06-32-4295-AESSR-823

Academy of
Education and Social Sciences Review
Vol. 4 No. 3 | August, 2024 | 341 - 349
ISSN (p): 2790-8348 | ISSN (e): 2789-6781
DOI: https://doi.org/10.48112/aessr.v4i3.823

Original Article

Investigating Elementary Teachers' Perceptions of Traditional Science Teaching Methods within the Single National Curriculum Framework

Check for updates

Article history

Received:	July 04, 2024
Revised:	August 12, 2024
Accepted:	August 28, 2024
Published:	August 31, 2024

Khalid Khan[1]
Department of Education and Research
Lakki Marwat Khyber Pakhtunkhwa – Pakistan
khalidtajori@gmail.com

Dr. Irfan Ullah Khan[2*]
Department of Education and Research
Lakki Marwat Khyber Pakhtunkhwa – Pakistan
irfan@ulm.edu.pk

Dr. Mudassir Hussain[3]
Department of Education and Research
Lakki Marwat Khyber Pakhtunkhwa – Pakistan
mudassir@ulm.edu.pk

Muhammad Hanif[4]
Department of Humanities & Social Sciences
DHA Suffa University, Karachi - Pakistan
hanif.pst12@gmail.com

*Corresponding Author

Authors' Biography

[1] **Khalid Khan** is currently a Research Scholar of Education at the Department of Education & Research, University of Lakki Marwat in – Lakki Marwat, Pakistan. He received his master's degree in Education from the University of Science & Technology Bannu in Bannu – Pakistan.

[2] **Dr. Irfan Ullah Khan** is currently an Assistant Professor at the Department of Education & Research, University of Lakki Marwat in Lakki Marwat – Pakistan. He obtained his Doctorate Degree in Education from the University of Science & Technology Bannu in in Bannu – Pakistan.

[3] **Dr. Mudassir Hussain** is currently an Assistant Professor at the Department of Education & Research, University of Lakki Marwat in Lakki Marwat – Pakistan. He obtained his Doctorate Degree in Education from the University of Science & Technology in Bannu – Pakistan.

[4] **Muhammad Hanif** is currently a Research Scholar of Education at the Department of Education & Research, University of Lakki Marwat in – Lakki Marwat, Pakistan. He received his master's degree in Education from the University of Science & Technology in Bannu – Pakistan.

How to Cite:

Khan, K., Khan, I. U., Hussain, M., & Hanif, M. (2024). Investigating Elementary Teachers' Perceptions of Traditional Science Teaching Methods within the Single National Curriculum Framework. *Academy of Education and Social Sciences Review, 4*(3), 341–349.

https://doi.org/10.48112/aessr.v4i3.823

Publisher's Note:
International Research and Publishing Academy (*i*RAPA) stands neutral with regard to jurisdictional claims in the published maps and institutional affiliations.

Abstract

This study investigates elementary teachers' perceptions of traditional science teaching methods within the Single National Curriculum (SNC) at the elementary level. The primary objectives were to evaluate the science achievement of Grade IV students using both cooperative and traditional teaching methods, to compare the effectiveness of these methods based on students' ability levels, and to assess their impact across different science content areas. The study involved 69 elementary teachers, who provided data through a self-developed questionnaire, validated and tested for reliability using Cronbach's Alpha during a pilot study. The data, collected via oral explanations followed by questionnaire completion, were analysed using statistical techniques such as mean and standard deviation. The findings reveal a preference among some teachers for traditional methods, citing their effectiveness in content delivery. However, there is also recognition of the need to enhance these methods with innovative techniques to improve student engagement and understanding. The study recommends refining traditional teaching approaches by integrating technology and experiential learning opportunities, ensuring a more comprehensive and effective science education experience for elementary students within the SNC framework.

