls in regard to their interest towards learning Geography.

Methodology of the Study

Method: The present study used 'Analytical Survey Method'.

Population: All the students of secondary schools of North 24 Parganas, West Bengal were the population of the present study. More specifically all the students of class IX were the target population of the study.

Sample: 200 students of class IX from 4 schools were the sample number of the study. Among 200 students, 50 boys and 50 girls were selected randomly from urban area and 50 boys and 50 girls were selected randomly from rural areas to study the interests' towards learning Geography.

Area	School	Number of Students
Urban	S1	50
	S2	50
Rural	S1	50

	S2	50
	Total	**200**

Table 1: *Showing the Number of Students selected from Urban and Rural School*

Tools for Data Collection: To collect data, investigator has made an 'Interest Inventory' tool. The questionnaire is having six categories followed by 30 statements. Five point rating scale was used to grade the statement. Every positive statement was being scored in the following manner - Strongly Agree (5), Agree (4), Neutral (3), Disagree (2) and Strongly Disagree (1) and each negative statement was being scored like – Strongly Agree (1), Agree (2), Neutral (3), Disagree (4) and Strongly Disagree (5). The entire questionnaire was categorized by six individual sectors. Each sector is having five statements to judge the students' interest towards Geography. The tool - *'Interest Inventory'* was finalised and accepted as valid on the basis of expert's judgement.

Data Analysis:

Objective 1: *To estimate the interest of urban students towards learning Geography.*

Groups	High (Greater than 120)	Moderate (60 – 120)	Low (Less than 60)	N
Urban Students	12	83	5	100

Table 2: *Frequency table showing high, moderate and low level of urban students' interest towards learning Geography*

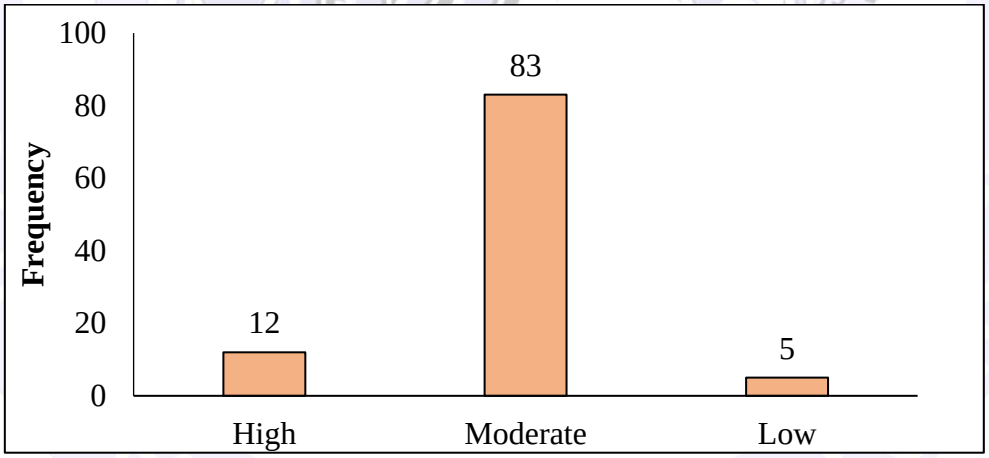

Figure 1: *Frequency of high, moderate and low level of urban students' interest towards learning Geography*

From table 2, it is found that 12 urban students having interest towards learning Geography. 5 students having low level of interest towards learning Geography and 83 students out of 100, having moderate level of interest towards learning Geography. So it is observed that maximum number of urban students having moderate level of interest towards learning Geography.

Objective 2: *To estimate the interest of urban boys towards learning Geography.*

Groups	High (Greater than 120)	Moderate (60 – 120)	Low (Less than 60)	N
Urban Boys	6	43	1	50

Table 3: *Frequency table showing high, moderate and low level of urban boys' interest towards learning Geography*

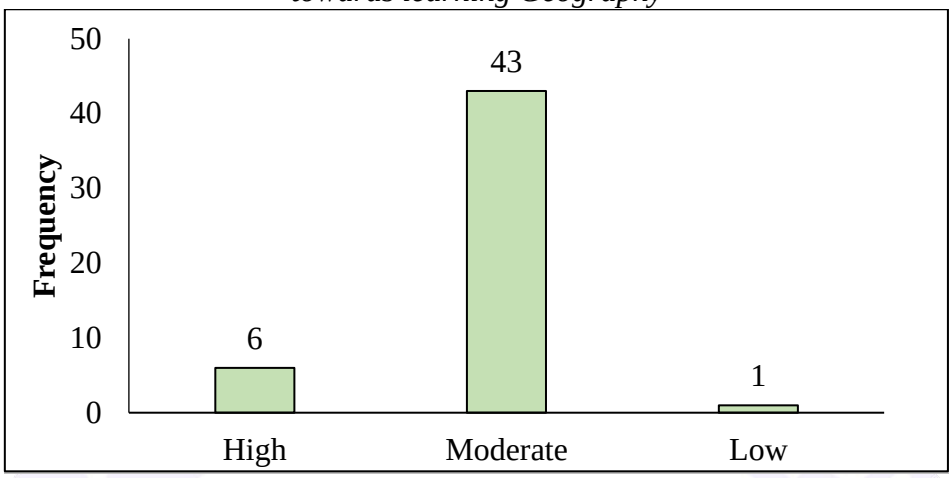

Figure 2: *Frequency of high, moderate and low level of urban boys' interest towards learning Geography*

From table 3, it is found that 6 urban boys having interest towards learning Geography. 1 students having low level of interest towards learning Geography and 43 students out of 100, having moderate level of interest towards learning Geography. So it is observed that maximum number of urban boys having moderate level of interest towards learning Geography.

Objective 3: *To estimate the interest of urban girls towards learning Geography.*

Groups	High (Greater than 120)	Moderate (60 – 120)	Low (Less than 60)	N
Urban Girls	6	40	4	50

Table 4: *Frequency table showing high, moderate and low level of urban girls' interest towards learning Geography*

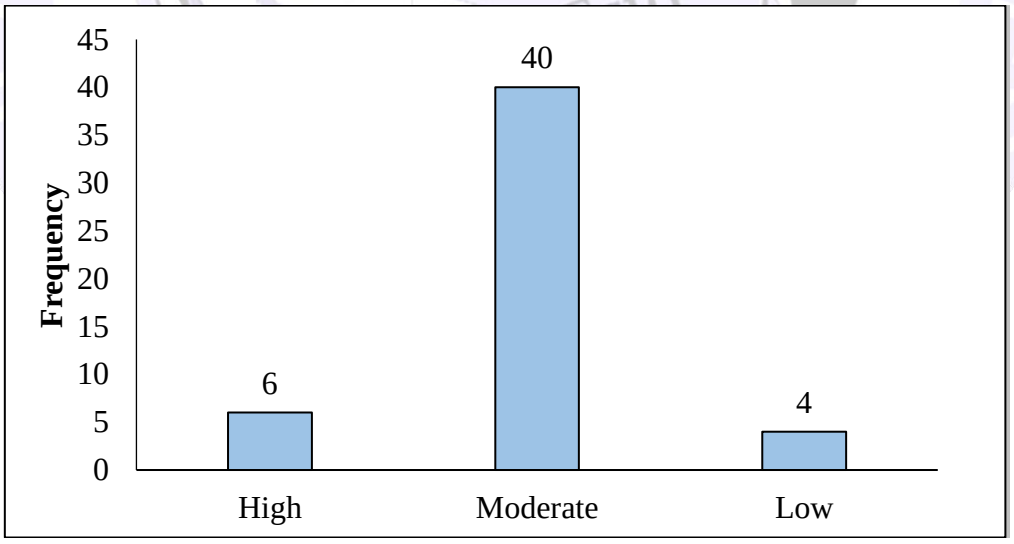

Figure 3: *High, moderate and low level of urban girls' interest towards learning Geography*

From Table 4, it is found that only 6 urban girls having high level of interest towards learning Geography, 40 urban girls having moderate level of interest towards learning Geography and 4 urban girls having low level of interest towards learning Geography out of 50 urban girls. Here also maximum number of urban girls having moderate level of interest towards learning Geography.

Objective 4: *To estimate the interest of rural students towards learning Geography*.

Groups	High (Greater than 120)	Moderate (60 – 120)	Low (Less than 60)	N
Rural Students	16	72	12	100

Table 5: *Frequency table showing high, moderate and low level of rural students' interest towards learning Geography*

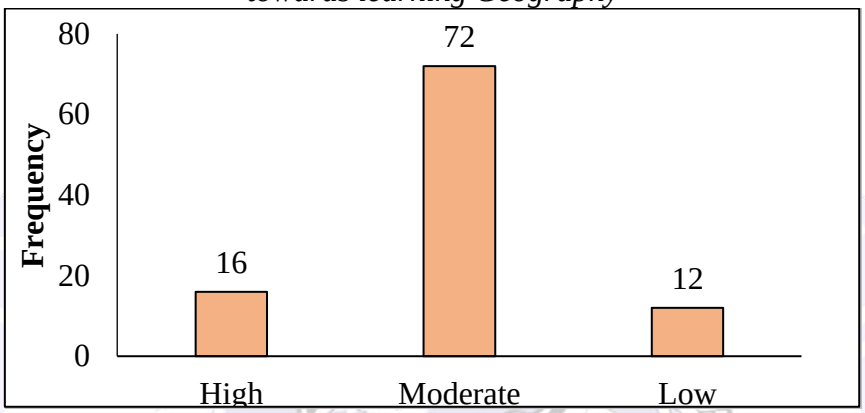

Figure 4: *Frequency of high, moderate and low level of rural students' interest towards learning Geography*

From Table 5, it is shown that 72 rural students having moderate level of interest towards learning Geography. Only 16 rural students containing high level of interest and 12 rural students having low level of interest towards learning Geography. Maximum number of rural students having moderate level of interest towards learning Geography.

Objective 5: *To estimate the interest of rural boys towards learning Geography*.

Groups	High (Greater than 120)	Moderate (60 – 120)	Low (Less than 60)	N
Rural Boys	9	37	4	50

Table 6: *Frequency table showing high, moderate and low level of rural boys' interest towards learning Geography*

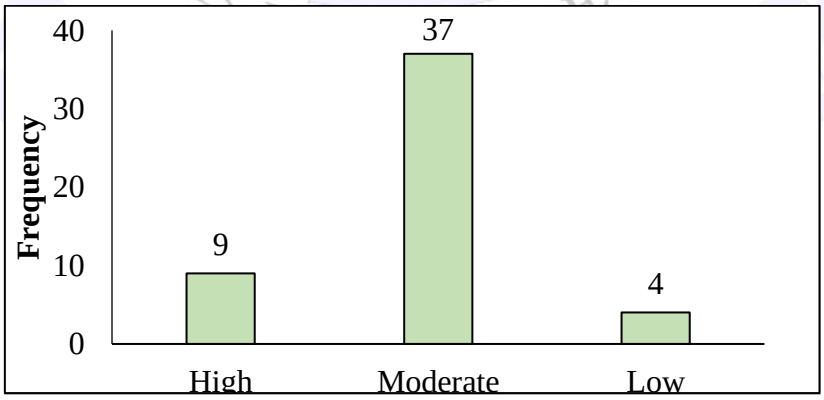

Figure 5: *Frequency of high, moderate and low level of rural boys' interest towards learning Geography*

From Table 6, it is shown that 37 rural boys out of 50, having moderate level of interest towards learning Geography. Only 9 rural boys having high level of interest towards learning

Geography and 4 rural boys' interest level having less than 60 and resulting low level of interest.

Objective 6: *To estimate the interest of rural girls towards learning Geography.*

Groups	High (Greater than 120)	Moderate (60 – 120)	Low (Less than 60)	N
Rural Girls	7	35	8	50

Table 7: *Frequency table showing high, moderate and low level of rural girls' interest towards learning Geography*

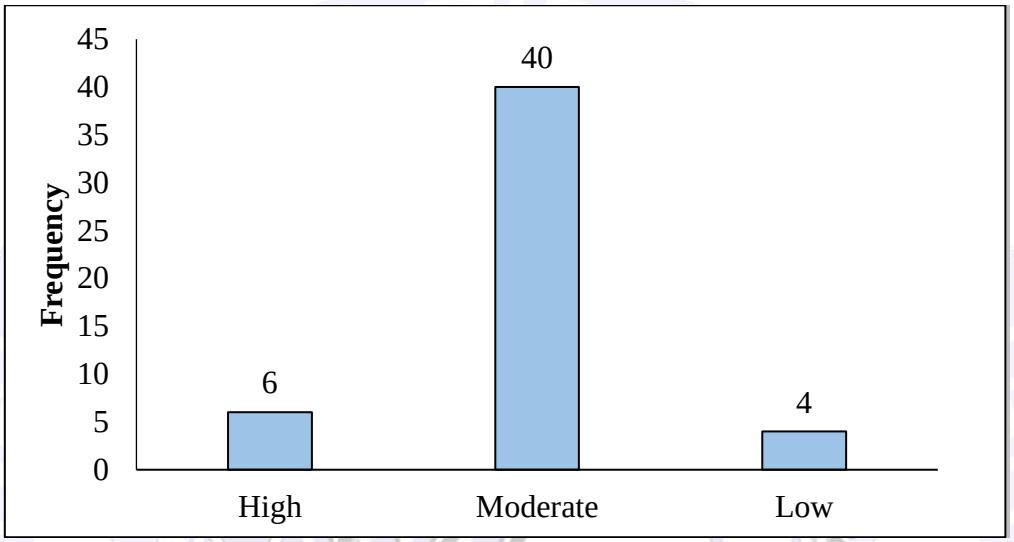

Figure 6: *Frequency of high, moderate and low level of rural girls' interest towards learning Geography*

From Table 7, it is shown that 40 rural girls out of 50, having moderate level of interest towards learning Geography. Only 6 rural girls having high level of interest towards learning Geography and 4 rural girls' interest level having less than 60 and resulting low level of interest.

Objective 7: *To compare the interest towards learning Geography between urban and rural students.*

H_{01} *There is no significant difference between urban and rural students in regard to their interest towards learning Geography.*

Urban Students			Rural Students			MD	df	SE_D	t-value	Significance
n_1	Mean	SD	n_2	Mean	SD					
100	95.47	21.21	100	93.98	28.52	1.49	198	3.55	0.42*	Not Significant
*t-criterion value at 0.05 level is 1.97 for df 198										

Table 8: *Difference between urban and rural students in regard to their interest towards learning Geography*

The result indicates that the t-value (0.42) is not significant. The meaning thereby rural and urban students do not differ in interest significantly. Hence the null hypothesis H_{01} is accepted.

Objective 8: *To compare the interest towards learning Geography between urban boys and rural boys.*

H_{02} *There is no significant difference between urban boys and rural boys in regard to their interest towards learning Geography.*

Urban Boys			Rural Boys			MD	df	SE_D	t-value	Significance
n_1	Mean	SD	n_2	Mean	SD					
50	99.84	18.05	50	95.90	25.02	3.94	98	4.36	0.90*	Not Significant
*t-criterion value at 0.05 level is 1.98 for df 98										

Table 9: *Difference between urban and rural boys in regard to their interest towards learning Geography*

The result indicates that the t-value (0.90) is not significant. The meaning thereby rural and urban boys do not differ in interest significantly. Hence the null hypothesis H_{02} is accepted.

Objective 9: *To compare the interest towards learning Geography between urban girls and rural girls.*

H_{03} *There is no significant difference between urban girls and rural girls in regard to their interest towards learning Geography.*

Urban Girls			Rural Girls			MD	df	SE_D	t-value	Significance
n_1	Mean	SD	n_2	Mean	SD					
50	91.10	23.32	50	92.06	31.78	0.96	98	5.58	0.17*	Not Significant
*t-criterion value at 0.05 level is 1.98 for df 98										

Table 10: *Difference between urban and rural girls in regard to their interest towards learning Geography*

The result indicates that the t-value (0.17) is not significant. The meaning thereby rural and urban girls do not differ in interest significantly. Hence the null hypothesis H_{03} is accepted.

Result and Discussion

By analysing the data, the results indicates that the maximum number of students having moderate level of interest towards learning Geography. Table No. 2 comprised of analysis of objective 1. To determine urban students' interest towards learning Geography. 12 students from urban area were showing high level of interest towards learning Geography and 5 students were showing low level of interest towards learning Geography. 83 students out of 100 were having moderate level of attitude in learning Geography at urban area. Table No. 3 is analysing objective No. 2 : To determine urban boys Interest Towards learning Geography and it shows that 43 urban boys from 100 were approaching moderate level of interest towards Geography, 6 urban boys having high level of interest and 1 urban student having low level of interest towards learning Geography. Table No. 4 and supporting graph shows that 40 urban girls having moderate level of interest, 6 urban girls having high level of interest and 4 urban girls having low level of interest towards learning Geography respectively. Table No. 5 is incorporating the objective 5 shows that 72 rural students out of 100 having moderate level of interest, 16 rural students having high level of interest and 12 students having low level of interest towards learning Geography.

Table No. 6 is incorporated with the objective 5 is showing that 37 rural boys having moderate level of interest, 9 rural boys having high level of interest and 4 having low level of interest towards learning Geography. Objective 6 which is analysed by frequency table and bar graph, showing that 40 rural girls having moderate level of interest towards learning Geography, 6 rural girls having high level of interest and 4 rural girls having low level of interest towards

learning geography. Table No. 8 is analysing hypothesis H_{01}: There is no significant difference between urban and rural students in regard to their interest towards learning Geography which is incorporated with objective 7. The result indicates there is no significant difference in interest between urban students and rural students towards learning Geography. The t-criterion value is 0.42. The mean value of urban students is 95.47 and mean value of rural students is 93.98. Hence the null hypothesis H_{01} is accepted.

Table No. 9 is analysing hypothesis H_{02} which is incorporated with objective 8. The result indicates that 't' criterion value is 0.90 which is not significant. Boys of urban area do not differ with rural boys in regard to their interest towards learning Geography. Mean value of rural boys is 95.90 and mean value of urban boys is 99.84. Hence the null hypothesis H_{02} is accepted. The Table No. 10 indicates the analysis of H_{03} which is incorporated with objective 9. There is also no significant difference between urban girls and rural girls in regard to their interest towards learning Geography. Table 10 is showing that 't' criterion value is 0.17 which is not significant. The mean value of urban girls is 91.10 and mean value of rural girls is 92.06. Hence the null hypothesis H_{03} is accepted.

The findings of the present study matched and incorporated with the result of the related literature consistent with Omachonu (2020). On the other hand the result of the present study not matched and despaired of the prior studies by Ajai et al. (2013), Sarif et al. (2020), and Emmanuel et al. (2023).

Conclusions and Suggestions:

Basically Geography is the compulsory subject in secondary level of Education. It provides a comprehensive understanding of both physical environment and cultural environment and also reveals interaction between two. It stimulates students' feelings of 'Weness' and helps them to make a sense to understand dynamically changing society.

Based on the results of present study, it may be concluded that a large number of students of urban and rural areas have moderate level of interest towards learning Geography. Very few students from urban and rural areas have high level of interest towards learning Geography. There is no significant difference between urban students and rural students in regard to their interest towards learning Geography. Maximum students of urban and rural areas have not shown their interest towards higher studies and research on Geography. It is really serious matter in the field of Education. High or positive interest towards learning Geography not only positively effect on their academic performance but also help to global progress in broader sense knowledge of Geography assists students to acquire the concept of cultural, physical, economical life of a country and also makes understand the cultural life of whole world. So this is the high time to make our students aware to the subject Geography. By using interactive teaching methodology, innovative teaching strategies, showing maps, models, charts, educator should motivate students and to make them understand teacher will discuss the relevance and contribution of Geography in the present society.