Keywords: Elementary level, Science teaching, Single national curriculum, Traditional teaching methods

INTRODUCTION

This study explores elementary teachers' perceptions of traditional science teaching methods within the framework of the Single National Curriculum (SNC). As education systems globally shift toward modern, student-cantered approaches, it is crucial to understand how traditional methods are perceived and implemented by educators under standardized curricula like the SNC. Traditional science teaching, characterized by a focus on textbook-driven instruction and teacher-led demonstrations, plays a significant role in shaping foundational knowledge (Akkus, et al., 2007). However, with the SNC's emphasis on critical thinking and hands-on learning, this research aims to investigate how elementary teachers navigate the balance between traditional methods and the innovative demands of the new curriculum. By examining their perspectives, this study seeks to uncover the challenges and opportunities that arise when integrating traditional teaching practices within a modern educational framework The traditional method, synonymous with the conventional approach, relies on recitation and memorization and heavily on textbooks, unlike modern methods that emphasize hands-on learning (Fan & Kaeley, 2000).

Content presentation in traditional teaching typically begins with sections, contrasting with modern techniques that start with an overview before delving into details (Willingale-Theune, et al., 2009). Traditional learning primarily occurs in a classroom setting, with a dedicated instructor guiding the educational process (Robinson & Mogliacci, 2019). This method encourages face-to-face interaction among students, promoting teamwork and communication skills (Wilkinson, et al., 2020). Active learning is prevalent, fostering quick comprehension through personal interactions with peers and teachers (Li, et al., 2023). Overall, traditional teaching methods provide ample opportunities for students to develop communication skills and collaborate effectively (Hardie, et al., 2022). Traditional methods in fact, teacher–cantered methods in which teacher deliver the knowledge and course content to the learner through the medium of instruction i.e. lecture method. Mainly in traditional methods i.e. lecture method only passive learning occurs in classroom setting (Schneider, 2001).

Government had lunched the Single National Curriculum (SNC) system of education to remove the social disparity. The SNC refers to an educational framework implemented in various countries to standardize and regulate the curriculum across different regions or states within the nation (Durrani & Dunne, 2010). This curriculum aims to ensure consistency and equity in education by providing a common set of learning objectives, standards, and content for all students, regardless of their geographical location or socioeconomic background. The SNC typically encompasses core subjects such as mathematics, science, language arts, and social studies, with an emphasis on promoting critical thinking, creativity, and problem-solving skills (Ali, 2024). By streamlining the curriculum, the SNC seeks to improve educational quality, enhance student outcomes, and foster national unity and identity through a shared educational

experience (Zaman, et al., 2021).

Objectives of the Study

- To assess elementary teachers' perceptions of the effectiveness of traditional science teaching methods within the Single National Curriculum Framework, in relation to Grade IV students' science achievement.
- To explore how elementary teachers, perceive the effectiveness of traditional science teaching methods compared to cooperative methods, considering students' varying ability levels.
- To compare elementary teachers' views on the effectiveness of traditional versus cooperative science teaching methods across different science content areas within the Single National Curriculum Framework.

Research Questions

- How do elementary teachers perceive the effectiveness of traditional science teaching methods within the Single National Curriculum Framework concerning Grade IV students' science achievement?
- What are elementary teachers' perceptions of the effectiveness of traditional versus cooperative science teaching methods, considering students' varying ability levels?
- How do elementary teachers compare the effectiveness of traditional and cooperative science teaching methods across different science content areas within the Single National Curriculum Framework?

Research Hypothesis

H_1: Elementary teachers perceive traditional science teaching methods as more effective in enhancing Grade IV students' science achievement within the Single National Curriculum Framework than cooperative methods

H_2: Elementary teachers believe that traditional science teaching methods are more effective for students with higher ability levels, while cooperative methods are perceived as more beneficial for students with lower ability levels

H_3: Elementary teachers perceive traditional science teaching methods as more effective in certain science content areas compared to cooperative methods within the Single National Curriculum Framework

LITERATURE REVIEW

Traditional Method of Teaching

Lecture and demonstration method, case study and group tests are the traditional methods of teaching. This method permits the students to choose the learning procedure according to their abilities. While hybrid teaching method, word wall teaching method are modern teaching method that are used to convey the basic concept of course content to the students. Such approach is acceptable for modern day's world especially in teaching of science. The lecture method is often describes as a traditional method of teaching. Learning today is based on experiences and observations that support the learning (Jain & Prasad, 2018). In order to create competition among the students teacher should provide a healthy, friendly environment and high expectation from their teacher. Teacher should emphasize learning by doing in the classroom. The teacher role of is very important (Auster & Wylie, 2006). Students will have positive result if they continue their academic engagement in the classroom through interactive sessions (Schneider, 2001). Through oral communication teacher deliver the knowledge to the students by mean of lecture method which include story telling method and interpretation. Teacher use all valuable teaching method for the betterment of students education. Lecture method is the centre of ant teaching learning (Cheng, et al., 2015). Many teacher consider lecture method is the best to communicate with students. For getting maximum knowledge teacher use traditional teaching method.