References:

Ajai, J. T., & Imoko, B. I. (2014). Gender differences in mathematics achievement and retention scores: A case of problem-based learning method. *International Journal of Research in Education and Science, 1*(1), 15-50. https://doi.org/10.21890/ijres.76785

Anthonia, N. E., & Emmanuel, I. (2023). Impact of school location and methodology on students' achievement in English essay writing. *Irish Journal of Educational Practice, 6*(1), 1-9.

Dewey, J. (1913). *Interest and effort in education*. Houghton Mifflin Company. https://doi.org/10.1037/14633-000

Emmanuel, O. N. B., Fonchamnyo, D. C., Thierry, M. A., & Dinga, G. D. (2023). Ecological footprint in a global perspective: the role of domestic investment, FDI, democracy and institutional quality. *Journal of Global Responsibility, 14*(4), 431–451. https://doi.org/10.1108/jgr-09-2022-0091

Essien, E. E., Akpan, O., & Obot, I. M. (2015). Students' interest in social studies and academic achievement in tertiary institutions in cross river state, Nigeria. *European Journal of Training and Development Studies, 2*(2), 35-40.

Hidi, S. (1990). Interest and its contribution as a mental resource for learning. *Review of Educational Research, 60*(4), 549-571. http://dx.doi.org/10.3102/00347643060064549

Lidiwati, B., Nurwahidin, M., & Widodo, S. (2022). Geography science strategy to increase students' interest in learning with the help of digital based learning media. *Educenter: Journal Ilmiah Pendidikan, 1*(10).

Meyzilia, A., Ruhimat, M., & Darsiharjo. (2019). Minat belajar geografi siswa kelas XII SMA Negeri se-Kabupaten Bangka tahun 2018. *Jurnal Pendidikan Geografi, 1*(1), 25-33. http://journal2.um.ac.id/index.php/jpg/

Morgan, A. M, & Aboagye, K. G. (2022). Students' interest in physics by gender, school type and programme of study. *International Journal of Research and Innovation in Social Science, 6*(8), 591-601 DOI: 10.47772/IJRISS.2022.6830

Omachonu, C. G. (2020). Exploring locational differences in students' interest in English Oracy skills using the peer team gritty method. Retrieved from https://www.researchgate.net/publication/346943610_EXPLORING_LOCATIONAL_DIFFERENCES_IN_STUDENTS'_INTEREST_IN_ENGLISH_ORACY_SKILLS_USING_THE_PEER_TEAM_GRITTY_METHOD

Rahaman, S., Suasti, Y., & Ernawati, E. (2021). Increasing students' learning interest in Geography throughout door study method. *International Journal of Educational Dynamics, 4*(1), 73-78. https://doi.org/10.24036/ijeds.v4i1.355

Renninger, K. A., & Hidi, S. (2022). Interest development, self-related information processing and practice. *Theory into Practice, 61*(6), 1-12. http://10.1080/00405841.2021.1932159

Sarif, M. N., Khardewsaw, M., & Vandana. (2020). A qualitative study of students' interest, learning difficulty and teachers' teaching methods in Geography in secondary schools of Meghalaya. *Journal of Indian Education, 46*(1), 128-144.

Warsani, H., & Ruhimat, M. (2016). The effect of interest and motivation in learning Geography towards spatial intelligence of senior high school students in Kuantan Singingi Regency. *Advance in Social Science, Education and Humanities Research, 79*, 300-305. https://doi.org/10.2991/icge-16.2017.57

Mathematical Modeling of Blood Flow within the Mildly Stenosed Artery with the Oscillatory MHD Effect

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Abstract:
The aim of this research work is to investigate the impact of oscillating MHD blood flow in stenotic arteries. Assuming a Newtonian fluid, the analytical and numerical findings for oscillatory MHD blood flow are produced. Also, it was assumed that, in comparison to the radius of an open-ended tube, the maximum height of surface roughness had a cosine form and was inconsequential. This study focuses into the fluid mechanics of blood flow in stenosed arteries using a mathematical model. The numerical solutions were presented for the effect of the magnetic field on the instantaneous flow rate, which decreases as the Hartman number increases.
Keywords: *Newtonian fluid, Oscillatory MHD blood flow, Cosine form, Stenosed arteries, Hartman number.*

Introduction

In the field of cardiovascular health, it is of utmost significance to comprehend the intricate dynamics of blood flow within arteries, especially those affected by mild stenosis. This understanding is essential for accurate diagnosis and effective treatment of a wide array of cardiovascular ailments. The presence of stenosis, a narrowing of the arterial lumen, significantly alters blood flow patterns, potentially leading to adverse health outcomes such as thrombosis or tissue ischemia. Furthermore, incorporating the oscillatory Magnetohydrodynamic (MHD) effect into the mathematical modeling of blood flow adds another layer of complexity, as it accounts for the interaction between the flowing blood and an external magnetic field, a phenomenon particularly relevant in biomedical engineering applications. Therefore, in this study, we embark on a journey to explore the intricacies of blood flow within mildly stenosed arteries while considering the influence of the oscillatory MHD effect, aiming to unravel insights crucial for both clinical understanding and technological advancements in cardiovascular medicine.

Several investigations have been conducted on blood flow in stenosed arteries, but few of them have looked at oscillatory MHD flow and have never used a mathematical model. An attempt is made to formulate an analysis for such a problem in the present study. Jain et al. (2010) investigated blood flow in a stenosed artery under the MHD effect within the porous medium using mathematical modeling. Analytical expressions have been obtained for share stress at the wall, pressure gradient, axial velocity, volumetric flow rate, and resistance to blood flow. They found that the flow patterns are considerably controlled by the magnetic field. Additionally, they discovered that a variety of factors, mainly the porosity constant and magnetic number,

had an impact on the blood flow within the stenosed artery. Blood flow inside a multistenosed artery under the influence of an externally applied magnetic field was investigated by Bali and Awasthi (2012). They considered an artery to be a round tube. By simulating blood as a Casson fluid, the impact of the non-Newtonian character of blood in small blood vessels has been considered. The study presents a graphic representation of the effects of many parameters on the velocity field, including the height of stenosis, shear stress on the wall at the stenotic surface and volumetric flow rate in the stenotic region. Using heat transfer and a bifurcated artery with minor stenosis in the parent lumen, Srinivasacharya and Rao (2015) investigated the impact of MHD on the couple stress fluid flow and provided numerical solutions for steady MHD blood flow. They assumed that blood was the couple stress fluid. The irregular boundary is transformed into a clearly defined boundary by coordinate transformation, which is based on the non-dimensionalization of the governing equations.

The finite difference method is used to numerically solve the resulting system of equations. A graphical representation is provided of the change in shear stress, flow rate, and impedance in the immediate region of the flow divider, along with the related physical data. The effect of varying viscosity on MHD-inclined arterial blood flow with a chemical reaction was studied by Tripathi and Sharma (2018). It is thought that the blood's variable viscosity varies with the hematocrit ratio. They used an analytical scheme and the homotopy perturbation method to solve the governing non-linear differential equations and find a solution for the blood flow's velocity, temperature, and concentration profiles. They found that in an incline artery, shear stress on the wall at the stenosis throat increases with applied magnetic field values, while it decreases with increasing chemical reaction and porosity parameter values. The influence of viscous dissipation and chemical reactions on MHD oscillatory blood flow in a tapered asymmetric channel was studied by Sasikumar and Senthamarai (2022). They treated blood as an optically thick, viscoelastic fluid passing through a porous material and magnetic force that is thought to travel normally throughout the neurological system. An analysis is done on the impact of chemical reactions and viscous dissipation on blood flow.

Mathematical Formulation:

In this current analysis, we view the artery as a circular, rigid, and cylindrical tube. Using the coordinate system (r, z, t), where the z-axis aligns with the artery's axis and the r-axis corresponds to its radius, we examine a laminar flow of blood, presumed to adhere to Newtonian characteristics, within an artery affected by mild stenosis. Throughout this study, the blood has maintained constant density and viscosity. The cylindrical shape of stenosis within the arterial segment is given by:

$$\frac{R(z)}{R_0} = \frac{\epsilon}{2R_0}\left(1 + \cos\frac{\pi z}{d}\right) \qquad (1)$$

where the radius of the stenosed arterial region is denoted by $R(z)$, the radius of the normal artery is represented by R_0, the semi-length of the stenosis is denoted by d and the maximum height of the stenosis is represented by ϵ, such that $\frac{\epsilon}{R_0} << \epsilon$ (Figure 1).

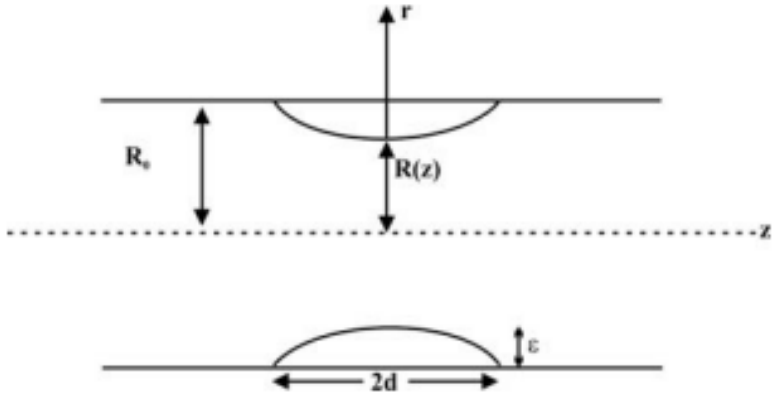

Figure 1: *Cylindrical Flow Geometry of Stenosed Artery*

This mathematical model, in which it is also introduced as a magnetic field, can be analyzed using the following governing equation:

$$\frac{\partial u}{\partial t} = -\frac{1}{\rho}\frac{\partial p}{\partial z} + \frac{v}{R_0^2}\left\{\frac{\partial^2 u}{\partial r^2} + \frac{1}{r}\frac{\partial u}{\partial r}\right\} + \frac{v}{R_0^2}\beta R_0^2 \frac{\sigma}{\mu} u$$

$$\frac{\partial u}{\partial t} = -\frac{1}{\rho}\frac{\partial p}{\partial z} + \lambda\left\{\frac{\partial^2 u}{\partial r^2} + \frac{1}{r}\frac{\partial u}{\partial r}\right\} + \lambda M^2 u \qquad (2)$$

Where p is the fluid pressure, v is the kinamatic viscosity, ρ is the fluid density, μ is the viscosity of the fluid, and u is the fluid velocity in the axial direction,

$$\lambda = \frac{v}{R_0^2},\ \beta^2 = \frac{\rho R_0^2 \omega}{\mu} \text{ and } M^2 = \beta R_0^2 \frac{\sigma}{\mu}.$$

While the following are the boundary conditions:

$$\left.\begin{aligned} u &= 0 \qquad \text{on } r = \frac{R}{R_0} \\ \frac{\partial u}{\partial r} &= 0 \qquad \text{on } r = 0 \end{aligned}\right\} \qquad (3)$$

In order to solve the problem, let's now consider the following expression:

$$u(r,t) = \bar{u}(r)e^{i\omega t}, \qquad -\frac{\partial p}{\partial z} = Pe^{i\omega t} \qquad (4)$$

$$\frac{d^2\bar{u}}{dr^2} + \frac{1}{r}\frac{d\bar{u}}{dr} - i\left(\frac{\rho R_0^2 \omega}{\mu} + i\beta R_0^2 \frac{\sigma}{\mu}\right)\bar{u} = -\frac{R_0^2}{\mu}P \qquad (5)$$

We can now write equation (5) as follows:

$$\frac{d^2\bar{u}}{dr^2} + \frac{1}{r}\frac{d\bar{u}}{dr} - i(\beta^2 + iM^2)\bar{u} = -\frac{R_0^2}{\mu}P$$

$$\frac{d^2\bar{u}}{dr^2} + \frac{1}{r}\frac{d\bar{u}}{dr} - i\alpha^2\bar{u} = -\frac{R_0^2}{\mu}P \qquad (6)$$

Where $\alpha = \beta^2 + iM^2$

Hence the expression (4), and its corresponding boundary conditions are as follows:

$$\left.\begin{aligned} \bar{u} &= 0 \qquad \text{at } r = \frac{R}{R_0} \\ \frac{d\bar{u}}{dr} &= 0 \qquad \text{at } r = 0 \end{aligned}\right\} \tag{7}$$

According to the boundary conditions (2), the solution to equation (2.6) is:

$$\bar{u}(r) = \frac{PR_0^2}{i\mu\alpha^2}\left[\frac{J_0\left(\frac{\alpha r}{R_0} i^{\frac{3}{2}}\right)}{J_0\left(\frac{\beta R}{R_0} i^{\frac{3}{2}}\right)}\right] \tag{8}$$

In this case, J_0 represents the complex argument Bessel function of order zero.
The axial velocity can thus be expressed as follows:

$$u(r,t) = \frac{PR_0^2}{i\mu\alpha^2}\left[\frac{J_0\left(\frac{\alpha r}{R_0} i^{\frac{3}{2}}\right)}{J_0\left(\frac{\beta R}{R_0} i^{\frac{3}{2}}\right)}\right] e^{i\omega t} \tag{9}$$

Using the terminology provided by McLachlan (1934)

$$J_0\left(z i^{\frac{3}{2}}\right) = M_0(z) e^{i\theta} 0^{(z)}$$

This might alternatively be written as:

$$u(r,t) = \frac{PR_0^2 M_0}{\mu\alpha^2}[\sin(\omega t + \epsilon_0) - i\cos(\omega t + \epsilon_0)] \tag{10}$$

where $\epsilon_0 = \tan^{-1}\left[\frac{h_0 \sin\phi}{1 - h_0\cos\phi}\right]$,

$\phi = \theta_0\left(\frac{\alpha R}{R_0}\right) - \theta_0\left(\frac{\alpha r}{R_0}\right)$,

$M_0 = [1 + h_0^2 - 2h_0\cos\phi]^{\frac{1}{2}}$

and $h_0 = \frac{M_0\left(\frac{\alpha r}{R_0}\right)}{M_0\left(\frac{\alpha R}{R_0}\right)}$

Now, if P cos ωt represents the real component of the simple harmonic pressure gradient, the axial velocity formulation is:

$$u(r,t) = \frac{PR_0^2 M_0}{\mu\alpha^2}\sin(\omega t + \epsilon_0) \tag{11}$$

along with the volumetric flow rate:

$$Q = \frac{\pi R_0^4 P}{i\mu\alpha^2}\left(\frac{R}{R_0}\right)\left[\frac{R}{R_0} - \frac{2J_1\left(\frac{\alpha R}{R_0} i^{\frac{3}{2}}\right)}{i^{\frac{3}{2}} J_0\left(\frac{\alpha R}{R_0} i^{\frac{3}{2}}\right)}\right] e^{i\omega t} \tag{12}$$

For pressure gradient P cos ωt, the flow rate is:

$$Q = \frac{nPR_0^4 M_1}{\mu\alpha^2}\left(\frac{R}{R_0}\right)\sin(\omega t + \epsilon_1) \tag{13}$$

$$\text{Where } \epsilon_1 = \tan^{-1}\left[\frac{h_1 \sin\theta}{\left(\frac{R}{R_0} - h_1 \cos\psi\right)}\right],$$

$$M_1 = \left[\left(\frac{R}{R_0}\right)^2 + h_1^2 - 2\left(\frac{R}{R_0}\right) h_1 \cos\psi\right]^{\frac{1}{2}},$$

$$h_1 = \frac{2M_1\left(\frac{\alpha R}{R_0}\right)}{\alpha M_1\left(\frac{\alpha R}{R_0}\right)},$$

$$\psi = \frac{3\pi}{4} - \theta_1\left(\frac{\alpha R}{R_0}\right) + \theta_0\left(\frac{\alpha R}{R_0}\right)$$

The shear stress at the wall:

$$\tau_R = \mu\left(\frac{\partial u}{\partial r}\right)_{r=R}$$

Results and Discussion:

In order to solve the problem numerically, let us assume that $\frac{2d}{l} = 1$ and $\frac{R}{R_0} = 1 - \frac{\epsilon}{R_0}$. Considering that the frequency parameter α is crucial to the flow pattern, it will now use it to describe the shear stress, and flow rate of the walls.

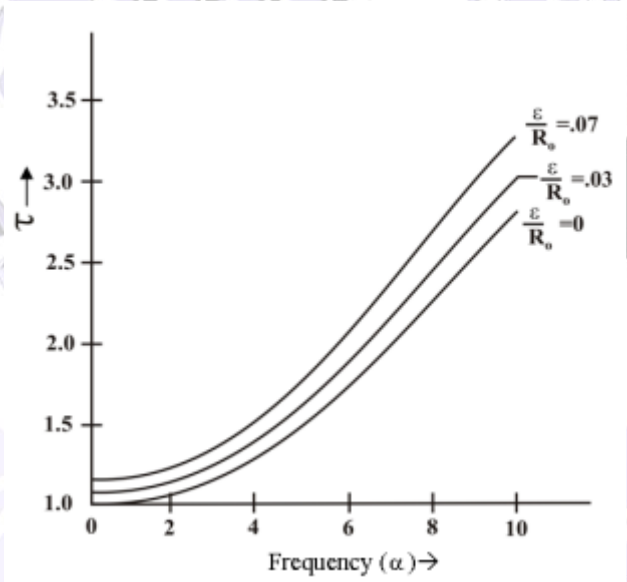

Figure 2: *Variation of shear stress at the wall with frequency parameter α for various stenosis height*

Figure 2 indicates how the shear stress at the wall varies with frequency for various stenosis heights. The study has found that when the stenosis height $\left(\frac{\epsilon}{R_0}\right)$ increases for fixed values of the frequency parameter α, the shear stress at the wall $|\tau|$ also increases. Put another way, shear stress increases as the stenosis height does.

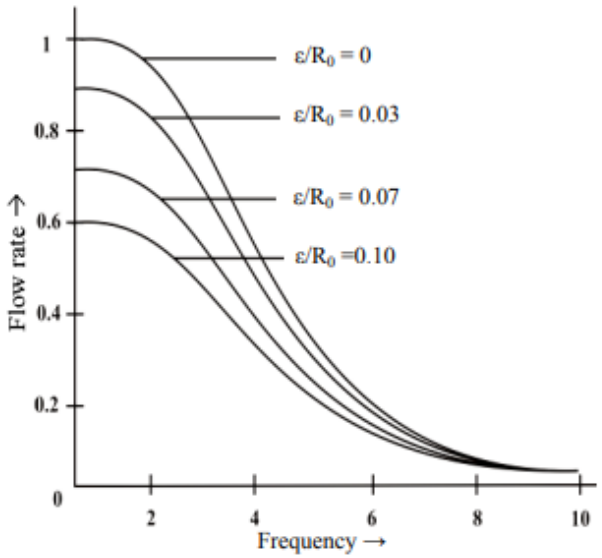

Figure 3: *Variation of instantaneous rate of flow with frequency for various stenosis height*

The instantaneous flow rate varies with frequency for various stenosis heights, as displayed in Figure 3. The flow rate was similarly found to decrease with increasing stenosis height $\left(\frac{\epsilon}{R_0}\right)$ for a specific value of the frequency parameter $|\alpha|$.

In the interval $0 \leq \alpha < 1$, the deviation between any two successive curves is roughly constant; outside of this range, it dramatically falls for any values of $|\alpha|$ that lie on the sharply falling portions of the curve.