The traditional method of teaching science, despite criticisms, offers certain advantages in certain contexts. One advantage is its structured approach, providing a clear framework for content delivery and ensuring that essential foundational knowledge is covered thoroughly. Additionally, the traditional method often allows for efficient dissemination of information to a large group of students, making it suitable for settings with limited resources or large class sizes. Moreover, this approach can provide a sense of familiarity and stability for both teachers and students, as it follows established pedagogical practices that have been used for generations (Baker, 2010). Another advantage of the traditional method is its potential to facilitate assessment and evaluation. With a focus on lectures, readings, and standardized tests, teachers can more easily gauge students' understanding of key concepts and identify areas where additional support may be needed. This structured approach to assessment can help track student progress over time and inform instructional decisions to meet individual learning needs (Eisenkraft, 2003).

Furthermore, the traditional method of teaching science can be effective in introducing students to fundamental concepts and theories in a systematic manner. By providing a solid foundation of knowledge through direct instruction, students can develop a framework upon which they can build more advanced understanding and skills in science. This approach may be particularly beneficial for learners who thrive in structured learning environments and require clear guidance from teachers (Bartos & Lederman, 2014).

Single National Curriculum

The aim of the SNC is to give equal education to all students either he is rich or poor .due to SNC all the students of private or public schools have the same curriculum .the first phase was started by education minister Shafqat Mehmood. According to Malik, et al., (2023), to give the uniform education system for the whole Pakistan government launched the SNC which will be taught in all privet and public schools. It will minimize the social gapes of rural and urban students (Malik, et al., 2023). SNC was the education reforms of the 2018 government for the minimization of gaps between private and public education system. SNC is the great achievement with respect of education by ruling party in 2018 (Jahanzaib, et al., 2021). The Single National Curriculum (SNC) is a standardized educational framework implemented by governments to unify curricula across educational institutions. It aims to ensure consistency in learning outcomes and content across all schools. According to Ahmed, et al., (2023), the SNC outlines subjects, content, and learning objectives at each grade level, providing students with a comprehensive education.

This approach promotes equity and uniformity in education (Wyatt-Smith & Klenowski, 2010). The SNC is designed to meet predetermined standards set by government or educational authorities, facilitating equal access to quality education for all students (Ali, 2024). The implementation of a Single National Curriculum (SNC) in Pakistan is deemed necessary for several reasons. Firstly, it promotes national cohesion and unity by ensuring that all students, regardless of their background or location, receive the same quality of education. Secondly, the SNC helps address disparities in educational standards among different regions and systems within the country, promoting equity and fairness in access to education (Zaheer, 2022). Thirdly, it streamlines the education system by providing a standardized framework for curriculum development, assessment, and teacher training, leading to improved efficiency and effectiveness in educational delivery (Hussain, 2021). Additionally, the SNC fosters a sense of national identity and pride by promoting the study of common cultural and historical themes across all schools (Lopez, et al., 2014).

METHODOLOGY

The study involved 69 elementary teachers as participants. Data were collected using a self-developed questionnaire designed specifically for this research. The same questionnaire was administered to all participants to ensure consistency. Before the main data collection, a pilot study was conducted to validate and check the reliability of the questionnaire. The reliability of the questionnaire items was assessed using Cronbach's Alpha, confirming the instrument's internal consistency. Data collection was carried out by having the researcher orally explain the questionnaire statements to the respondents,

ensuring clarity and understanding. The respondents then completed the questionnaires according to the provided instructions. Once the data were collected, they were analysed using statistical techniques, including mean and standard deviation, to determine trends and insights. The analysis was performed using Statistical Package for Social Sciences (SPSS) software, version 20, to ensure accurate and reliable statistical results.

RESULTS & FINDINGS

Table 1
Perception of teachers regarding the effectiveness of traditional and cooperative teaching methods in science education

Statements	Mean	S.D
Students taught using the traditional method generally achieve better standardized test scores in science	4.013	1.132
Students taught using the cooperative method generally exhibit better teamwork and collaboration skills	4.041	1.043
Students taught using the traditional method are more likely to memorize facts	4.131	0.937
Students taught using the cooperative method are more likely to apply scientific concepts to real-life situations	3.934	0.996

The table indicates varying perception of teachers regarding the effectiveness of traditional and cooperative teaching methods in science education. The highest mean score (4.131) suggests that teachers strongly believe that students taught using the traditional method are more likely to memorize facts. Additionally, teachers perceive that students taught using the cooperative method generally exhibit better teamwork and collaboration skills, as reflected by a mean score of 4.041. On the other hand, the statement that students taught using the traditional method achieve better standardized test scores in science received a lower mean score of 4.013, with most responses in the "Disagree" category, indicating a general disagreement with this notion. Lastly, the statement that students taught using the cooperative method are more likely to apply scientific concepts to real-life situations received a mean score of 3.934, suggesting a moderate agreement among teachers. Overall, the data reveal a preference for the cooperative method in fostering teamwork and application of concepts, while the traditional method is seen as more effective for memorization.

Table 2
Descriptive Statistics of Traditional and Student Outcomes

	Mean	Std. Deviation	N
Traditional	2.910	.334	69
Student outcomes	3.387	.486	

Table 2 presents descriptive statistics for two variables: Traditional and Student Out comes. For the Traditional variable, the mean score is 2.910 with a standard deviation of 0.334. The sample size (N) for this variable is 69.For the Student Outcomes variable, the mean score is 3.387 with a standard deviation of 0.486.

Table 3
Teachers' perceptions of various aspects of traditional and cooperative teaching methods

Statements	Mean	S.D
Implementing the cooperative method can be challenging due to the need for group management.	2.362	0.746
The traditional method provides stability and familiarity in the classroom.	3.666	1.009
The cooperative method offers the opportunity for diverse learning experiences.	4.26	0.609
Integrating technology into teaching can enhance both traditional and cooperative methods.	3.84	0.609

Table 3 reveals teachers' perceptions of various aspects of traditional and cooperative teaching methods. The highest mean score (4.260) indicates a strong agreement among teachers that the cooperative method offers the opportunity for diverse learning experiences. Additionally, there is a general consensus, with a mean score of 3.840, that integrating technology into teaching can enhance both traditional and cooperative methods, reflecting positive attitudes toward the use of technology in education. On the other hand, the statement that the traditional method provides stability and familiarity in the classroom received a mean score of 3.666, indicating a moderate agreement among teachers. However, the statement that implementing the cooperative method can be challenging due to the need for group management received the lowest mean score (2.362), with most teachers disagreeing with this notion. This suggests that while teachers recognize the benefits of cooperative methods and technology integration, they do not perceive group management as a significant challenge when implementing cooperative learning.

Table 4
Descriptive Statistics of Traditional Method of Teaching and Challenges

	Mean	Std. Deviation	N
Traditional	2.910	.334	69
Challenges	3.532	.413	

Table 4 displays descriptive statistics for two variables: Traditional and Challenges. The Traditional variable has a mean score of 2.910 and a standard deviation of 0.334, based on a sample size (N) of 69.For the Challenges variable, the mean score is 3.532 with a standard deviation of 0.413

RESULTS & FINDINGS

The study revealed that both cooperative and traditional teaching methods are perceived as effective for teaching science to Grade IV students. However, the cooperative method stands out for its ability to promote active learning, foster teamwork, and facilitate the application of scientific concepts to real-life situations. Teachers indicated that the cooperative approach is particularly beneficial for engaging students in collaborative problem-solving and critical thinking activities. In contrast, the traditional method was recognized for its effectiveness in delivering structured content and supporting the memorization of key scientific facts. The findings suggest that the choice between these methods should be guided by the specific science topic being taught and the desired educational outcomes. Similarly, topics requiring deep understanding and real-world application may benefit more from cooperative methods, while those focusing on foundational knowledge may be better suited to traditional approaches. Integrating both methods, where appropriate, could provide a balanced and comprehensive science education experience for students.