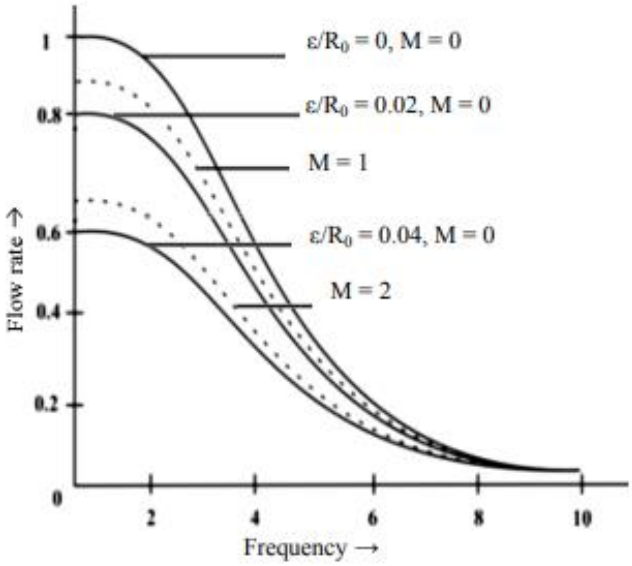

Figure 4: *Variation of instantaneous flow rate with frequency both with and without a Hartmann number*

The instantaneous flow rate variation is displayed in Figure 4 both in the presence and absence of the Hartmann number, or magnetic field. When a magnetic field is present, the increase in Hartmann numbers reduces the variation in instantaneous flow rate, and vice versa. In an instance of no magnetic field, the outcome is the same as that described by Haldar (1987) in the oscillatory flow of blood in a stenosed artery.

Conclusions:

The analytical and numerical results for oscillatory MHD blood flow, which is believed to be a Newtonian fluid, are obtained in order to comprehend the irregular flow conditions of blood in locally constricted blood vessels. It is assumed that the surface roughness in this instance has a cosine form and that its maximum height is extremely slight in relation to the radius of the unconstrained tube. For various values of stenosis height, numerical solutions are given for the instantaneous flow rate, shear stress at the wall, and instantaneous flow rate with frequency, both in the absence and in the presence of Hartmann numbers.

This study suggests the complicated interactions among oscillatory MHD impact, artery stenosis, and blood flow dynamics, offering important new understandings of the intricate behavior of blood flow in mildly stenosed arteries. These results open up new avenues for investigating and improving mathematical models to improve our comprehension of cardiovascular disorders and guide future therapeutic approaches.

References:

Agrawal, B., Kumar, S., & Das, G. (2022). Mathematical model of blood flow through stenosed arteries with the impact of hematocrit on wall shear stress. *International Journal of Applied Research, 8*(3), 439-443.

Bali, R., & Awasthi, U. (2012). A casson fluid model for multiple stenosed artery in the presence of magnetic field. *Applied Mathematics, 3*(5), 436-441.

Das, G., Agrawal, B., & Kumar, S. (2023). A mathematical model of blood flow of a stenosed artery in variable shape. *Journal of Advanced Zoology, 44*(7), 1193-1208.

Haldar, K. (1987). Oscillatory flow of blood in a stenosed artery. *Bulletin of Mathematical Biology, 49*(3), 279-287.

Jain, M., Sharma, G.C., & Singh, R. (2010) Mathematical modeling of blood flow in a stenosed artery under MHD effect through porous medium. *International Journal of Engineering, 23*(3), 243-251.

Kumar, S., & Kumar, S. (2006). Numerical study of the axisymmetric blood flow in a constricted rigid tube. *International Review of Pure and Applied Mathematics, 2*(2), 99-109.

Kumar, S., Kumar, S., & Kumar, D. (2009). Oscillatory MHD flow of blood through an artery with mild stenosis. *International Journal of Engineering, Transactions A: Basics, 22*(2), 125-130.

Kumar, S., Singh, K.V., Yadav, A.K., & Yadav, S.S. (2020). Mathematical model for behaviour of blood flow in artery through stenosis. *Iconic Research and Engineering Journals, 4*(1), 94-98.

Mclachlan, N.W. (1934). *Bessels function for engineers*. Oxford University Press, London, U.K.

Nanda, S.P., & Mallik, B.B. (2012). A non-Newtonian two phase fluid model for blood flow through arteries under stenotic condition. *International Journal of Pharmacy and Biological Sciences, 2*(1), 237-247.

Rakshit, S, Agrawal, B., & Kumar, S. (2024). Numerical and analytical study of unsteady arterial blood flow in time-dependent stenosis using the non-Newtonian power-law blood fluid flow model. *Journal of Advanced Zoology, 45*(1), 297-310.

Sasikumar, J., & Senthamarai, R. (2022). Chemical reaction and viscous dissipation effect on MHD oscillatory blood flow in tapered asymmetric channel. *Mathematical Modeling and Computing, 9*(4), 999-1010.

Srinivasacharya, D., & Rao, G.M. (2015). MHD effect on the couple stress fluid flow through a bifurcated artery. *International Conference on Computational Heat and Mass Transfer-2015, 127,* 877-884.

Tripathi, B., & Sharma, B.K. (2018). Effect of variable viscosity on MHD inclined arterial blood flow with chemical reaction. *International Journal of Applied Mechanics and Engineering, 23*(3), 767-785.

Academic Resilience & M-Learning of Undergraduate Students: A Correlational Study

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Abstract:
Academic resilience and m-learning are the two essential parts in the field of education. Academic resilience is the capability to bounce back from adversity and stress while m-learning is the process of learning through any kind of technological devices. The present study aims to seek if there is any relationship between academic resilience and m-learning of undergraduate (UG) students of West Bengal. It also aims to find out the differences in them in regard to gender and location of residence. It is a Descriptive Survey research. Data collection for the study has been done from 200 UG students using simple random sampling technique administering 'Academic Resilience Scale' by Cassidy (2016) and 'Mobile-Learning Perception Scale' by Uzunboylu & Ozdamli (2011). The data was analysed using mean, standard deviation, coefficient of correlation and 't' test. The outcome demonstrated the substantial association between academic resilience and m-learning that has been observed among UG students of Purulia, West Bengal. Male and female UG students of Purulia district retains almost same academic resilience but there is substantial difference between rural and urban UG students. And in terms of m-learning, significant difference has been observed both in terms of gender and location of residence.
Keywords: *academic resilience, m-learning, UG students.*

Introduction

Every day, students encounter social and intellectual pressure in their homes, towns, classrooms, and institutions. This pressure can undermine their academic success and cause them to drop out of school. However, despite these challenging conditions, some students are able to overcome them and achieve high levels of academic success because they think that hard work and determination, rather than just talent, are the keys to successful learning. Those pupils are termed as academically robust students. In short, the ability to bounce back from adversity and stress is a sign of resilience. In difficult circumstances, people can draw upon their mental fortitude to go through difficult times without crumbling (Radhamani & Kalaivani, 2021). In this modern era, another important key aspect in the field of education is m-learning. Learning that occurs through a portable, handheld electronic device is known as mobile learning. It also includes studying through other mobile devices including e-readers, tablet PCs, and netbooks (Joan, 2013). Mobile learning, as defined by McQuiggan et al. (2015), is instantaneous, optionally available, anywhere, anytime learning that fosters knowledge creation, satisfies curiosity, fosters interpersonal collaboration, and enriches experiences. The study intentioned to find out the relationship between academic resilience and m-learning of UG students of Purulia, West Bengal.

Review of Related Literature

A study by Mahato, Gayen, and Mahato (2023) on the internet addiction and academic resilience of UG students found no significant correlation between the two. Pai and Sekhar PM (2023) directed a study on academic resilience among young adults and found no such differences in it in regard to gender and stream of study. The relationship between high school students' academic resilience was investigated by Romano et al. (2021) and showed a relationship between perceived emotional support from teachers and academic resilience. Even after controlling for family-related and personal protective factors, Fallon (2010) found significant relationship between academic achievement and academic resilience for students with multiple risk factors. She also found a significant relationship between academic optimism of schools and academic resilience of students. In a study conducted by Mahato, Gayen, and Mahato (2023) examined the relationship between m-learning and self-efficacy among UG students in Purulia, West Bengal, and discovered that there was none. Hassan et al. (2023) conducted a study on m-learning and revealed significant shortcomings in the current learning applications with respect to the requirements of slow learners, especially in terms of learnability and user-friendliness, which contributed to their discontent. To overcome these obstacles, the study offers a methodology that makes use of a hybrid recommendation system. An SLR was conducted by Kumar and Mohite (2018) to assess usability elements in the M-Learning application. They discovered that, in addition to being a crucial success element for M-Learning, usability also faces a number of difficulties, including limited input options and small screens.

Objectives of the Study

1. To study the relationship between academic resilience and m-learning of UG students.
2. To find out the difference in academic resilience of UG students in regard to gender.
3. To find out the difference in academic resilience of UG students in regard to location of residence.
4. To find out the difference in m-learning of UG students in regard to gender.
5. To find out the difference in m-learning of UG students in regard to location of residence.

Hypotheses of the Study

H_{01} There is no significant relationship between academic resilience and m-learning of UG students.
H_{02} There is no significant difference in academic resilience between male and female UG students.
H_{03} There is no significant difference in academic resilience between rural and urban UG students.
H_{04} There is no significant difference in m-learning between male and female UG students.
H_{05} There is no significant difference in m-learning between rural and urban UG students.

Methodology

i. **Method:** Descriptive Survey method has been used in this study.
ii. **Population:** All the UG students of general degree colleges of Purulia district is the population for the current study.
iii. **Sample & Sampling Technique:** Data was gathered from 200 UG students of general degree colleges of Purulia district using simple random sampling technique.
iv. **Tools Used:**
   a) *Academic Resilience Scale by Cassidy (2016)*

b) Mobile-Learning Perception Scale by Uzunboylu & Ozdamli (2011).

Analysis of Data

Descriptive Statistics			
	Mean	**Std. Deviation**	**N**
Academic Resilience	99.00	15.120	200
M-Learning	32.51	6.250	200

Table 1: ***Descriptive Statistics of Academic Resilience and M-Learning of UG Students***

Table 1 shows the descriptive statistics of academic resilience and m-learning of 200 UG students of Purulia, West Bengal. The mean and standard deviation of academic resilience is 99.00 and 15.120 respectively. On the other hand the mean and standard deviation of m-learning is 32.51 and 6.250 respectively.

Correlations			
		Academic Resilience	**M-Learning**
Academic Resilience	Pearson Correlation	1	.193**
	Sig. (2-tailed)		.006
	N	200	200
M-Learning	Pearson Correlation	.193**	1
	Sig. (2-tailed)	.006	
	N	200	200
***Significant at the 0.01 level (2-tailed).**			

Table 2: ***Coefficient of Correlation of Academic Resilience and M-Learning of UG Students***

In table 2 the coefficient of correlation value between academic resilience and m-learning is 0.193 that is significant at 0.01 level. So, significant relationship is there between academic resilience and m-learning. So, the null hypothesis (H01) "There is no significant relationship between academic resilience and m-learning of UG students" is rejected. Thus, the alternative hypothesis (Ha1) "There is significant relationship between academic resilience and m-learning of UG students" is accepted.

	Pair of Comparison	**N**	**Mean**	**SD**	**MD**	**df**	**Calculated 't' value**	**Critical 't' value**	**Remarks**
Academic Resilience	Male	118	98.75	16.044	0.62	198	.285	1.96 (0.05) & 2.58 (0.01)	Not Significant
	Female	82	99.37	13.769					
	Rural	161	100.12	15.162	5.74	198	2.144	1.96 (0.05) & 2.58 (0.01)	Significant
	Urban	39	94.38	14.216					

Table 3: ***Descriptive Statistics and 't' value of Academic Resilience of UG Students***

The mean score of academic resilience of male and female UG students are 98.75 and 99.37 respectively. The standard deviations are 16.044 and 13.769 respectively. The calculated 't' value is 0.285. The resulted 't' value is not significant at 0.05 level as it is less than table value for the df 198. Result discovered no significant difference in academic resilience between male

and female UG students. So, the null hypothesis (H02) "There is no significant difference in academic resilience between male and female UG students" is retained.

The mean score of academic resilience of rural and urban UG students are 100.12 and 94.38 respectively. The standard deviations are 15.162 and 14.216 respectively. The calculated 't' value is 2.144. The resulted 't' value is significant at 0.05 level as it is greater than table value for the df 198. Result discovered significant difference in academic resilience between rural and urban UG students. So, the null hypothesis (H03) "There is no significant difference in academic resilience between rural and urban UG students" is rejected. Thus, the alternative hypothesis (Ha3) "There is significant difference in academic resilience between rural and urban UG students" is accepted.

	Pair of Comparison	N	Mean	S.D	MD	df	Calculated 't' value	Critical 't' value	Remarks
M-Learning	Male	118	31.53	6.245	2.40	198	2.715	1.96 (0.05) & 2.58 (0.01)	Significant
	Female	82	33.93	6.016					
	Rural	161	33.11	6.129	3.06	198	2.784	1.96 (0.05) & 2.58 (0.01)	Significant
	Urban	39	30.05	6.219					

Table 4: ***Descriptive Statistics along with 't' value of M-Learning of UG Students***

The mean score of m-learning of male and female UG students are 31.53 and 33.93 respectively. The standard deviations are 6.245 and 6.016 respectively. The calculated 't' value is 2.715. The resulted 't' value is significant at 0.01 level as it is greater than table value for the df 198. Result discovered significant difference in m-learning between male and female UG students. So, the null hypothesis (H04) "There is no significant difference in m-learning between male and female UG students" is rejected. Thus, the alternative hypothesis (Ha4) "There is significant difference in m-learning between male and female UG students" is accepted.

The mean score of m-learning of rural and urban UG students are 33.11 and 30.05 respectively. The standard deviations are 6.129 and 6.219 respectively. The calculated 't' value is 2.784. The resulted 't' value is significant at 0.01 level as it is greater than table value for the df 198. Result revealed significant difference in m-learning between rural and urban UG students. So, the null hypothesis (H05) "There is no significant difference in m-learning between rural and urban UG students" is rejected. Thus, the alternative hypothesis (Ha5) "There is significant difference in m-learning between rural and urban UG students" is accepted.

Major Findings

Academic resilience and m-learning of UG students of Purulia, West Bengal are related to each other as significant relationship has been observed between them. Male and female UG students of Purulia, West Bengal possess approximately same academic resilience as significant difference has not been observed between them but in terms of rural and urban UG students, significant difference has been observed between them. And in terms of m-learning, significant difference has been found in regard to both gender and location of residence.

Conclusion

In this modern century of technological wonder and innovation, education can't be imagined without technological support. And in this crucial juncture, m-learning has emerged as an important aspect in the field of education. The present study also finds out that academic resilience of UG students has impacted by m-learning as significant relationship has been found between them.

References

Cassidy, S. (2016). The academic resilience scale (ARS-30): A new multidimensional construct measure. *Frontiers in Psychology, 7*, 1-11. https://doi.org/10.3389/fpsyg.2016.01787

Fallon, C. M. (2010). *School factors that promote academic resilience in urban Latino high school students*. (Doctoral dissertation). ProQuest Dissertations and Theses Global. https://ecommons.luc.edu/luc_diss/122

Hassan, J. U., Saad Missen, M. M., Firdous, A., Maham, A., & Ikram, A. (2023). An adaptive m-learning usability model for facilitating m-learning for slow learners. *International Journal of Interactive Mobile Technologies, 17*(19), 48–69. https://doi.org/10.3991/ijim.v17i19.42153

Joan, R. (2013). A study on mobile learning as a learning style in modern research practice. *i-manager's Journal on School Educational Technology, 8*(4), 29-37.

Kumar, B. A., & Mohite, P. (2018). Usability of mobile learning applications: A systematic literature review. *Journal of Computers in Education, 5*, 1-17.

Mahato, D., Gayen, P., & Mahato, R. C. (2023). Relationship between academic resilience and internet addiction of undergraduate students of Purulia district of West Bengal: A study. *EPRA International Journal of Multidisciplinary Research (IJMR), 9*(3), 103-106. DOI: https://doi.org/10.36713/epra12603

Mahato, M., Gayen, P., & Mahato, R. C. (2023). Relationship between self-efficacy and m-learning of undergraduate students of Purulia district of West Bengal. *International Journal of Research Publication and Reviews, 4*(4), 3219-3222.

McQuiggan, S., McQuiggan, J., Sabourin, J., & Kosturko, L. (2015). *Mobile learning: A handbook for developers, educators, and learners*. John Wiley & Sons, New Jersey.

Pai, M., & Sekhar PM, A. (2023). Academic resilience and self-efficacy among young adults. *The International Journal of Indian Psychology, 11*(2), 542-557.

Radhamani, K., & Kalaivani, D. (2021). Academic resilience among students: A review of literature. *International Journal of Research and Review, 8*(6), 360-369. DOI: https://doi.org/10.52403/ijrr.20210646

Romano, L., Angelini, G., Consiglio, P., & Fiorilli, C. (2021). Academic resilience and engagement in high school students: The mediating role of perceived teacher emotional support. *European Journal of Investigation in Health, Psychology and Education, 11*(2), 334-344. https://doi.org/10.3390/ejihpe11020025

Uzunboylu, H., & Ozdamli, F. (2011). Teacher perception for m-learning: Scale development and teachers' perceptions. *Journal of Computer Assisted Learning, 27*(6), 544-556. https://doi.org/10.1111/j.1365-2729.2011.00415.x

The Practice of Ethics in Medical Field: A Philosophical Outlook

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Abstract:
The term 'ethos' implies custom or character. Ethics is the study of conflicts arising from moral imperatives, moral norms and the way to deal with them. The actions or the choices that we make are very important in ethics. On the basis of which both the term ethical and unethical are stand upon. Medical ethics enjoyed a remarkable degree of continuity from the days of Hippocrates till the middle of the twentieth century. At that ancient time, the Hippocrates was known as the Father of medicine. In Hippocrates school, they took two oaths; one is benefiting the patient and secondly, not harming the patient. This article is all about the concern, identifying the root cause, how these activities are related to modern society, what can be the solutions regarding the unethical performance occurring in the medical field.
Keywords: *Ethics, confidentiality, consent, medical field, transparency, wellbeing.*

Introduction

Today's active life demands an ethical approach to every aspect of human life. Righteousness and wrongness are two basic sense that every human being should be aware of. In the vast area of Philosophy, ethics includes some major areas such as; Meta ethics, normative ethics, applied ethics. Meta ethics deals with the origin of ethical principles that govern the specification of right and wrong behaviour. It is a theoretical study of moral thought and moral language rather than applying things in practical situations. Normative ethics is concerned with values including what 'ought to be'. Applied ethics deals with social problems and responsibilities in different sectors. Applied ethics is also known as practical ethics. It includes field like bio ethics, medical ethics, business ethics, media ethics, environmental ethics, and many more. These domains of ethics are very much related to our daily life problems. Though there are some active norms and regulations in the field of medicines, still there are some unethical activities going against to the patients' welfare.

Issues

1. The oath was about not harming the patient and it should be only concerned about the justice what the patient deserves. Instances like euthanasia, abortion, organ transplantation, and surrogacy are filled with corruption and injustice.
2. The basic norm was to maintain confidentiality between the doctor and patient, the confidential matter is also very vague. Whenever a patient undergoes treatment, there are always some ethical issues to negotiate.
3. Unethical issues are rampant within the medical field. Some healthcare providers engage in fraudulent activities, such as billing for services not provided.

4. Patient privacy is also compromised when medical personnel share confidential information without consent.
5. These unethical behaviours erode the trust between patients and healthcare professionals, ultimately compromising patient care and well-being.
6. In some medical cases doctors prescribe unnecessary medical tests or take advantages of various patients by prescribing different expensive surgeries for monetary gain.

Objectives

1. To identify how unethical medical practices violets the right to autonomy.
2. To identify the root cause behind these unethical activities and find out a solution.
3. To understand the motive behind the harmful activities in the vital sectors like Euthanasia, abortion, organ transplantation.
4. To find how these issues are hampering our modern society and treatment procedure.

History of Medical systems and some problems:

In India, Ayurveda is known as the oldest school of medical field. The word 'Ayur' means life, and the word 'veda' means knowledge. So together it indicates the knowledge about life. Charaka and Sushruta were the two pillars of Ayurvedic texts.