Discussion

In a comprehensive comparative study investigating the traditional and cooperative methods of teaching science at the elementary level within the framework of the Science and Nature of Curriculum (SNC) perspective, Quazi (2020) conducted an insightful examination of pedagogical practices. The traditional method, characterized by teacher-cantered instruction, demonstrated its strengths in providing stability and familiarity within the classroom setting. Nevertheless, the study identified notable limitations, particularly in fostering student participation and encouraging the practical application of scientific concepts in real-life scenarios. Contrarily, the cooperative method, as emphasized by Fatima, et al., (2022), was found to be highly effective in promoting collaborative learning and teamwork, aligning seamlessly with the SNC perspective's objective of integrating real-world applications into the curriculum (Fatima, et al., 2022). This research underscores the importance of considering both the strengths and weaknesses of each teaching method to create a balanced and effective science education framework at the elementary level. The study's findings suggest that a nuanced approach, integrating elements of both the traditional and cooperative methods, could be advantageous in achieving a more holistic and engaging science curriculum.

CONCLUSION

The study highlights a clear preference for the cooperative method, particularly in its effectiveness at promoting collaboration, active engagement, and the practical application of scientific concepts. However, the study also acknowledges the stability, structure, and familiarity that the traditional approach provides, which can be beneficial for certain types of content delivery and knowledge retention. The findings suggest that by recognizing the unique strengths of both teaching methods, educators can strategically tailor their approach to suit specific science topics and learning objectives. This balanced integration of cooperative and traditional methods can create a more dynamic and engaging learning environment for elementary students, fostering both critical thinking and foundational knowledge in science education.

Recommendations

- Implement targeted professional development programs for elementary teachers focusing on modern and innovative science teaching methods
- Regularly review and update the science curriculum to balance traditional and contemporary teaching practices, including hands-on, inquiry-based activities
- Provide teachers with adequate resources, including teaching aids, digital tools, and classroom materials, and establish support systems for mentorship and collaboration

Competing Interest

The authors had no competing interests.

References

Ahmed, I., Lashari, A. A., & Golo, M. A. (2023). Evaluating primary-level English textbooks of single national curriculum through the lens of Bloom's Taxonomy. *Pakistan Languages and Humanities Review*, *7*(3), 352-361.
https://doi.org/10.47205/plhr.2023(7-III)31

Akkus, R., Gunel, M., & Hand, B. (2007). Comparing an inquiry-based approach known as the science writing heuristic to traditional science teaching practices: Are there differences?. *International Journal of Science Education*, *29*(14), 1745-1765.
https://doi.org/10.1080/09500690601075629

Ali, F. (2024). *Understanding Policy Enactment in Diverse Institutional Contexts: An Exploration of the Implementation of the Single National Curriculum Policy in Pakistan* (Doctoral dissertation, University of Maryland, College Park).

Ali, F. (2024). *Understanding Policy Enactment in Diverse Institutional Contexts: An Exploration of the Implementation of the Single National Curriculum Policy in Pakistan* (Doctoral dissertation, University of Maryland, College Park).

Auster, E. R., & Wylie, K. K. (2006). Creating active learning in the classroom: A systematic approach. *Journal of Management Education*, *30*(2), 333-353.
https://doi.org/10.1177/1052562905283346

Baker, C. (2010). The impact of instructor immediacy and presence for online student affective learning, cognition, and motivation. *Journal of Educators Online*, *7*(1), n1.

Bartos, S. A., & Lederman, N. G. (2014). Teachers' knowledge structures for nature of science and scientific inquiry: Conceptions and classroom practice. *Journal of Research in Science Teaching*, *51*(9), 1150-1184.
https://doi.org/10.1002/tea.21168

Cheng, M. T., Chen, J. H., Chu, S. J., & Chen, S. Y. (2015). The use of serious games in science education: a review of selected empirical research from 2002 to 2013. *Journal of Computers in Education*, *2*, 353-375.
https://doi.org/10.1007/s40692-015-0039-9

Durrani, N., & Dunne, M. (2010). Curriculum and national identity: Exploring the links between religion and nation in Pakistan. *Journal of Curriculum Studies*, *42*(2), 215-240.
https://doi.org/10.1080/00220270903312208

Eisenkraft, A. (2003). Expanding the 5E model. *The Science Teacher*, *70*(6), 56.