Bio medical ethics emerged as a distinct field of study in the early 1960s. They introduced several new techniques in treatments such as organ transplantation and kidney dialysis. Also, this modern system introduced taking some difficult decisions about which patients would receive treatment and which would be allowed to die, which are very important in our present life.

Three doshas and three dhatus

Since ancient times, medical ethics has been concerned about individual's well being and good health. According to Ayurveda, our whole body consists of three Doshas: Vatta (movement), Pitta (transformations) and Kapha (lubrication and stability). Also, there are three Dhatus: Rasa (bone), Flesh (mangso) and Blood marrow (Rakto). According to medical science, the balance between these three Doshas and three Dhatus are very important. An imbalance may occur some diseases in human health. The reason can be due to patients carelessness or lack of nutrition but sometime it is the Doctor who prescribed inappropriate drugs or due to wrong check-up.

Bio -Medical or Bio- Clinical Ethics

Medical field is a huge area of various important things. Bio medical ethics is in the domain of Applied Ethics. This is the study of ethical, social, and legal issues that arise in the domain of medical field. This theory focuses on various issues that are there in daily basis in several health care institutions.

The fundamental principles of Ethics

There are four principles which are very important for healthcare industry. From the Hippocrates School, Beneficence and Non - maleficence, these two principles were there. With times, both the Autonomy and Justice gained acceptance as equally important principles in ethics.

I. Beneficence:

This principle is about taking all types of care of an individual. The physician should act for the benefit of the patient. It is about to avoiding any types of harm and promote welfare of the patient. This principle talks about to provide all type of medical protection to the individual.

II. Non – maleficence:

The patient should feel protected and harmless when he or she is under any treatment with a doctor. So doctor should take care of that and there should not be any intention to harm that individual. This principle is about some moral rules - do not kill, do not cause suffering, do not cause offense and many more like this. By using appropriate medicine and providing accurate treatment the physician should treat the patient.

III. Autonomy:

This principle will work for people who can work autonomously, excluded the infants and incompetence due to developmental, mental or physical disorder. This principle work accordingly with patient's interest. This principle demands transparency, confidentiality, decision making ability, informed consent.

IV. Justice:

Justice is very important for a patient so the justice should be maintained. Justice is all about fairness, equal opportunities. This also claims appropriate treatment of the patient. Among several types of justice, this particular domain comes under Distributive justice. This type of justice demands - an equal share, according to need, effort, and contribution. And fairness plays a very important role in this domain. But in reality, the balance among these principles are vague and ethical norms are neglected.

Unethical practices in the medical field:

1. Doctors for their own practices, prescribed their experimental drugs to their patients. It may turned out as poisonous for that patient. According to me there should not be dishonesty between doctor and patient. There are some vagueness between doctor patient relationships.
2. Many unethical issues of medical field that should identify.
3. It is very common that there are always some privileged people who get extra advantages in every sector. Be it getting doctor's special treatment or take free medicines. This imbalance is increasing day by day and it should disappear from this field.
4. In the matter of euthanasia, there are some terrible incidents where the rules are not followed by the experts properly. This is absolutely not correct to take one individual's life through biased Euthanasia.
5. The surrogacy should be treated more carefully for that we can find more instances about surrogacy. If any imbalance occurs, it's the child who suffers the more.
6. A comparative study whether surrogacy is actually helpful or not, is important.

Modern issues in the medical field

Modern times come with modern problems in various ways, in which people are suffering with some unethical issues.

1. Negligence of patient when the hospitals find themselves incapable to provide the correct treatment
2. Providing misleading information to the patient in some serious medical problems such as Kidney Failure, which is highly unethical violation and unprofessional integrity

3. Creating pressure to the patients for choosing expensive treatment or operations over the more affordable options
4. Failure of doctors to pay attention to the individuals, the important symptoms or the medical background the patient has, which may include inaccurate diagnosis.
5. Crucial matter like Euthanasia and the matter of life death, hospitals are giving attention to monetary matters.

Day by day as Medical science has evolved, it introduced new types of real life problems and solutions such as euthanasia, abortion, surrogacy and many more. At the same time, modern time brings some unethical environment also. This profession is more like a business now. Though these all are for people's welfare and good life, there are some major negligence also. From my point of view there are some unethical and biased or partial activities happening in our daily life. Here are some popular concepts of medical domain with problems in those area.

Three major problematic areas in Medical field

A. Euthanasia

Though it seems that euthanasia is a modern concept but it was there in Kurushetra the battle field. The heroic Bhisma turned to Duryodhana the king and said, *"Give generous and benefiting presents of money to these good surgeons and pay them due honor and send them away for to me in this condition no treatment is welcome... I must be allowed to die..."*

Euthanasia is the practice of ending the life of a patient to limit the patient's suffering. Euthanasia is of two kinds; active euthanasia and passive euthanasia. Active euthanasia is killing a patient by active means, for example injecting a patient with a heavy dose of drug. Passive euthanasia is intentionally letting a patient die by withholding his or her treatment such as a ventilator or feeding tube.

Related questions

An individual who is unconscious and has no hope for recovery, do they have the right to decide how to end their own life?

In any critical situation of the patient, is it morally right for his family members to decide about his death, when the patient himself is unaware?

B. Abortion

Abortion in medical science is the expulsion of a fetus from the uterus before it has reached the stage of viability. Basically it is a pregnancy interruption. Before the 20th week of pregnancy it may happen.

Related questions

1. Every year close to 20 million women risk their lives and health by undergoing unsafe abortions and 25% will face a complication with permanent consequences. Is this action morally right?
2. In rural areas these problems are very common among under aged women. Sometimes their family also pressurize them to do abortion.
3. There are some instances where the hospital or the atmosphere are very unhygienic for the mother. In that case it is possible to get infected.

C. **Surrogacy**

Surrogacy is a process in which the mother is artificially inseminated with the sperm of intended father. The child will be genetically connected with the mother. It is a legal process between both the parties.

Related questions:

1. As the child will not be her won, sometimes the surrogate mothers are careless such as they do not give up their drinking habit or smoking habit. They became less bothered about the child so they continue their regular lifestyle without taking any extra care of the upcoming child. I think that is not the correct way to harm a life.
2. After pregnancy the child might get rejected because of certain abnormalities. Then some major problems occur and ultimately it's the child who suffers unknowingly the most. Who gave them the right to do so for their own pleasure?
3. Also, in this long process, the surrogate mother and her family may demand for more money, threaten to terminate the child and many more complications may arise.

To enhance ethics in the medical field, healthcare professionals should undergo regular training on ethical principles and dilemmas. Encouraging open communication and transparency with patients can also help in promoting ethical behavior. Additionally, establishing clear guidelines and protocols for handling ethical issues can guide professionals in making ethical decisions. Overall, improving ethics in the medical field requires a collective effort from healthcare professionals, patients, and policymakers. By upholding ethical standards and promoting a culture of ethics, the medical field can better serve the needs of patients and uphold its commitment to providing quality healthcare.

Conclusion and critique

It has become a terrible affair nowadays to find instances where patients dying from seemingly negligent therapy followed by the doctors or even by reputed hospitals. There is no doubt that like other public sectors of India, widespread corruption has also entered in our medical education and healthcare system. From the very beginning of students to enter in a medical college to go for a treatment and paying a hefty fee, there are no limits for unethical activities in hospitals today.

The Delhi High Court recently declared the Medical Council of India (MCI) the highest medical regulatory body in the country, as a 'den of corruption'. As an evidence Dr. Ketan Desai was caught on 2010 by CBI for taking bribe of crore rupees in exchange of granting recognition to a private medical college.

In a huge population like India, medicine could be the number one money making profession if one use this profession as their own profit. Also, sometimes power comes with greed, dishonesty and selfishness. A country like India, where people are busy with their own money making profit and where everything is business, the ethical guidelines are just a recommendation, not a law. Everything under the treatment is important and should deal with care. The essentially of the treatment, the voluntariness, informed consent, community agreement should be maintained. In the ongoing process of checking up, the privacy and confidentiality except legal reasons are the basic principles which should maintained? The risk to do any operation or surgery the doctor's concern should be unbiased. The transparency is another important thing for the treatment, both the patient and the doctor should be transparent to each other. Overall, both the individuals should be responsible to each other and should have mutual trust and respect to complete the process with an unethical and unbiased manner.

Being a student of Philosophy I always find myself to think in an unbiased and ethical manner. It has been always my concern that in a professional field like hospital and nursing homes there are several unethical activities happening in a regular manner. Which is unavoidable. People are their best when it's the matter of missus one's power. And the unprivileged people suffers the most. My interest is to know more about these concepts and further analyse those problems.

References:

Potter V.R. (1988). *Global bioethics, East Lansing*. Michigan State University Press.

Indian Council of Medical Research (2006). *Ethical Guidelines for Biomedical Research on Human Subjects*. New Delhi.

Singer, P. (1993*). Practical Ethics, second edition*. Cambridge University Press, USA.

Singer, P. (1986). *Applied Ethics*. Oxford University Press.

The Role of School in Transmission of Culture

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Abstract:
From the very creation of the human society, useful custom, tradition, ideas of right and wrong and practice of rules and regulations came to exist in human affairs and these entered into moral and cultural system. In this socio-cultural context education is an important tool for cultural transforming and conservation from older generation to younger generation. School is a cultural -laden social institution. This paper explore the role of school in the transmission of culture. The objectives of this paper are to discuss the role of the curriculum to transmit culture and to discuss the role of teacher as socializing agent. Analytical method is used in the present study. The secondary sources of data are used in the present study. The analysis of data shows that the school as an important role in the transmission of culture.

Keywords: *School, Culture, Education, Curriculum, Teacher.*

Introduction

Human are social creature. Humans all mundane activity hopes, thought, language, literature, artifice, idealness, principle of justice all the cultural identity carrier. According to R. M. Maclver and C. H. Page "It (culture) is the expression of our nature in our modes of living and of thinking, in our everyday intercourse, in Art, in literature, in religion, in recreation and enjoyment." All the things which are included to the social life of the social people are cultural based. Agriculture, House building, Industrial production the fine arts, ritual ceremony, cooking are outdoor of social culture. All society have religious, state, moral etc. ideals in different ways. The member of the society are following this ideals and observe this rituals. This are included with his culture all the thing that human practice, learn dominate all prove his culture. The way of life his called as culture in overall judgement social and socialist persons, a mixed and hard social subject from is called as culture. Societies collective knowledge, idealness, faith, law, rituals all are included in this. Subject and the social people and as a member of the society human all the thing that he does are the result of his mentality and for this resign it is his cultural identity. So the ritual, hope, ideal of the human society all are included with his culture. According to Edward Tylor " That complex whole which includes knowledge, belief, Art, moral, law, custom and other capabilities and habits acquired by man as a member of society"

Culture represents the whole ways of life which are acquired, nourished, preserved and transmitted by human groups for its member. Which are differs from region to region, country to country and continent to continent.

Literature Review:

Katke (2014), in his study *"Socialization and Education: Investigation the Role of Schools in Transmitting Social Norms and Values"* analyzed how schools contribute to transmission of social norms and values. The researcher got result the significant role of schools in transmitting social norms and values.

Kauka (2018) in his study, *"The Role of the School in the Transmission of Culture, with Kenyan References"*, analysed how school curriculum is constructed to transmit culture and the role of the teacher as socializing agent and to relate the cultural nexus of pedagogy.

Shodiq and Modjid (2020) in their study *"Transmission of Social-cultural Values through Education in the Yogyakarta Community Tradition"*, analyzed how transmitted socio cultural values from one generation to other generation through education. The researcher got result socio-cultural values transmitted to students such as cooperation values, politeness and discipline.

Luijk, Soldati and Kruel (2021), in their study *"The Role of Schools as an Opportunity for Transmission of Local Knowledge about Useful Restinga Plants: Experiences in South-eastern Brazil"*, analysed and compare cultural transmission during youth.

Hastuti and Ahmad (2022) in their research paper *"Transmission of Culture and Development of Educational Institutions"*, analysed how culture transmitted from one generation to other generation and role of educational institution.

Objectives of the Study:

1. To find out the role of school curriculum to transmit culture.
2. To find out the role of the teacher as socializing agent to transmit culture.

Method of Study:

The method used in present study is analytical method. Present study used secondary sources of data. Secondary data are also used in writing the paper.

Culture:

The word 'Culture' comes from latin word 'colere' meaning 'To cultivate'. The culture is not innate. Human learn culture from society. Culture is a dynamic and continuous process.

According to Lustig and Koester *"Culture is a learned set of shared interpretations about beliefs, values, norms and social practices which affect behaviours of a relatively large group of people."*

School Curriculum as Content of Cultural Transmission:

Environment. According to Dewey "School is a miniature of society". In school children are knowing about his culture on the other hand they also know about others culture and display respect to others. By giving curriculum in school it develops the students' universal manifestation and by the curriculum the cultural transmission comes to the mind of the students. Each curriculum item transmits a portion of the content of culture as pointed out below:

First of all, speech as content of culture is very vital for all members of the society. This is because it facilitates interaction among members of the society. The culture is not transmitted

by birth. The culture transmit by language. Language is the main carrier of culture. If ones the language is learn then huge treasure of language is open to the literate person. Education, writing, speaking this various type of language delivers the success to the ancestor to the descendants. On the other hand language is the part of culture from primary to Higher secondary all the classes have the facility to study the mother language by which the culture arrive the students. Something which are included human culture are the ideal of the social person, pleasure, and pain targeted all the human felling. This component of the culture is called symbolic element. The Art of the society is transmitted though drama, literature, Fine Arts and other related subject. In India the study of literature has been made compulsory in secondary school, subject like Art and design, drawing and design, music are also taught in India Education system. Every year the school organizes cultural and annual activity. The school celebrate all the birthday wise man, dance, song, recitation all the cultural programme are celebrated on the Independence Day.

The culture transmits by Science, Geography, Philosophy, History and other subjects also. The physical environment come to know by Geography and Science. Philosophy is the mother of all science by this the students come to know about the critical thought and create the value judgement, while the Indian educational system and higher secondary have this.

By work education various type of work come to know on the other hand respect all the working of other. By study they know how to made food processing, agriculture, electrical, Art and craft, wood cutting etc. work.

There are many educational institutions in India where religious education is imparted along with formal education. Through this not only spiritual development is sent to the student here also transmit culture and moral education. Through this he gains knowledge about his own religion as well as shows respect for other religions and they understand various religious custom.

Transmission of Culture in School by the Co-curriculum Activity:

Apart from the written curriculum, co-curricular activities are also conducted in the school. Co-curricular activities are dance-singing sports reciting acting etc. Culture is also transmitted through these. They depend on geographical location climate etc. For example, different folk dances and folk music can be found in different states of India. Some Indian state and his folk song and music given below.

State	***Folk song & music***
West Bengal	Chhau, baul, kirtan, jatra,
Maharashtra	Katha kirtan, tamasha, gafa,
Karnataka	Suggi, huttari, Kunia,
Odisha	Chada, dostnut,

Schools in various states teach their local folk dances and folk music, through which culture is transmitted. The costumes of different folk dances vary, depending on the concept of costumes and the passing down of generations. Folk music in India varies from state to state, hence different folk music is taught in different schools of India, through which folk culture is imparted to the students. Again different types of instruments are used in different folk music and those instruments are made and performed by local people so that through the use of those

local instruments folk music is taught in schools and the local culture is being passed on to the next generation. Different religions, different castes, different tribes are located in India due to which different cultures can be found here. Different religions, different castes, different tribes are located in India due to which different cultures can be found here. Now in many schools, food festivals are conducted through which the students prepare food themselves and sell it to the school, as a result of which many local foods are prepared and sold by them, as a result, the method of making local food is being transmitted to the next generation.

In India, sports programme are arranged according to the seasons in various schools/ inter schools. Mostly during winter and monsoon. There are many local sports in India according to geographical location such as local Bengali name lathi khela, sita haran, nouka chalano, kala gache chora, etc.

School sports also hold many local sports events through which boys and girls learn to play local games and rules. Through this also the circulation of folk culture takes place.

A wall magazine is published in the school and in that wall magazine, various types of poems, prose, essays, rhymes, etc. are collected from the students, and the teachers select them and publish them in the wall magazine. Many students submit writings in the vernacular and these are published through which folk culture is also transmitted

Transmission of Culture in School by the Hidden Curriculum:

A hidden curriculum is a type of curriculum that is taught in an educational institution but is not written down. Like standing up and praying when the bell rings in school, participating properly in various school events like Independence Day, Foundation Day, Republic Day, etc. Special respect for teachers on Teachers' Day and the respectful behaviors students show to teachers throughout the year, such as wishing teachers on first meeting and bowing when teachers step on them. Use of respectful words towards teachers etc. during teacher student conversation. These behaviors are learned by the students from the boys and girls of the senior class through which the culture of the school is passed on to the next generation and through which the patriotism, fraternity, internationalism among the students manifests in respectful behavior towards the teachers.

The Role of the Teacher in Transmission of Culture:

A teacher is his right and nature is could be said to be an embodiment of culture. Any teacher, therefore is expected to be knowledgeable on the values of the society which he in turn transmits to the learner in the school environment and even outside the school.

Teacher are human maker and agent of social change. Teachers are respectful of all cultures in the classroom which made student attitude to respect other culture. Two things are important first the professionalism of the teacher, secondly fashioning the young. In Indian culture teacher called ‘guru’ and student called ‘sisya’ and their relationship like father and son. It is a important tradition and a part of culture. The teacher also has a duty to inculcate the values and morals of their traditions and culture into the minds of younger generations. Teacher play a integral role to tradition preservation and transmission.

Pedagogy and Classroom in Transmission of Culture:

There was a time when children study in the Guru’s house in the forest. Currently students study in classroom within four walls. In Indian culture, teaching is considered a nobel

profession. Although not everyone had the opportunity to get education in the vedic period, but nowadays everyone has the opportunity to get education regardless of caste, religion, caste. The classroom is a place where children from different races, religions and cultures come together and unite and the classroom becomes a multicultural environment. This has resulted in the development of a democratic spirit in the classroom through equal rights and living together in the democratic subcontinent. Which is helping students to become good citizens. In schools culture is not only transmitted but also preserved. Patience, understanding, prudence is reflected in the teacher behavior of the sweet relationship between teacher and student. The attitude of respect towards teachers in the classroom is reflected which in turn is reflected in student behavior towards any elders.

The Role of School Environment and Structure to Transmission of Culture:

In India, different schools have different infrastructure, flags, logos, uniforms and colors. Various types of school such as religiously run school, private school, government school, every school have flack, logo, dress, infrastructure etc. Every school also has a culture and that culture is passed on to students through their education in that school.

Findings:

1. To promote cultural awareness in the classroom.
2. Teachers can include diverse perspectives and experience in their curriculum.
3. Values the cultural tradition and festival.
4. Encourage respectful discussion about cultural differences.
5. Provides opportunities for the students to learn Cultural transmission.

Conclusion:

Culture is not a static. Its nature is dynamic and culture change is also inevitable in the future. Human science and technology are always progressing. Many new things are being discovered in different fields. New ideas and ideologies have emerged in social life. All of these reactions continue the flow of cultural change. Thus in human societies culture transmit through successor one generation to other generation or one era to other era. School is a place where different cultural boys and girls come and make a multicultural environment. In school children are knowing about others culture and display respect to others. The culture is not transmitted by birth. The culture transmit by language. Curriculum plays an important role as a transmitter of culture. The Art of the society is transmitted through drama, literature, Fine Arts and other related subject. The physical environment are come to know by Geography and science. Blind faith and superstition are removed in them and scientific attitude is developed.

A culturally transforms classroom is one where students feel save to learn and participate. It is a place where they develop pride and create a self-esteem. The teacher also has a duty to inculcate the values and morals of their traditions and culture into the minds of younger generation. Teacher play an integral role to culture preservation and transmission. Cultural transmission is being feel the school community empowering and building a sense of pride in their cultural heritage. Students community are perform better academically and grow to more independent and active citizen when they learn their language, environment and culture that values them. Culture in a transmission is happening so fact that sometimes we are unable to understand it. Transmission of culture dependent on dialects, languages, social issues, different ideology, and our life style, thinking, acceptable. Cultural transmission can create ideologies that difficult to religious beliefs, difficult to alter and such as racism.

References:

Auka, E. O. (2018). The role of the school in the transmission of culture, with Kenyan references. *International Journal of Social Science and Humanities Research, 6*(4), 1017-1020.

Deyoung, A. J., & Paul, T. (1991). Community schools in the national context: The social and cultural impact of educational reform movements on American rural schools. *Journal of Research in Rural Education, 7*(2), 120-125.

Hastuti, S., & Firman, A. R. (2022). Transmission of culture and development of educational institutions. *Literasi Nusantara, 2*(1), 1-14.

Katke, S. (2023). Socialization and education: Investigating the role of schools in transmitting social norms and values. *Journal of Emerging Technologies and Innovative Research (JETIR), 10*(6), 504-510.

Sharma, S. (2014). Influence of culture on secondary school students' understanding of statistics: A Fijian perspective. *Statistics Education Research Journal, 13*(2), 104-117.

Shodiq, S., & Madjid, A. (2021). Transmission of social-cultural values through education in the Yogyakarta community tradition. *Advances in Social Science, Education and Humanities Research, 518*, 26-34.

Trow, M. (1961). The second transformation of American secondary education. *International Journal of Comparative Sociology, 2*(1), 135-140.

National Education Policy 2020 (NEP 2020) in Relation to Early Childhood Care and Education (ECCE)

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Abstract:
Education is essential for fostering the development of our society. "Education is fundamental for achieving full human potential, developing an equitable and just society and promoting national development" (Ministry of Human Resource Development, 2020). In the 21st century, an important reformation in the field of education is the introduction of National Education Policy 2020. From several researches, it has been found that prior to 6 years of age over 85% of a child's cumulative brain development happens (Ministry of Human Resource Development, 2020). Recognizing this fact, NEP 2020 has brought a modified 5+3+3+4 pedagogical and curricular structure instead of 10+2 structure of school education (Ramavath, 2021). In the modified structure, Early Childhood Care and Education (ECCE) has been given much importance for a child's holistic healthy development. ECCE can be conceptualized as having "integral elements like care, health, nutrition and early education in a safe and conducive environment" (Kumar, 2023). According to National Education Policy 2020, "Universal provisioning of quality early childhood development, care, and education must thus be achieved as soon as possible, and no later than 2030, to ensure that all students entering Grade 1 are school ready" (Ministry of Human Resource Development, 2020). In this paper, Early Childhood Care and Education (ECCE) will be discussed in relation to National Education Policy 2020 (NEP 2020), including the importance of toys in childhood and how they can be used in the learning experiences of the children the period of early education.

Keywords: *NEP 2020, Early Childhood Care and Education (ECCE), Universal Provision.*

Introduction

Education is an important key for transforming our society in a better way, in changing our thinking capabilities and perception, in solving various issues, in eradicating poverty, in providing strength for fighting against injustice and in the development of the personal skills (Mahindra University, 2022). "Education is fundamental for achieving full human potential, developing an equitable and just society and promoting national development. Providing universal access to quality education is the key to India's continued ascent and leadership on

the global stage in terms of economic growth, social justice and equality, scientific advancement, national integration, and cultural preservation" (Ministry of Human Resource Development, 2020). Governments of different countries worldwide focus majorly on the educational policies, where the end results of the educational policies and their impact on the social and economic development get increasing attention (Manjunatha, 2018). "The Indian Government has been trying to enhance the quality of education since the time of Independence. There have been numerous policies and schemes that aimed at providing better education for everyone, irrespective of caste and religion. Indian constitution allows children with the right to education, which means that education isn't just something that children want, it is their right" (G.D. Goenka International School Rohtak, 2019). In the post- independent India, mainly three major shifts in the educational policies are seen, where the first National Policy on Education was introduced in 1968 by the government led by Smt. Indira Gandhi on the basis of the recommendations from Kothari Commission. After that the National Policy on Education 1986 was introduced by the Government led by Shri Rajiv Gandhi and this National Policy on Education 1986 was modified in 1992, which was led by the Government of Shri Pamulaparthi Venkata Narasimha Rao (Anbazhagan, 2020). After that the first national educational policy of 21st century is National Education Policy 2020, which was approved by the Union Cabinate of India, chaired by our Prime Minister Shri Narendra Damodardas Modi on 29th July, 2020. The chairperson of the drafting committee of National Education Policy 2020, was Dr. Krishnaswami Kasturirangan, the former chairman of Indian Space Research Organization (ISRO). The National Education Policy 2020 is a comprehensive policy framework aiming at the reformation and revitalization of the educational system in India and it has placed emphasis upon the inclusive and equitable education and upon giving quality education to all, irrespective of one's socio- economic background and location (Fatima, 2022). In the field of school education, the National Education Policy 2020 has focused on the development of core values and principles among the students, that is, it has given importance in the development of the cognitive skills, including both the foundation skills of literacy and numeracy and higher order skills like critical thinking and problem solving skills and also social and emotional skills including empathy, cultural awareness, teamwork, leadership, perseverance and grit, communication among other skills (Ministry of Education, 2023).

This new education policy 2020 has included four parts: Part I includes the school education, Part II includes higher education, Part III includes other key areas of focus, i.e., professional education, adult education and life-long learning, arts and culture, use and integration of technology as well as online and digital education, and Part IV includes the implementation part, strengthening the central advisory board of education and financing.

Early childhood Care and Education (ECCE) is included in the Part I, i.e. School education part of National Education Policy 2020. In the National Education Policy 2020, the educational structures related to school education has been modified into 5+3+3+4 from previous 10+2 structure of school education. In this newly modified structure of school education, Early Childhood Care and Education (ECCE) has been given much importance and is proposed to have a universal provision to reach to every child below age 6, before they enter class I. In this paper Early Childhood Care and Education (ECCE) in relation to National Education Policy 2020, and the importance of toys in childhood and how they can be used in the learning experiences of the children the period of early education will be focused.

Review of the Related Literatures

National Education Policy 2020 document published by the Ministry of Human Resource Development, Government of India has presented the newly modified structures of education in four parts, where the Early Childhood Care and Education (ECCE) has been discussed under

the Part I, i.e., School education. Few studies (Ramavath, 2021; Shashtri & Rajput, 2022; Vadeyar, 2022; Kumar, 2023) have been done on the early childhood care and education in the new education policy 2020, focusing on the areas of the concept, objectives, principles, curricula, ways of strengthening and improving the facilities and quality of early childhood care and education, early childhood care and education in NEP 2020 in relation to sustainable development goal 4, role of NEP 2020 on early childhood care and education and importance of foundation of learning.

Objectives

1. To discuss about the Concept and importance of Early Childhood Care and Education (ECCE).
2. To discuss about the pedagogical and curricular structure of Early Childhood Care and Education (ECCE) in relation to NEP 2020.
3. To discuss about the goals for Early Childhood Care and Education (ECCE).
4. To discuss about the National Curricular and Pedagogical Framework for Early Childhood Care and Education (NCPFECCE).
5. To explore the institutions for delivering Early Childhood Care and Education.
6. To explore the curriculum for Early Childhood Care and Education (ECCE).
7. To discuss about the importance of toys in childhood and the ways of using it in the learning experiences of children in the period of early education.
8. To discuss about the qualification of teachers in ECCE program.
9. To explore the responsible ministries for Early Childhood Care and Education (ECCE) curriculum and pedagogy
10. To discuss about the ways to strengthen the Early Childhood Care and Education (ECCE) facilities.
11. To discuss about the probable suggestions to increase awareness about the Early Childhood Care and Education (ECCE).

Method of Study

The study has been done on the basis of the secondary data including various research journals, Government document, articles, online websites etc.

Discussion

1. **Concept and Importance of Early Childhood Care and Education (ECCE):**

Children are the future foundation of our society. Early childhood care and education is very much important for a child's holistic healthy development. Early Childhood Care and Education (ECCE) can be referred to as providing care, nutrition for maintaining health of the child, pre-school education through stories, poems, dance, music and playing toys etc. Quality early childhood care and education before entering class I always helps children to be well-adaptive in future in the school environment and also helps them to achieve better educational outcome in the school (Kumar, 2023).

Early Childhood Care and Education (ECCE) is important for every child because from several researches, it has been found that before 6 years of age over 85% of a child's cumulative brain development occurs. So in this crucial stage of child's development, a child requires proper care and stimulation of the brain for ensuring their healthy brain development and growth (Ministry of Human Resource Development, 2020).

2. Pedagogical and Curricular Structure:

In National Education Policy, 2020 the previous academic structure has been modified from 10+2 academic structure to 5+3+3+4 structure. In the 10+2 structure of school education Early Childhood Care Education (ECCE) of 3 to 6 years age group has not been given importance as in 10+2 structure class 1 starts at age of 6 years. In the modified 5+3+3+4 structure, Early Childhood Care Education (ECCE) of 3 to 6 years age group children has been given strong importance for ensuring a child's well-being and holistic development and making the child ready for joining school.

<table>
<tr><th>Previous Academic Structure
(10+2 Structure)</th><th colspan="2">New Pedagogical and Curricular Structure
(5+3+3+4 Structure)</th></tr>
<tr><td>(Class 11 & 12)
(16-18 Years age)</td><td colspan="2">(Class 9 to 12)
(14-18 Years age)
Secondary</td></tr>
<tr><td rowspan="4">(Class 1 to 10)
(6-16 Years age)</td><td colspan="2">(Class 6 to 8)
(11-14 Years age)
Middle</td></tr>
<tr><td colspan="2">(Class 3 to 5)
(8-11 Years age)
Preparatory</td></tr>
<tr><td>2 Years
(Class 1 & 2)
(6 to 8 Years age)</td><td rowspan="2">Foundational</td></tr>
<tr><td>3 Years
(Anganwadi/ Pre-School/ Balvatika)
(3 to 6 Years age)</td></tr>
</table>

Table 1: ***Previous 10+2 Structure of School education and New Pedagogical and Curricular Structure of 5+3+3+4***

According to National Education Policy 2020, "Strong investment in ECCE has the potential to give all young children such access, enabling them to participate and flourish in the educational system throughout their lives. Universal provisioning of quality early childhood development, care, and education must thus be achieved as soon as possible, and no later than 2030, to ensure that all students entering Grade 1 are school ready" (Ministry of Human Resource Development, 2020).

3. Goals for Early Childhood Care and Education (ECCE):

According to NEP 2020, the goals for Early Childhood Care and Education (ECCE) are:

a. To achieve universal provisioning of providing quality early childhood development, care and education as soon as possible within 2030 to make the students school ready before entering grade 1.
b. To engage the child in a flexible, multilevel, multifaceted, activity based, play-based and inquiry based learning.
c. To develop social capacities, good behavior, ethics, sensitivity, courtesy, personal and public cleanliness, teamwork and cooperation of the child.
d. To attain the optimal holistic development of the child in terms of physical and motor development, cognitive development, socio-economic-ethical development, cultural and artistic development, and the development of skills of communication and early language, literacy and numeracy.

4. National Curricular and Pedagogical Framework for Early Childhood Care and Education:

To achieve the aims of Early Childhood Care and Education (ECCE), this framework is needed and it has been developed by NCERT. This framework is divided into two parts (Ministry of Human Resource Development, 2020; National Steering Committee for National Curriculum Frameworks, 2022):

a. Primarily at home environment (0 to 3 years age):

Up to age 3, the child should get adequate nutrition, responsive care, good health practices, safety and protection, cognitive and emotional care and stimulation for early childhood learning through talking, playing, listening to music, moving etc.

b. In institutional environment (3 to 8 years age):

3 to 6 years: During this stage the child should join the early childhood care and education program in Pre-schools, Anganwadis or Balvatias.

6 to 8 years: During this stage child will enter grade 1 and 2 in school.

5. Institutions for Delivering Early Childhood Care and Education:

a. According to NEP 2020, the institutions for delivering Early Childhood Care and Education to the child (Ministry of Human Resource Development, 2020) are:
b. Stand-alone Anganwadis.
c. Anganwadis co-located with primary schools.
d. Pre-primary schools, covering at least 5 to 6 years age, co-located with existing primary schools.
e. Stand-alone pre-schools.

6. Curriculum for Early Childhood Care and Education:

According to NEP 2020, curriculum for ECCE (Ministry of Human Resource Development, 2020) should include:

a. Flexibility as per the need and interest of the child.
b. Multi-dimensionality for the optimal holistic development of the child.
c. Education for early literacy and numeracy of the child.
d. Early development of language and communication.
e. Play-based, activity-based and inquiry-based learning.
f. Learning through stories, puzzle solving, drawing, painting and other visual art and craft, drama, music and movement etc.

7. Importance of Toys in Childhood and the Ways of Using it in the Learning Experiences of Children in the Period of Early Education:

Toys play an important role in childhood, by promoting the holistic development of children. The importance of toys in childhood (Srivastava & Mehta, 2022) can be discussed as follows:

a. **Physical Development:** The physical movement of children, while playing with toys, helps in their development of muscles, fine-motor skills, hand-eye coordination, which is important for physical development.

b. **Cognitive Development:** Playing with toys also help in the cognitive development of the children by nurturing their creativity, and their cognitive abilities like thinking, reasoning, remembering etc.
c. **Social Development:** Playing with toys can also help in social development of the child by improving their quality of self-discipline, sharing, caring and cooperation. It also helps the development of their communication skill.
d. **Emotional Development:** Playing with toys contribute in the emotional development of the children by developing the quality of understanding the emotions of self and others within them. They learn to manage and regulate their emotions.
e. **Moral Development:** Moral development of children also occur as a result of playing with toys by helping them to know which is right and which is wrong. It helps the child to learn the quality of honesty.
f. **Educational Development:** At the initial stage, playing with toys help the children to learn different size, shape, colors, textures, numbers etc. By experimenting with the toys children learn new information. It also plays an important role in developing a sense of responsibility which is needed in their future life.

During the stage of early education, teachers can help children to learn new concepts and skills by selecting proper toys and by using it. Using toys in the early education process (Department of School Education & Literacy Ministry of Education, 2022) can be discussed as follows:

a. Teachers can use puzzle games in the early education stage. By solving the puzzle games, children can develop the problem solving ability and strategic thinking skills.
b. To encourage creative expression of children teachers can use various craft materials like beads, clay, Washable markers etc.
c. Games such as construction of building using blocks, Playing with toys like kitchen sets can be used to develop children's fine motor skills.
d. Jumping ropes, balls etc. can be used for developing their gross motor skills.
e. Sands can be used by children in writing letters and alphabets in fun ways.
f. Playing with colorful balls can also help children to learn about the different names of colors.

In this way toys can be used in early education stage for encouraging children to learn different skills and concepts actively.

8. Qualification of Teachers:

According to NEP 2020, all the institutions should recruit specially trained teachers in the curriculum and pedagogy of Early Childhood Care and Education (ECCE). Anganwadi teachers with the qualifications of 10+2 and above have to do a 6 months certificate course in ECCE. The Anganwadi teachers with lower qualifications than 10+2 have to do an one-year diploma program in ECCE. These programs can be run through digital or distance mode. The mentoring of ECCE training of Anganwadi teachers will be done by Cluster Resource Centers of the School Education Department which will hold at least one monthly contact class for continuous assessment. In the longer term, the cadres of professionally qualified educators will be prepared by the State Governments for early childhood care and education. Necessary facilities for Continuous Professional Development (CPD) will also be created (Ministry of Human Resource Development, 2020).

9. Responsible Ministries for ECCE Curriculum and Pedagogy:

According to NEP 2020 (Ministry of Human Resource Development, 2020), for ensuring the continuity of ECCE curriculum and pedagogy from pre-primary school through primary

school, the responsibility lies upon the Ministry of Human Resource Development (presently known as Ministry of Education). The planning and implementation of the curriculum will be done jointly by the following ministries:

a. Ministry of Human Resource Development
b. Ministry of Women and Child Development
c. Ministry of Health and Family welfare
d. Ministry of Tribal Affairs.

With these ministries, a special joint task force will be made to guide continuously for the successful and smooth inclusion of early childhood care and education into school education (Ministry of Human Resource Development, 2020).

10. Ways to Strengthen the Early Childhood Care and Education (ECCE) Facilities:

Some ways to strengthen the Early Childhood Care and Education (ECCE) facilities (Ministry of Human Resource Development, 2020; Shashtri & Rajput, 2022) are:

a. To give attention to the universal access to quality Early Childhood Care and Education (ECCE) with special focus on the socio-economic disadvantaged population.
b. Proper monitoring and maintaining the infrastructures and play equipments of the institutions consisting of Stand-alone Anganwadis, Anganwadis co-located with primary schools, Pre-primary schools, covering atleast 5 to 6 years age, co-located with existing primary schools and Stand-alone pre-schools for delivering Early Childhood Care and Education (ECCE).
c. Development of well-constructed, well designed, well-ventilated and child friendly learning environment.
d. Developing the integration into the school complexes and Anganwadi children parents and teachers for participating in the school programs.
e. Recruitment of well-qualified teachers and workers with necessary education in the field of Early Childhood Care and Education (ECCE).
f. Mid-day meal facilities should be extended to the Anganwadi and preparatory classes of the primary schools.
g. Health checkup and growth monitoring programs should be made available for Anganwadi and Primary Schools.

11. Probable Suggestions to Increase Awareness about the Early Childhood Care and Education (ECCE):

Some probable suggestions to increase awareness about the Early Childhood Care and Education (Shashtri & Rajput, 2022) can be as follows:

a. Organizing nation-wide campaigning programs to make people aware of the importance of Early Childhood Care and Education (ECCE).
b. Educating parents on healthy child care practices.
c. Encouraging parents to be involved in certain home and school activities.

Conclusion

It can be concluded that, Early Childhood Care and Education (ECCE) intends to focus on the all-round healthy development of a child, which is worthy for developing efficient human resources. So the education sectors of India can be reformed in better way by giving proper importance to the early childhood care and education in National Education Policy 2020.