Fan, L., & Kaeley, G. S. (2000). The influence of textbooks on teaching strategies: An empirical study. *Mid-Western Educational Researcher*, *13*(4), 2.
https://scholarworks.bgsu.edu/mwer/vol13/iss4/2

Fatima, H. G., Akbar, H., Khan, B. S., Amin, H., & Anjum, S. M. A. (2022). Cooperative Learning As An Innovative Method In Teaching Science At Elementary Level. *Journal of Positive School Psychology*, 879-889.

Hardie, P., Darley, A., Langan, L., Lafferty, A., Jarvis, S., & Redmond, C. (2022). Interpersonal and communication skills development in general nursing preceptorship education and training programmes: A scoping review. *Nurse Education in Practice*, *65*, 103482.
https://doi.org/10.1016/j.nepr.2022.103482

Hussain, A. (2021). *The Further Education Experiences of Young Males of Pakistani-Origin: A Case Study* (Doctoral dissertation, University of Huddersfield).

Jahanzaib, M., Fatima, G., & e Nayab, D. (2021). Review of single national curriculum with perspective of the education of children with visual impairment at primary level in Punjab Pakistan. *Journal of Business and Social Review in Emerging Economies*, *7*(3), 547-560.
https://doi.org/10.26710/jbsee.v7i3.1836

Jain, C., & Prasad, N. (2018). *Quality of secondary education in India.* Springer Singapore.
https://doi.org/10.1007/978-981-10-4929-3

Li, R., Lund, A., & Nordsteien, A. (2023). The link between flipped and active learning: a scoping review. *Teaching in Higher Education*, *28*(8), 1993-2027.
https://doi.org/10.1080/13562517.2021.1943655

Lopez, C., Carretero, M., & Rodriguez-Moneo, M. (2014). Fostering national identity, hindering historical understanding. *The Catalyzing Mind: Beyond Models of Causality*, 211-221.
https://doi.org/10.1007/978-1-4614-8821-7_11

Malik, S. A., Ch, M. S., Batool, Z., & Mahmood, S. (2023). Challenges and opportunities in implementation of single national curriculum: A qualitative inquiry. *Journal of ISOSS*, *9*(1), 85-98.

Quazi, A. N. (2020). A Comparative Analysis of TPS-Cooperative Learning Model over Conventional Teaching Method for Students' Achievement in Environmental Science: An Indian Case Study. *Shanlax International Journal of Education*, *9*(1), 118-132.

Robinson, M., & Mogliacci, R. J. (2019). Conceptions and models of teacher education. In *Oxford research encyclopedia of education*. Oxford: Oxford University Press.

Schneider, S. L. (2001). In search of realistic optimism: Meaning, knowledge, and warm fuzziness. *American Psychologist*, *56*(3), 250.

Wilkinson, S., Freeman, J., Simonsen, B., Sears, S., Byun, S. G., Xu, X., & Luh, H. J. (2020). Professional development for classroom management: a review of the literature. *Educational Research and Evaluation*, *26*(3-4), 182-212.
https://doi.org/10.1080/13803611.2021.1934034

Willingale-Theune, J., Manaia, A., Gebhardt, P., De Lorenzi, R., & Haury, M. (2009). Introducing modern science into schools. *Science*, *325*(5944), 1077-1078.
https://doi.org/10.1126/science.1171989

Wyatt-Smith, C., & Klenowski, V. (2010). Role and purpose of standards in the context of national curriculum and assessment reform for accountability, improvement and equity in student learning. *Curriculum Perspectives*, *30*(3), 37-47.

Zaheer, Z. (2022). Global Citizenship in a National Curriculum: The Case of Pakistan's Single National Curriculum. In *Educational Response, Inclusion and Empowerment for SDGs in Emerging Economies: How do education systems contribute to raising global citizens?* (pp. 103-128). Cham: Springer International Publishing.

Zaman, M. S., Saleem, K., & Ali, S. (2021). Implementation of the Single National Curriculum (SNC) at Primary Level: Teachers' Expectations and Concerns. *Jahan-e-Tahqeeq*, *4*(4), 161-168.