References:

Anbazhagan, A. (2020, July 30). India's National Education Policy 2020 – History, Highlights and Findings! *The EduRise Blog*. Retrieved from https://medium.com/eduriseglobal/indias-national-education-policy-2020-history-highlights-and-findings-551768dfe77

Department of School Education & Literacy Ministry of Education, Government of India (2022). *Toy-Based Pedagogy*. Retrieved from https://www.ncert.nic.in/pdf/notice/toy_based_pedagogy.pdf

Fatima, F. (2022, December 21). Implementation of New Education Policy in India: An insight. *Readers' Blog, Times of India.* Retrieved from https://timesofindia.indiatimes.com/readersblog/educational-blog/implementation-of-new-education-policy-in-india-an-insight-48262/

G.D. Goenka International School Rohtak, (2019, September 4). *Government Policies to Promote Education in India*. Retrieved from https://gdgoenkarohtak.com/government-policies-to-promote-education-in-india/

Kumar, M. (2023). Early childhood care and education in new education policy 2020: The foundation of learning. In Mehar, R., Saxena, M.K. & Grover, J. (Eds.). *National Education Policy 2020: Reinvigorating Education, Issues, Challenges and Concerns*. Chanakya Publication & Distributors, 420-436. Retrieved from https://www.researchgate.net/publication/371120584_Early_Childhood_Care_and_Education_in_New_Education_Policy_2020_The_Foundation_of_Learning

Mahindra University (2022, December 14). *Importance of education in today's world?* Retrieved from https://www.mahindrauniversity.edu.in/blog/importance-of-education-in-todays-world/

Manjunatha, S. (2018). History of education policy in India. *Education and Society. Inflibnet Society*. Retrieved from https://ebooks.inflibnet.ac.in/socp13/chapter/history-of-education-policy-in-india/

Ministry of Education, Government of India (2023). National Education Policy. *National Informatics Centre*. Retrieved from https://www.education.gov.in/nep/about-nep

Ministry of Human Resource Development, Government of India (2020). *National Education Policy 2020*. Retrieved from https://www.education.gov.in/sites/upload_files/mhrd/files/NEP_Final_English_0.pdf

National Steering Committee for National Curriculum Frameworks (2022). *National Curriculum Framework for Foundational Stage*. Retrieved from https://ncert.nic.in/pdf/NCF_for_Foundational_Stage_20_October_2022.pdf

Ramavath, N. (2021). The role of NEP-2020 on early childhood care and education. *MITE Journal of Education. 2*(1), 108-114. Retrieved from https://www.researchgate.net/publication/352735498_The_Role_of_NEP_on_ECCE

Shashtri, M.C., & Rajput, S.J. (2022). A study of early childhood care education and NEP 2020. *International Journal of Creative Research Thoughts (IJCRT), 10*(10), 77-83. Retrieved from https://ijcrt.org/papers/IJCRTU020014.pdf

Srivastava, P., & Mehta, B. (2022). Role of toys in child development. *International Journal of Education, Modern Management, Applied Science & Social Science (IJEMMASSS). 4*(01), 145-147. Retrieved from https://www.inspirajournals.com/uploads/Issues/1066434205.pdf

Vadeyar, A. (2022). Early childhood care and education in national education policy-2020. *Journal of Emerging Technologies and Innovative Research (JETIR), 9*(11), 368-370. Retrieved from https://www.jetir.org/papers/JETIR2211461.pdf

Role of ECCE and Psychological Aspects in Pre-School Education: NEP 2020

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Abstract:
Education is a medium through which the country as well as the world becomes prosperous. According to the 5+3+3+4 structure of new NEP, age three is the right time for ECCE. The goal of ECCE is related to Bloom's Taxonomy, as ECCE addresses all round development and communication development and basic language, literacy and numeracy according to the psychological basis of toddlers of NEP 2020. Therefore, NEP 2020 has implemented ECCE at the primary level. New NEP 2020 has been formulated based on psychological principles in primary school to high school education.
Hence the purpose of this research is to know the role of pre-primary education including ECCE as mentioned in NEP 2020 and to know how psychological aspects are focused in pre-school education in NEP 2020. This is based on qualitative research and secondary resources.
In conclusion, ECCE plays a pivotal role in laying a strong foundation for lifelong learning and well-being. The National Education Policy (NEP) 2020 underscores the significance of ECCE in implementing a kid's development. Here are key takeaways: Holistic Approach, Play-Based Learning, School Readiness and Inclusive Practices.
Keywords: *NEP 2020, Preschool Education, ECCE, Psychological Aspect.*

Introduction

Education is a universal process. Education is an utmost necessity of every human being. India's 2015 Sustainable Development Goals are the 4th (SDG4) (Quality Education) of the 17th Sustainable Development Goals which object to "ensure inclusive and equitable quality education for all and promote lifelong learning opportunities for all" by 2030.Many years after the NPE 1986 and NPE 1992 shaped the education system; this new NEP has changed the entire education system thinking about the hybrid society in 2020. The new Education policy emphasized the development of the creative potential of each individual. The principles of the new NEP is constructed on the following aspects like education should develop not only cognitive abilities but also an emphasis on literacy and numeracy, 'core abilities' and 'higher order cognitive abilities, such as critical thinking and problem solving, as well as social, moral and emotional abilities and character is given. With the aim of NEP 2020, play-based learning in the preparatory class is also indicative of the psychological aspect. Even the new educational curriculum NEP 2020 has improved basic literacy and numeracy for children on psychological basis. As children's books are enjoyable and inspirational, it is possible to increase interest and attention among children. The entire section of the National Education Policy 2020 has given

weight to the Psychological aspect. Glancing at today's society, from students to teachers, from school education to higher education, Psychological fields have been given importance. NEP 2020 extensively used the psychological underpinnings of ECCE at pre-school level that we found in the theory of Froebel, Montessori, Rousseau, Maslow, Piaget and Vygotsky's socio-cultural learning theory.

Significance of the Study:
The significance of the study is as follows:

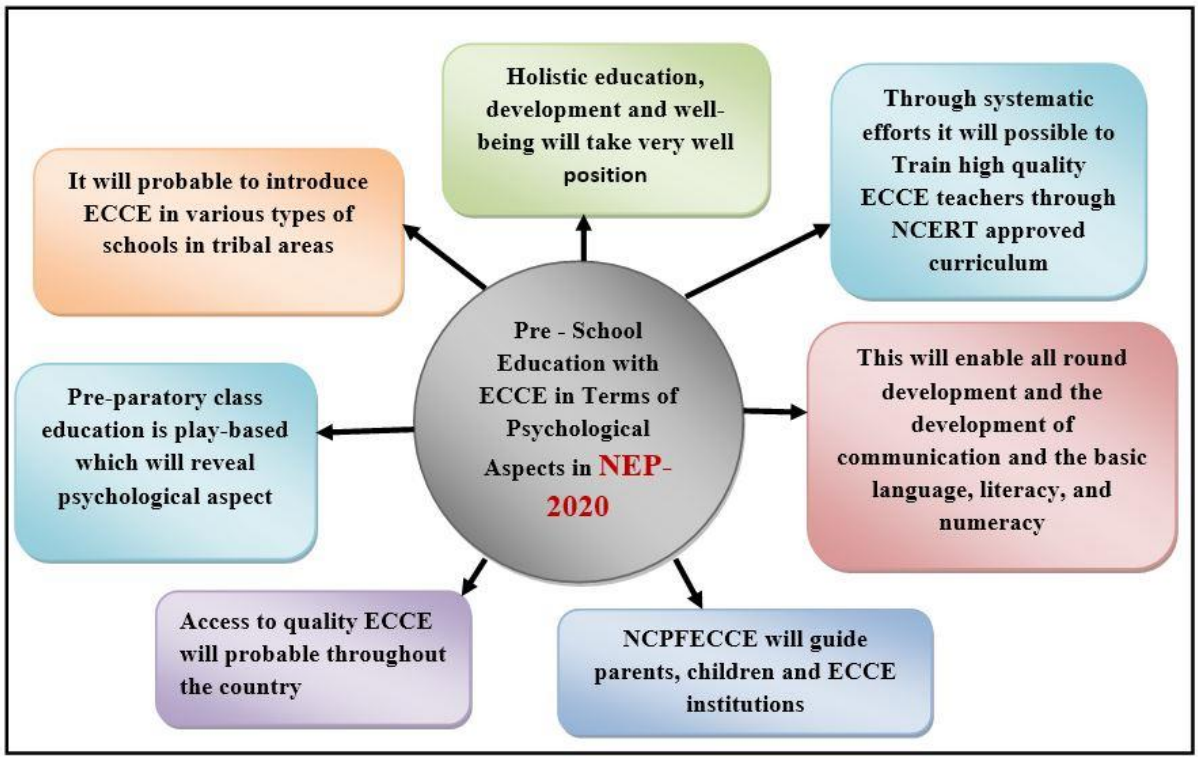

Figure 1: ***Role of ECCE and Psychological aspects in Pre-school education: NEP 2020***

Statement of the Problem:

Education boosts everyone to walk the pathway. Its importance can be seen in the recommendations of various commissions and committees since many years; hence the current new NEP 2020 has been shaped to improve the quality of education with everyone in thinking. So, the problem is:

"Role of ECCE and Psychological aspects in Pre-school education: NEP 2020."

Objectives:

1. To know about pre-primary education with ECCE in NEP 2020.
2. To know about psychological aspects in application of preschool education in NEP 2020.

Review of Related Literature:

Sahoo and Pradhan (2024), in this study, the researchers talked about the role of ECCE in the application of the National Education Policy 2020 and also stated the challenges and opportunities existed for the implementation of this NEP 2020.

Mahato and Omkar (2023), the researchers gave their opinion on the pros and cons of ECCE in their study. They suggested further development of ECCE recommendations of NEP 2020 based on integration between naturalism and pragmatism and other philosophies.

Kumar (2023), in this study the researcher specifically mentioned the implementation of ECCE about the teacher's role in this implementation.

Basu and Santra (2023), in the study, the ECCE noted that the researcher NEP 2020 has greatly helped in quality improvement. Researchers have also alluded that ECCE promotes the overall growth of children by expanding their playing, basic, emotional, educational and aesthetic needs.

Shabbir and Afsan (2022), researchers have discussed the past background of ECCE and its concept and importance as per NEP 2020 in their study. They referred to NEP 2020's psychologically based education for children aged 3 to 8 years.

Singh (2022), in this study the researcher discussed the new education framework of NEP 2020. Besides, he discussed what form ECCE has taken in the field of education after the in dependence of India. Researcher's study also discusses how the possibilities related to pre-school education are explained in the recommendations of NEP 2020.

Gandhi (2021), in this study the researcher discussed the special importance of school development in NEP 2020 which is also significant for disadvantaged groups and uneducated members of the community.

Naresh (2021), in this study the researcher discussed the new education framework of the new NEP-2020. Researcher discussed the role of ECCE along with the importance of ECCE teachers, educational institutions in the new education policy.

Shastri and Sarojkumari (2022), the research of the researchers has revealed how it will be possible to advance with the goal of ensuring early childhood educational success at the beginning of the education mentioned in the new National Education Policy 2020.

Manhas (2020), researcher in his study fully explained the objectives of ECCE included in the new National Education Policy 2020, quality training to improve teachers and curriculum issues and challenges.

Method:

This study is based on qualitative research. This study is based on secondary sources include the guidelines given in NEP 2020, systematic review, books, different articles, websites and analysis of NEP 2020 with respect to preschool education programs.

Discussion:

1. **The Role of ECCE in Pre-Primary Study in NEP 2020:**

The NEP 2020 recognizes the eventual role of ECCE in implementing a kid's overall development. Specifically, ECCE focuses on children aged 3 to 6 years and aims to provide a strong foundation across various domains:

a. **Cognitive Development:** ECCE encourages investigation-based learning, maintaining cognitive abilities.
b. **Social and Emotional Development:** It supports emotional well-being and social interactions.
c. **Physical Development:** ECCE promotes motor skills and physical health.

d. **Early Literacy and Numeracy:** Basic skills are acquired through play-based approaches.
e. **Holistic Upliftment:** ECCE focuses on all round developmental aspects.

The NEP emphasizes a supple and game-based approach to these base years which prepares children for school readiness and enables holistic development.

a. Pre-school structure:

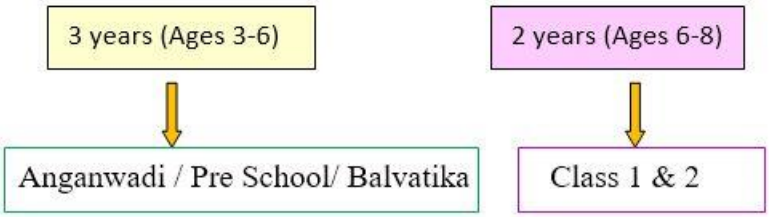

Figure 2: ***Structure of Pre-school***

Here the starting age of ECCE is three years.

b. NCPFECCE:

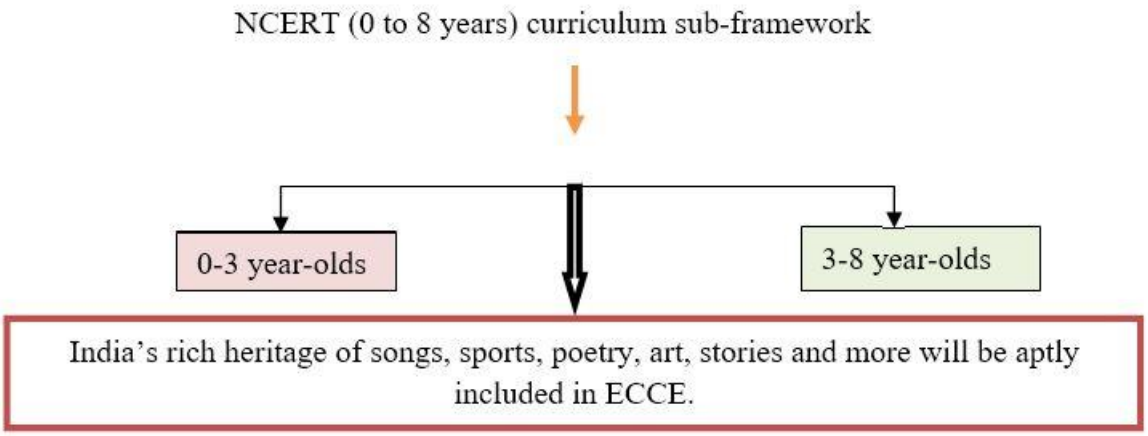

Figure 3: ***National Curricular and Pedagogical Framework for ECCE***

This framework guides for both parents and early childhood and care education.

c. Pre-school Institutions:

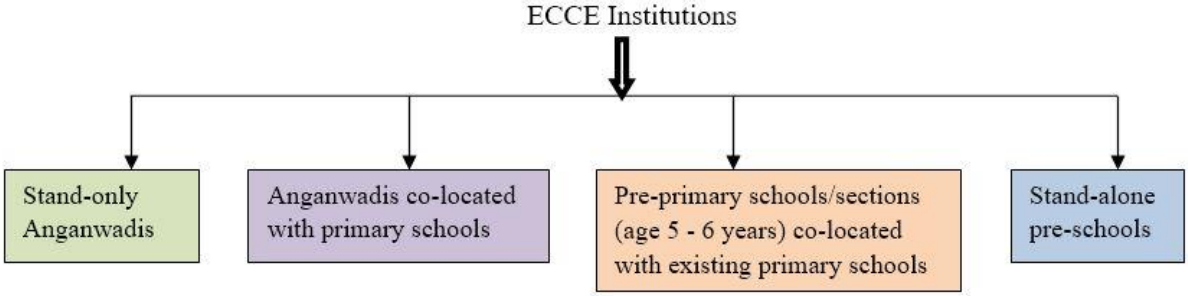

Figure 4: ***Pre-school Institutions***

d. For Universal Accession of ECCE:

i. Access to ECCE is being made possible by standard infrastructure, game materials, trained high quality Anganwadi workers or teachers.
ii. Anganwadi institutions have better plan with good learning environment.
iii. Arrangements have been made Primary school teachers and students to visit Anganwadis to convert primary schools into better school clusters.
iv. Anganwadi children, parents and teachers are required participate in the program of this school clusters.

e. It is said to produce high quality ECCE teachers in Anganwadi with the help of training through curriculum developed by NCERT.

Lower Educational qualifications – 1 year diploma course (basic literacy, numeracy and other pertinent directions of ECCE). DTH channel, smart phone etc. can engage in ECCE without any hindrance even by doing training in digital mode.

⬇

Anganwadi workers/teachers qualifications – 10+2

⬇

Above - 6-month certificate course in ECCE

State Governments are gradually providing stage specific occupational training, mentoring processes and working life mapping for the professional development of educators. Provide early professional preparation and development for the benefit of educators.

f. There is also talk of introducing ECCE in various types of schools in tribal areas.

g. HRD has been asked to take charge of ECCE curriculum and education system for continuity school education.

h. The Ministries of Health and Family Welfare, Tribal Affairs, Women and Child Development and HRD have pledged to work together for planning and implementation of ECCE.A combined task force has been formed for proper administration of the ECCE.

2. Psychological aspects in application of preschool education in NEP 2020:

85% of a child's brain is developed before the age of 6. That is why it is so important to emphasize healthy brain growth and development in the early years. The study mentions how preschool education is described in NEP 2020 based on psychological aspects, which are -

a) The new National Education Policy 2020 on ECCE based on psychological aspects are -supple, versatile, umpteen-layer, game-based, action-oriented, and investigation-oriented study, composed of languages, colours, numbers, alphabets, indoor and outdoor play, counting, shapes, problem-solving, drawing, puzzles and logical thinking, music and movement, play and puppetry, craft, painting and other visual art. All of these above are psychological resource, through which it is possible to teach psychologically.
b) Emphasis on obscenity, morality, private and universal cleanliness, group work, collaboration, social capacities, sensitivity and good behaviour are healthy psychological human aspects that are essential in education.

c) ECCE goals are to maximize impacts in the psychological domains of Physical and motor, cognitive, socio-emotional-ethical, cultural and communicative development and basic language, literacy, and numeracy development.
d) Play-based learning: In NEP 2020, emphasis has been given on play based learning in pre-school class (Balvatika). If this 3-6 year is old children taught through play, it will be possible to develop three domains of Bloom Taxonomy and basic literacy and numeracy in them.
e) An interim 3 month play-based 'School Readiness' program combines activities and workbooks alongside learning the alphabet, sounds, words, colours, shapes and numbers to ensure that all students are ready for school with a psychological focus and for all students in grade 1. Modules and will involve collaboration with mates and parents, will be developed by National Council of Educational Research and Training and State Council of Educational Research and Training.
f) Another aspect of the psychological field is the nutritional diet (mental health) that helps children study more cognitively demanding subjects.
g) Holistic Development of Learners: Education should aim not only at cognitive development, but also at character building and creating holistic and well-rounded individuals equipped with key 21st century skills.
h) To enhance essential learning and Critical Thinking: Unnecessary content should be eliminated from the curriculum to do room for critical thinking and more holistic, investigation oriented, invention oriented, analysis oriented and discussion oriented learning. This policy calls for a more interactive manner to teaching and learning. To encourage classroom and question session mode to be more pleasure, creative, cooperative and emphasis on exploratory actions for more empirical education of pupils, which is purely psychology based.
i) Experiential Learning: At all levels, psychology-based learning, which is experiential learning such as hands-on learning, arts-based and sports-based learning and story-telling-based pedagogy, is discussed.
j) Art-Integration: An art-compacted access will not only tighten the link among education and Indian heritage culture but also create an enjoyable learning environment in the classroom which is definitely indicative of the psychological aspect.
k) Sports-Integration: The main reason for the need to include sports in education is that it promotes physical and psychological well-being as well as improves holistic development by enhancing cognitive abilities. If sports are included in education, children will easily acquire social development skills such as teamwork, responsibility, self-discipline, collaboration, self-initiative, self-direction etc. from an early age.

Conclusion:

In summary, New National Education Policy in school education, foundation and preparatory school education, structure, pedagogical curriculum, teaching methods, books are all based on psychological principles. The new education policy clearly states that ECCE is important for children's future upliftment. ECCE plays pivotal role in laying a strong foundation for lifelong learning and well-being.

References:

Basu, S., & Santra, R. (2023). On the basis of NEP 2020: Quality and excellences of early childhood care and education. *International Journal of Applied Research, 9*(10).DOI: https://doi.org/10.22271/allresearch.2023.v9.i10a.11290.

Gandhi, R. (2021). Review on the key features of the national education policy 2020 in the context to pre-school education and its expected impact. *International Journal of Management, Technology, and Social Sciences (IJMTS), 6*(1), 241-252.

Government of India. (2020). *National Education Policy 2020*. Retrieved from https://www.education.gov.in/en/nationaleducation-policy-2020.

Kumar, M. (2023). *Early childhood care and education in new education policy 2020: The foundation of learning*. Chanakya Publication.

Kumari, D. (2020). Roadmap for holistic implementation of the New Education Policy 2020.

Mahato, S., & Omkar, P. (2023).Early childhood care and education (ECCE) in India: Integration between naturalism and pragmatism: Inputs to NEP 2020. Retrieved from https://www.researchgate.net/publication/369532214.

Manhas, S. N. (2020). Early childhood care & education in the NEP 2020. *OnlineGatha – The Endless Tale*, 105-122.

Naresh, R. (2021). The role of NEP-2020 on early childhood care and education. *MITE Journal of Education, 2*(1), 108-114.

Sahoo, L., & Pradhan, M. (2024). Early childhood care and education in NEP-2020: Challenges and opportunities, *International Journal of Research Publication and Reviews, 5*(1), 5886-5889.

Shabbir, S. W. S., & Afsan, N. (2022).Early childhood care and education (ECCE) in the light of NEP- 2020. *Peer reviewed referred and UGC listed journal No: 47026, 10*(2), 74-79.

Singh, V. (2022). NEP 2020: Towards access to quality pre-school stage of learning. *Research and Reflections on Education, 20*(1), 1-5.

Shastri, C.M., & Sarojkumari, J. R. (2022). A study of early childhood care education and NEP 2020. *International Journal of Creative Research Thoughts (IJCRT), 10*(10), 77-83.

Fortified Ghee - A Step towards Quality Enhancement and Retinol

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Abstract:
Raw and fresh Ghee samples, both home-made (Gh)& packaged (Gp), were analysed for estimating the initial FFA and PV and these remained the initial values for the entire experiment, based on which the changes in FFA & PV due to β-carotene fortified products were compared, where 'h' & 'p' denote home-made & packaged ghee respectively. Home-made ghee was itself sufficiently potent to combat against the in situ FFA generation and resulted lowest value (1.46%) amongst all the samples after 5-week experimental period and fortification of β-carotene didn't impart a remarkable role towards combating the lipid-oxidation For home-made and packaged ghee respectively, 200 & 100ppm fortifications may furnish 333 & 166.50 IU Vit A/gm, thus one can replenish the Vitamin A deficiency and may partially meet up his daily need.
Keywords: *Home-made & packaged Ghee, β-carotene fortification, Free Fatty Acid Value, Peroxide Value, Vitamin A deficiency.*

Introduction

In our daily diet ghee is one of the most important sources of essential fatty acids (Tahir, Bokhari and Adnan, 2015) (Butyric acid, Capric and myristic acid,some long chain saturated fatty acids and MUFA (mainly oleic acid) (Mehta, 2013). Ghee is generally prepared from cow's milk, buffalo's milk or a combination of two types of milk. It is a good source of fat-soluble vitamins (A, D, E and K) and Cholesterol content is very high at about 0.2–0.4% which may serve a detrimental effect on heart if it consume in excess amount (Achaya, 1949; Mehta, Darji and Aparnathi, 2015).

Rancidification is one of the major problems during storage of ghee. There are so many methods are applicable for determining the deterioration like Free Fatty Acid value, Peroxide value, Saponification value etc. (Achaya, 1949; Mehta, Darji and Aparnathi, 2015).

In this study we focused on the need for addition of antidegradating agent for arresting the degradation of ghee. Beta-carotene is one such naturally occurring and potentially strong antioxidant (Rice-Evans et al., 1997) and also have a nutraceutical value that can act towards retarding or lessening the normal degradation of ghee because plant pigment not only act as an antioxidant but also it has a photo protective effect (Clevidence and Bieri, 1993; Burton and Ingold, 1993). All those information regarding the field of research motivate us to study the effects of most important plant pigment, beta-carotene to exert effects on the shelf life of ghee in commercial manufacturing level as well as in home scale preparation (Hornero-Méndez, 2000).

Review of Literature

Literatures study reveals that there are several analytical works had been done in the field of oxidative deterioration effects on ghee or other types of fats and oils as well as the fortification of beta carotene and its antioxidant effects (Handelman et al., 1991; Castenmiller and West, 1998).

Mehta and Aparnathi (2015) suggested that FOX (ferrous oxidation-xylenol orange) method was the most suitable method tested to determine peroxide value in oxidized ghee instead of other four methods (BIS, AOAC, AOCS, IDF) which are examined by them.

In the experimental study by Asha et al. (2015), the antioxidant activities of butylatedhydroxyanisole (BHA) and orange peel powder extract in ghee stored at different storage temperatures were evaluated during storage period of 21 days and showed that the ghee incorporated with orange peel extract (OPE) showed stronger activity in quenching DPPH radicals and least development of PV, TBA and FFA than ghee incorporated with BHA and control.

A further study found that by adding beta-carotene (50 to 300µg/g) to the corn, rapeseed and sunflower oils, no significant changes was observed in saturated fatty acids but have a significant effect on unsaturated fatty acids in the tested oils (Goulson and Warthesen. 1999; Habibullah et al., 2007). The study reveal that the concentration of stearic, arachidic and behenic acid did not changed with increasing the concentration of beta-carotene. It was also observed that the presence of different concentration of each individual fatty acid in the three oils showed similar non-significant effects on the stability of the oils (Hazra, Meheta and Aparnathi, 2014).

Aims and Objectives

1. To observe the differential stage of oxidative degradation of non-fortified &beta-carotene fortified (100, 200 and 300ppm) homemade ghee and packaged ghee to control the oxidative breakdown of saturated fat for a long time by free fatty acid (FFA) value and peroxide value (PV) estimation.
2. To compare the stability or shelf-life between the fortified & non-fortified ghee for one and half month at a gap of 7 days incubation.
3. To formulate a nutrient-rich product through fortification of ghee thereby aims to control Vit A deficiency partially.

Materials and Methods

Sample Preparation:

Raw and fresh carrots were purchased from local market, washed with clean water, air dried, cut into pieces, grinded with mixer grinder and extract the beta-carotene with acetone AR grade (Merck). Extraction were done several times using magnetic stirrer to swirl the mixture for optimum extractions until the color of grinded carrot becomes faint yellow. The combined extractions containing beta carotene was then clarified through petroleum ether (40-60˚c) wet alumina columnar and eluted with acetone after freeing the soluble starchy materials.

The purified beta-carotene was then dried on water bath at 50˚C and then added to ghee in different amounts to achieve the desired concentrations of 100, 200 and 300 ppm in the final product.

Determination of Acid Value- AOCS Cd 3d-63 method (Aricetti and Tubino, 2012):

Definition: The acid value is defined as the number of milligrams of sodium hydroxide required to neutralize the fatty acids present in one gram of fat to measure the percentage of rancidity as free fatty acids (lauric acid) during decomposition of glycerides of ghee.

Principle: The acid value is determined by titrimetric method against the standard sodium hydroxide in alcoholic medium.

Apparatus: 250 ml conical flasks.

Reagents:

a. Ethyl alcohol: 95% ethyl alcohol or rectified spirit neutral to phenolphthalein indicator.
b. Phenolphthalein indicator solution: dissolve one gram of Phenolphthalein in 100 ml ethyl alcohol.
c. 0.1 N Standard aqueous sodium hydroxide solution.

Procedure:

Accurate amount of sample was taken (about 1gm) in a 250 ml conical flasks and 25 ml of freshly prepared neutralized hot ethyl alcohol was then added to the sample and again heated in hot water bath for 5 min. Titration was done in hot condition against standardised NaOH shaking vigorously during titration using 1ml of phenolphthalein as an indicator

Calculation:

$$\text{Acid value} = \frac{20 \times \text{buret reading} \times \text{strength of NaOH}}{\text{Weight in gm of the sample}} \quad (\%)$$

Determination of Peroxide Value– AOCS method (Takeshita et al., 1994; Crowe and White, 2001):

The rancidity can be analyzed by the determination of peroxide value. This is an indication of the extent of oxidation suffered by the fats.

Reagents and Solution:

1. Acetic Acid - chloroform solution (1:3).
2. Saturated Potassium Iodide solution.
3. Sodium thiosulfate solution, 0.1N.
4. 1% Starch solution.
5. Distilled or deionized water.

Procedure:

1. (±0.01) g of weighted sample was taken in a 250 ml glass stoppered flask.
2. 30 ml of the acetic acid - chloroform solution was then added by graduated cylinder.
3. Flask was swirled properly until the sample is completely dissolved.
4. After that 0.5 ml of saturated potassium iodide solution was prepared
5. Stopper the flask and swirl the contents of the flask for exactly one minute.

6. 30 ml of either distilled or deionized water was immediately added by graduated cylinder, stopper the flask and shaken vigorously to liberate the iodine from the chloroform layer.
7. Then yellowish orange colour was appeared in the solution which in turn blue grey colour by adding 1% starch solution.
8. Titration was done against std 0.1N sodium thiosulfate until the blue grey colour disappears into the aqueous solution.

Calculation:

S = titration of sample

B= titration of blank

$$\text{Peroxide value} = \frac{(S - B) \times N \text{ thiosulfate} \times 1000}{\text{Weight of sample}} \text{ (mEq/kg.)}$$

Result and Discussion

SAMPLE	FFA (%) WEEK						PV (mEq/kg) WEEK					
	0	**1**	**2**	**3**	**4**	**5**	**0**	**1**	**2**	**3**	**4**	**5**
Non-fortified Ghee (G_h)	2.41	2.34	1.99	1.86	2.63	1.46	1.52	9.24	9.13	22.96	32.86	40.28
***β*-carotene fortified Ghee (100ppm) (G_hCAR1C)**		1.79	2.42	2.06	2.61	2.46		7.93	13.97	22.57	53.89	44.93
***β*-carotene fortified Ghee (200ppm) (G_hCAR2C)**		2.39	2.31	2.64	2.91	2.20		6.25	10.64	22.43	54.84	48.24
***β*-carotene fortified Ghee (300ppm) (G_hCAR3C)**		1.71	2.62	2.13	2.99	2.26		11.27	36.71	47.82	60.20	76.05

Table 1: ***Free Fatty Acid (FFA) Value & Peroxide Value (PV) of Raw &β-carotene fortified Home-made Ghee***

Non-fortified means without β-carotene.

Week means PV and FFA values were estimated in a gap of seven days.

Highlighted Values (green): lowest FFA & PV Values after 5-week

Highlighted Values (yellow): lowest FFA & PV Values in the whole experiment

SAMPLE	FFA (%) WEEK						PV (mEq/kg) WEEK					
	0	1	2	3	4	5	0	1	2	3	4	5
Non-fortified Ghee (G_h)	1.07	0.94	0.76	0.95	1.03	**1.36**	5.05	6.57	6.07	1.60	1.85	71.38
β-carotene fortified Ghee (100ppm) (G_hCAR1C)		0.97	0.83	0.93	1.05	0.59		5.66	5.42	1.56	1.35	34.88
β-carotene fortified Ghee (200ppm) (G_hCAR2C)		0.66	0.73	0.89	1.16	1.78		3.66	4.75	1.17	1.43	36.66
β-carotene fortified Ghee (300ppm) (G_hCAR3C)		0.94	0.43	0.95	0.92	1.54		7.73	5.26	1.01	1.46	53.15

Table 2: ***Free Fatty Acid (FFA) value & Peroxide Value (PV) of Raw &β-carotene fortified* Packaged Ghee**

Non-fortified means without β-carotene.

Week means PV and FFA values were estimated in a gap of seven days.

Highlighted Values (green): lowest FFA & PV Values after 5-week

Highlighted Values (yellow): lowest FFA & PV Values in the whole experiment

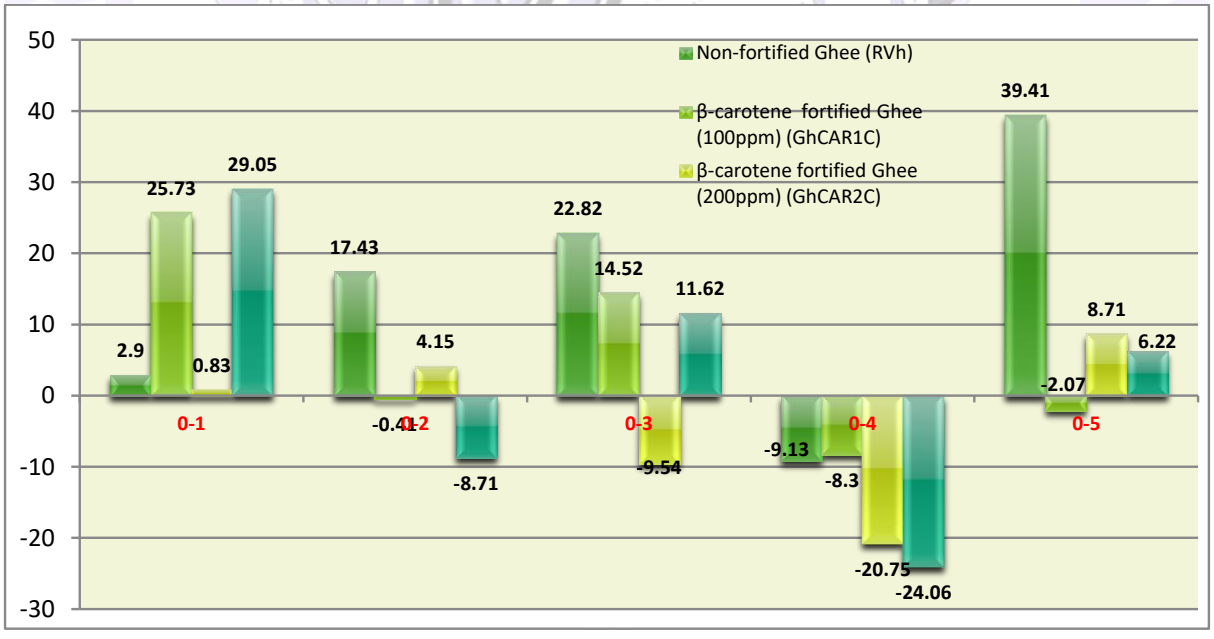

Figure 1: ***Percentage (%) change of FFA value of Raw &β-carotene Fortified Home-made Ghee***

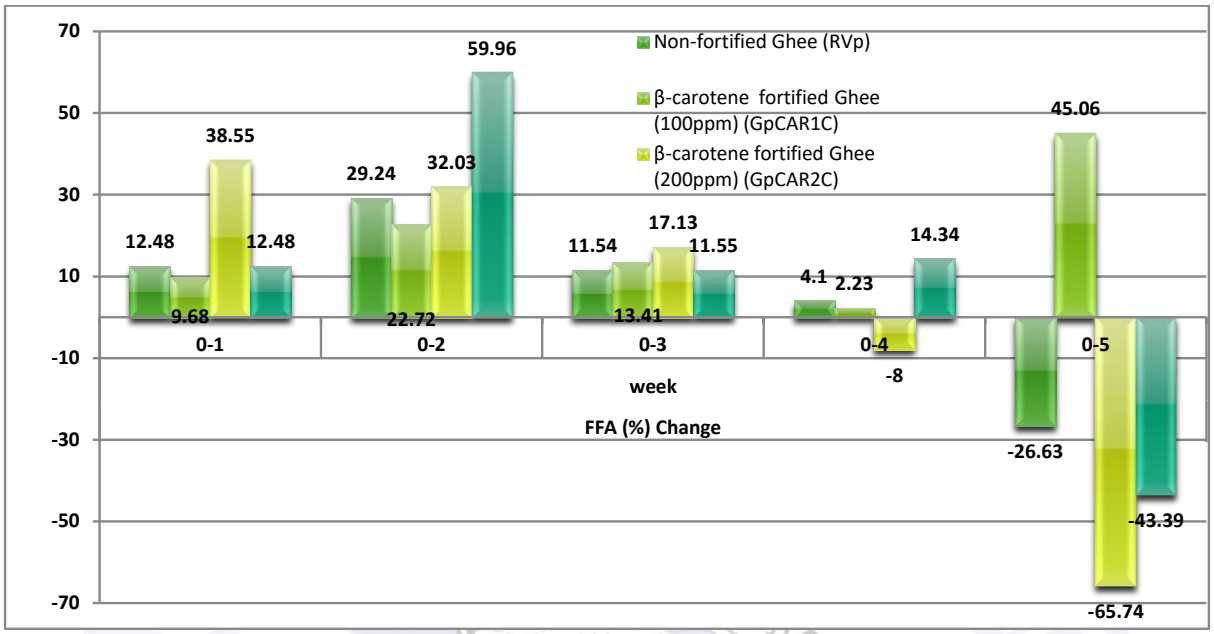

Figure 2: ***Percentage (%) change of FFA Value of Raw &β-carotene Fortified Packaged Ghee***

The samples, both home-made (Gh)& packaged (Gp), were analyzed for estimating the initial FFA (Gh: 2.41%; Gp: 1.07%) and PV (Gh: 1.52mEq/kg; Gp: 5.05mEq/kg)and these remained the initial values for the entire experiment, based on which the changes in FFA & PV due to beta-the samples was fortified with carotene in different concentration like 100ppm:GhCAR-1C, GpCAR-1C; 200ppm:GhCAR-2C, GpCAR-2C; 300ppm: GhCAR-3C, GpCAR-3C were compared. The experiment was carried out for a period of five (5) weeks at 32-34ºC temperature in 60-85% humid condition. All the samples were kept open for 1hour each day to have the normal home storage and usage effect. Data were taken after an interval of 7 days from the beginning.

A. Free Fatty Acid (FFA) Value:

The FFA of the non-fortified samples changed from the initial 2.41% to 1.46% for Gh and from 1.07% to 1.36% for Gp, during the 5-week experimental period. Three fortified products ended up at different degradation levels. While for home-made ghee the final FFA values ranged from the lowest 2.20% (GhCAR-2C) to the highest 2.46% (GhCAR-1C), for packaged ghee the values ranged between 0.59% (GpCAR-1C) and 1.78% (GpCAR-2C) (Table1 & Table2).

Home-made Ghee: It is clear from Table1, the prepared product from fresh cow milk was itself sufficiently potent to combat against the in situ free fatty acid generation and resulted lowest FFA value (1.46%) amongst all the samples after 5-week experimental period. Here, the 200ppm (GhCAR-2C) fortification proved to be the best among all fortifications done to control the FFA generation (2.20%) and GhCAR-1C proved to be the least effective and does not impart a remarkable role towards combating the oxidation of lipids.

Packaged Ghee: On contrary to from Table2 that 100ppm (GpCAR-1C) fortification depicted the highest controlling power against lipid oxidation and resulted in the lowest free fatty acid generation (0.59%) after 5-week experimental period where non-fortified and other fortified products shows higher FFA than the initial value, although GpCAR-3C resulted in lowest value during the experimental period (0.43%) after 2-week storage.

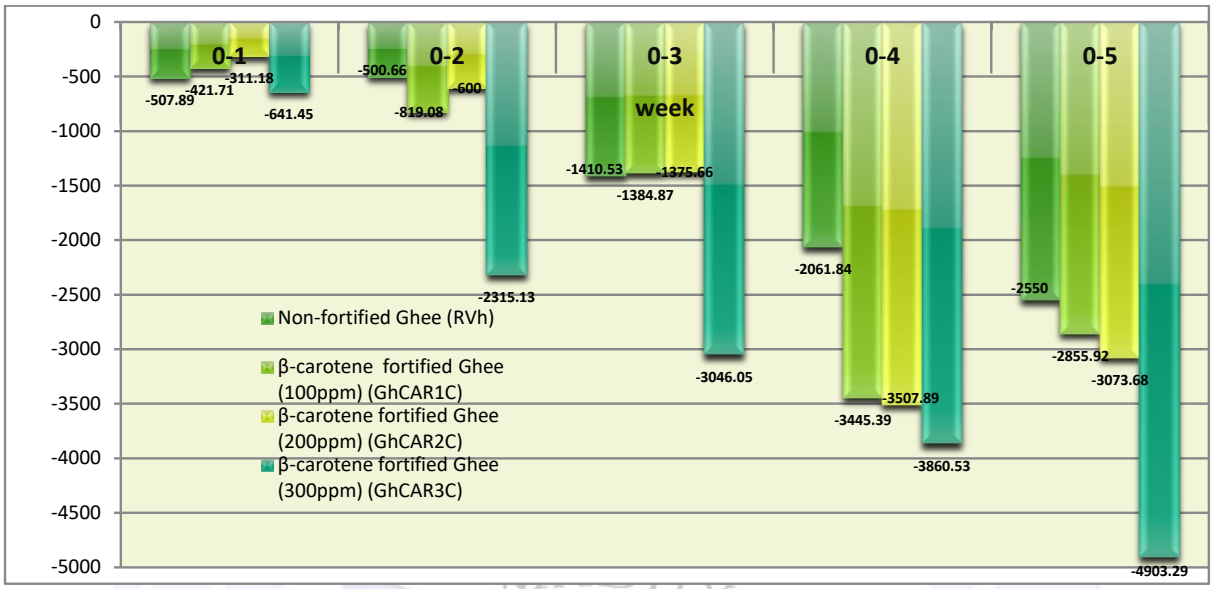

Figure 3: ***Percentage (%) change of Peroxide value (PV) of Raw &β-carotene Fortified Home-made Ghee***

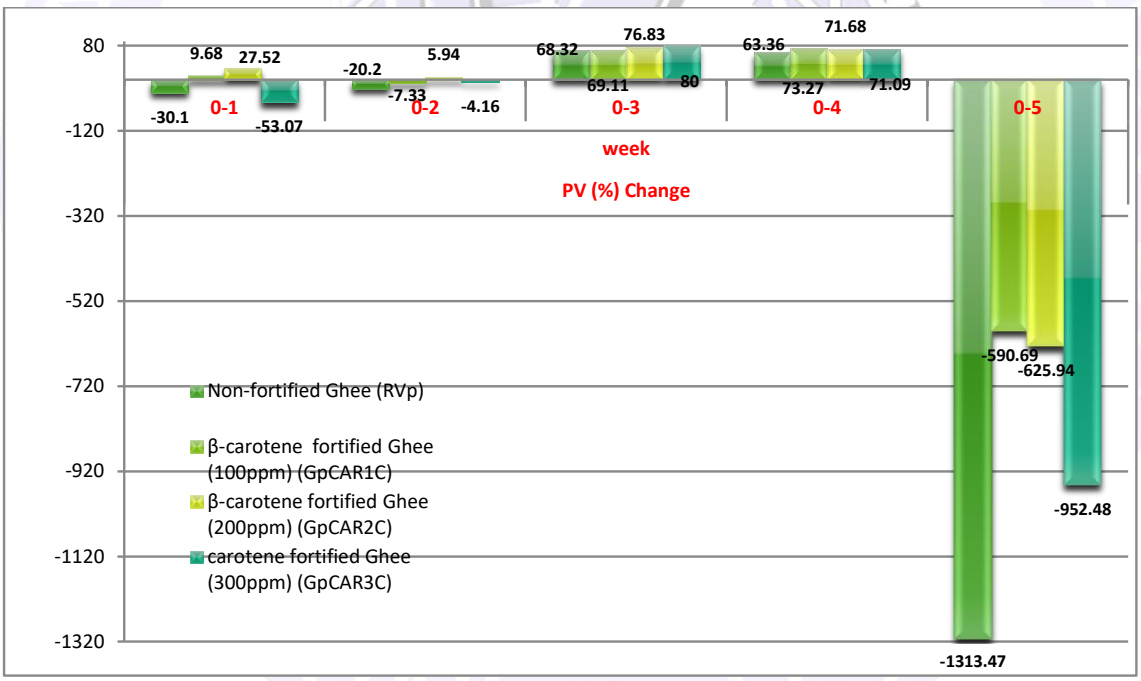

Figure 4: ***Percentage (%) change of Peroxide value (PV) of Raw &β-carotene Fortified Packaged Ghee***

B. Peroxide Value (PV)

The PV of the non-fortified samples changed from the initial 1.52 to 40.28mEq/kg for Gh and from 5.05 to 71.38mEq/kg for Gp, during the 5-week experimental period. Three fortified products ended up at different degradation levels. For home-made ghee the final PV ranged from the lowest 44.93mEq/kg (GhCAR-1C) to the highest 76.05mEq/kg (GhCAR-3C), for packaged ghee the values ranged between 34.88mEq/kg (GpCAR-1C) and 53.15mEq/kg (GpCAR-3C) (Table1 & Table2).

Home-made Ghee: Table1 depicts that home-made ghee have enough potential to quench the in situ peroxides generation and resulted lowest PV value (40.28mEq/kg) amongst all the samples after 5-week experimental period. Here, the 100ppm (GhCAR-1C) fortification proved to be the best among all fortifications and GhCAR-2C expressed comparable result with the former (48.24mEq/kg). Thus, non-fortified home-made ghee showing antioxidant property to control the peroxide formations for a period of at least 5-week and fortification ghee does not play an effective action towards combating the oxidation of lipids.

Packaged Ghee: From Table2, 100ppm (GpCAR-1C) fortification depicted the highest controlling power against peroxide formation and showed remarkable effect non-fortified product (71.38mEq/kg).

C. Retinol Availability

For a healthy population, the major factors that affect the bioavailability of food carotenoids and the bioconversion of food provitamin A carotenoids to vitamin A in humans are food matrices, food preparation, and the fat content of a meal (20). Because the body converts all dietary sources of vitamin A into retinol, 1 mcg of physiologically available retinol is equivalent to the amounts from dietary sources: 1 mcg of retinol, 12 mcg of beta-carotene. (21)

Conversion:

- 1 IU retinol = 0.3 mcg RAE
- 1 IU beta-carotene from dietary supplements = 0.15 mcg RAE
- 1 IU beta-carotene from food = 0.05 mcg RAE

As the 200ppm fortification for Gh and 100ppm fortification for Gp proved to be the best among the fortified products, retinol availability from such may be considered.

200ppm beta-carotene = 200mg per 1000gm = 200,000mcg per 1000 gm = 200mcg beta-carotene per gm.

and

100ppm beta-carotene = 100mg per 1000gm = 100,000mcg per 1000 gm = 100mcg beta-carotene per gm

Now, 0.6 mcg beta-carotene= 0.3 mcg retinol = I IU Vitamin A.

Thus, 200mcg beta-carotene = 100mcg retinol (RAE) = 100 x 3.33 = 333.00 IU Vitamin A and

100mcg beta-carotene = 50mcg retinol (RAE) = 50 x 3.33 = 166.50 IU Vitamin A

(Ref: Vitamin A: 1 IU is the biological equivalent of 0.3 mcg retinol, or of 0.6 mcg beta-carotene)

So, for the home-made ghee, a 200ppm fortification may furnish 333 IU Vitamin A per gm and for packaged ghee 166.50 IU Vitamin A per gm may be obtained from the corresponding 100ppm fortified product; thereby, one can replenish the Vitamin A deficiency and may partially meet up his daily need.

Conclusion

The experiment revealed that in home-made ghee, fortification was not fruitful and that the freshly prepared product from cow milk proved to be more efficient in combating the generation of either free fatty acid or peroxides. On the contrary, the packaged ghee from

market could not produce the same effect. It exhibited excellent quenching power as far as the FFA value & PV are concerned and in particular, the 100ppm fortified packaged ghee proved to be the best. The study revealed that due to some differences – either in processing or in ingredients, the antioxidant activity getting hindered. Therefore, further research is required to analyze the differences which counteract the natural capacity of this product.

References:

Achaya, K. T. (1949). Rancidity in Indian butterfats (ghee). *Journal of Biochem, 44*(5), 561-567.

Aricetti, J., & Tubino, M. (2012). A visual titration method for the determination of the acid number of oils and fats: A green alternative. *Journal of the American Oil Chemists' Society, 89*(11).

Asha, A., Manjunatha, M., Rekha, R. M., Surendranath, B., Heartwin, P., Rao, J., Magdaline, E., & Sinha, C. (2015). Antioxidant activities of orange peel extract in ghee (butter oil) stored at different storage temperatures. *Journal of Food Science Technology, 52*(12), 8220-7.

Bendich, A. (1989). Carotenoids and the immune response. *J Nutr, 119*(1), 112-5.

Burton, G. W., & Ingold, K. U. (1984). Beta-carotene: An unusual type of lipid antioxidant. *Science, 224*, 569-573.

Castenmiller, J. J., & West, C. E. (1998). Bioavailability and bioconversion of carotenoids. *Annu Rev Nutr, 18*, 19-38.

Clevidence, B. A., & Bieri, J. G. (1993). Association of carotenoids with human plasma lipoproteins. In *Methods in enzymology on CD-ROM/Methods in enzymology, 214*, 33-46. https://doi.org/10.1016/0076-6879(93)14051-j.

Crowe, T. D., & White, P. J. (2001). Adaptation of the AOCS official method for measuring hydroperoxides from small-scale oil samples. *Journal of the American Oil Chemists' Society, 78*(12), 1267-1269. https://doi.org/10.1007/s11745-001-0424-7

Furr, H. C., & Clark, R. M. (1997). Intestinal absorption and tissue distribution of carotenoids. *The Journal of Nutritional Biochemistry, 8*(7), 364-377. https://doi.org/10.1016/s0955-2863(97)00060-0

Goulson, M., & Warthesen, J. (1999). Stability and Antioxidant Activity of Beta Carotene in Conventional and High Oleic Canola Oil. *Journal of Food Science, 64*(6), 996–999. https://doi.org/10.1111/j.1365-2621.1999.tb12267.x

Habibullah, Abbas, M., Shah, H., & Ateeq-Ur-Rehman. (2007). Stability of vitamin A (retinol) in fats/oils. *Sarhad Journal of Agriculture, 23*(2). https://agris.fao.org/agris-search/search.do?recordID=PK2008000246

Handelman, G. J., Van Kuijk, F. J., Chatterjee, A., & Krinsky, N. I. (1991). Characterization of products formed during the autoxidation of β-carotene. *Free Radical Biology & Medicine, 10*(6), 427-437. https://doi.org/10.1016/0891-5849(91)90051-4

Hazra, T., Meheta, B. M., & Aparnathi, .K. D. (2014) Effect of two varieties of tomatoskin addition on oxidative stability of ghee: A comparative study. *Journal of Food and Nutritional Sciences, 3*(3).

Hornero-Méndez, D., & Mínguez-Mosquera, M. I. (2000). Carotenoid Pigments inRosa mosquetaHips, an Alternative Carotenoid Source for Foods. *Journal of Agricultural and Food Chemistry, 48*(3), 825–828. https://doi.org/10.1021/jf991136n

Mehta, B. M., Darji, V., & Aparnathi, K. (2015). Comparison of five analytical methods for the determination of peroxide value in oxidized ghee. *Food Chemistry, 185*, 449–453. https://doi.org/10.1016/j.foodchem.2015.04.023

Mehta, M. (2013). Consumption pattern and fatty acid composition of ghee. *Food Science Research Journal, 4*(2), 116–120. https://www.cabdirect.org/abstracts/20143285938.html

Otten, J. J., Hellwig, J. P., & Meyers, L. D. (2006). DRI, Dietary reference intakes : The essential guide to nutrient requirements. In *National Academies Press eBooks*. http://ci.nii.ac.jp/ncid/BA79199837

Rice-Evans, C. A., Sampson, J., Bramley, P. M., & Holloway, D. E. (1997). Why do we expect carotenoids to be antioxidantsin vivo? *Free Radical Research, 26*(4), 381–398. https://doi.org/10.3109/10715769709097818

Tahir, M. N., Bokhari, S. A., & Adnan, A. (2013). Cholesterol extraction from ghee using glass beads functionalized with beta cyclodextrin. *Journal of Food Science and Technology, 52*(2), 1040-1046. https://doi.org/10.1007/s13197-013-1039-2

Takeshita, Y., Yoshida, H., Hinata, K., & Iimura, K. (1994). Study on improving peroxide value, Acetic acid-Isooctane method. *Transaction of the Kokushikan Univ. Faculty of Engineering*, 9-13.

Values in Teacher Education within the Framework

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Abstract:
Globalization has a huge impact on the system of education. The respect for humanity, dignity and equal rights are the values that need to be practiced to achieve global harmony, peace and holistic development. The teachers are the backbone of education system. So in the present scenario of 21st century, terrorism and violence which threaten to perish the total value system of the society, it is the teacher who are truly inculcate morality in the young minds of the students. The students are the future human resource which could be guided and directed by the teachers. Therefore, the teacher education gives importance to the enhancement of values and morals of the teachers who in turn would ensure the development of the principal values among the students upon which other values and integrity are based. Teacher education is very important in the global era, in the mind of future generation the authentic values and morality to possess a holistic personality. So, this research article focuses upon the globalization and values in teacher education.
Keywords: *Globalization, Values, Morals, Teacher Education.*

Introduction

The most important component that is crucial to human development is education. It produces responsible, effective, and productive citizens. One fundamental human virtue is education. Man's spleen did slave, thinking like a savage, without it. To humanize, socialize, and become spiritual. Education makes an individual a "man". Human existence consists of two main facets. The first is biological, while the second is a sound social or cultural human. The only way to exalt his life is via education, and the only socio-cultural life is improved.

Education is an important sector in any economy and globalization has its implication for this sector as well. The aim of education is to achieve overall development and enlighten of mind, broaden the vision and character building which can be beneficial to the individual himself and to the society and nation at large. To achieve this goal the role of teacher and student is important. In the age of globalization, change is so rapid that the educational system has to keep itself with the latest development.

Education serves the dual purposes of transferring to the new generalization the wisdom of the past and preparing it for the needs of individuals and society as they emerge in the present and the future. There are a plethora of fully satisfying social, aesthetic, spiritual, cultural, and occupational aspects of life that need to be considered. One of the main and fundamental objectives of India's educational development since independence has been Universal Elementary Education (UEE). Globalization has implications for the education sector, which is a crucial one in any economy. The purpose of education is to foster character development,

enlightenment, and broaden one's perspective—all of which can be advantageous to human development.

Teacher Education

The professional preparation of teachers is referred to as teacher education. It goes beyond simple teacher preparation. It is transforming a teacher's mind set, routines, principles, and character. *"A sound programme of professional education of teachers is essential for the qualification important of education,"* stated the Indian Education Commission in 1966. To be able to perform their jobs professionally, teachers should be equipped with the most up-to-date resources both during and after their training, including teaching methodology and content knowledge and skills. In ancient Indian society, teachers hold a very high status. He was the fabled 'guru', the one who cared for his students and imparted wisdom. Citizens with moral fibre and integrity have not been produced by contemporary training and education.

The new generation is drifting away from, its history and culture while violence have spread to all spheres of life. According to Miltons Rokeach, value is what an individual desire likes or prefers. Values are generally long term standard or principles that are used to judge the worth of an idea or action. A value system is an enduring organization of beliefs preferably made of conduct. The current generation is becoming more disengaged from its history and culture, and violence is permeating every aspect of society. Miltons Rokeach defined value as an individual's likes or preferences. Values are typically long-term standards or guidelines that determine the relative merit of a concept or course of action. A value system is a stable framework of beliefs, ideally composed of behaviour.

Objectives

- To gain knowledge about methods used in value education.
- To take into account how personal behaviour and values relate to achieving a sustainable future.
- To comprehend the fundamental ideas, procedures, and developments related to globalization.
- To consider your awareness and actions going forward.
- To comprehend the fundamental ideas, plans, and developments related to globalization concepts, programme and trends associated with globalization.

The Sergeant committee emphasized in 1944 the pointlessness of any curriculum lacking an ethical foundation. The Radhakrishnan Commission (1948–49), also known as the University Education Commission, emphasized the importance of include spiritual education in school curricula. The Mudaliar Commission (1952–53) noted that moral and religious education would play a major role in a student's development as a person. The National Curriculum Framework (NCF) of the NCERT placed a strong emphasis on traits like responsibility, cleanliness, regularity, timeliness, and a democratic mind-set. A teacher should guide the class in the right direction for developing their values.

Globalization

It is a process of integrating Swami Vivekananda highlighted the importance of education in creating good men and developing character in order to create good citizens and, above all, better human beings. Since then, the significance of value education has become increasingly apparent, particularly with independence. The Sergeant committee emphasized in 1944 the pointlessness of any curriculum lacking an ethical foundation. The Radhakrishnan Commission (1948–49), also known as the University Education Commission, emphasized the importance of including spiritual education in school curricula. The Mudaliar Commission (1952–53)

noted that moral and religious education would play a major role in a student's development as a person. The National Curriculum Framework (NCF) of the NCERT placed a strong emphasis on traits like responsibility, cleanliness, regularity, timeliness, and a democratic mind-set. A teacher should guide the class in the right direction for developing their values. Values in Technical education is an important sector in any economy.

Nations and states by eliminating or reducing barriers to the flow of labour, ideas, and material resources. It is an acronym for policies with an outward focus that are meant to help all nations in the world. An essential component of any economy is values in technical education. If teacher preparation is to have a positive impact on the calibre of curricular transition in the classroom, the emphasis must move from training to education. Academic preparation, subject matter quality and quantity, knowledge acquisition, pedagogical skill development, and awareness of current issues and problems should all be prioritized. It is the duty of the teacher to make sure that every student reaches a high level of learning and is capable of acting appropriately.

Globalization and Values in Teacher Education

UNESCO Commission on the development of education (1972) rightly, observes in its memorable report learning to be *"Rigid distinction between different types of teaching, general, scientific, technical and professional must be dropped and education as from primary and secondary levels must became theoretical, technological practical etc. at the same time."* In this way education is not narrowly conceived particularly. Now-a-days it needs to be conductive globally because of impact of globalization.

Value Based Teacher Education

Rather than emphasizing spiritual or religious values, value-based teacher education should focus on values related to the social system. In addition to the curriculum, they ought to expand the fields of communication, labour, and service. Co-curricular activities ought to be reinforced and value-oriented. Since teachers play such an important role in our society, value orientation in education should receive special attention. For example, in Indian society, teachers are revered as the fount of knowledge and the source of great ideals. Good ideas and values should be imparted or inculcated in the students. If the teacher has a keen sense of values and faith in a higher purpose of life, he can be a resourceful guide to the entire nation through his visible personality.

Development of Values

Development of values in teacher education in the context of globalization:

- Quality Assurance
- Teaching as a profession
- ICT for future teacher

Choosing from among alternatives: When there is more than one alternative from which to choose, do we say a value can result.

- Growth of Values
- Value development in teacher education within the framework of globalization
- Assurance of Quality
- In-service teacher education
- ICT for aspiring teachers and
- Teaching as a profession
- National development and the education of teachers.
- Teachers' dedication

- **Valuing Process:** When something reaches a certain point in its life, it is likely to resurface on a few occasions. Ideals have a way of sticking with you and making you perfect in life.
- **Making your own decisions:** Your values must come from your own free will.
- **Selecting from among alternatives:** Do we say a value can arise when there are multiple options to consider?

Conclusion

Value of education and its importance depend on the close networking of the teachers, students and the parents. The two can only complete the process of learning. Education has to function for wholesome development of valuable skills, sense of dignity of labour. Learning is desired to bring changes in the total behaviour and performance satisfactorily.

References:

Aggarwal, J. C. (1988). *Teacher's role, status, service conditions and education in India: A reference manual, with special reference to committees and commissions*. Doaba House, New Delhi, India.

Chaurasia. G., & Roy Chowdhury, N. (2006). *Teacher Education for twenty First Century Bhopal*. Council for Teacher Education.

Delors, J. (1996). *Learning: The treasure within: Report to UNESCO of the International Commission on Education for the 21st century*. UNESCO, Paris.

Mohanti, J. (1988). *Trend in Indian education, current issues and strategies in the context of NEP*. Deep & Deep, New Delhi.

Pandey, V. C. (2001). *Education and globalization*. Kalpaz Publication, New Delhi.

Singh, M. S. (2007). *Challenges in teacher education*. Adhyan Publishers & Distributors, New Delhi.

Venkataih, N. (1988). *Values Education*. APH publishing Corporation, New Delhi.

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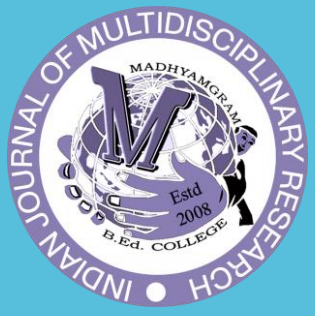

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