ACTION RESEARCH REPORT

CREATING INTEREST AMONG STANDARD VIII STANDARD STUDENTS IN LEARNING OF ATOMIC STRUCTURE THROUGH DEMONSTRATIVE METHOD

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CERTIFICATE

It is certified that the Action Research Report entitled "**CREATING INTEREST AMONG STANDARD VIII STANDARD STUDENTS IN LEARNING OF ATOMIC STRUCTURE THROUGH DEMONSTRATIVE METHOD**" is an original and independent Action Research work done by N.**Rukmani**, Senior Lecturer District Institute of Education and Training, Manjur, Ramnad District. It has not previously formed the basis for any other action research work or for the award.

Place: Ramnad

Date: Principal

N.RUKMANI
Senior Lecturer
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Ramnad District

DECLARATION

I hereby declared that the Action Research report entitled "**CREATING INTEREST AMONG STANDARD VIII STANDARD STUDENTS IN LEARNING OF ATOMIC STRUCTURE THROUGH DEMONSTRATIVE METHOD**" is an original and independent work done by me and it has not formed the basis for any other programme, project work (or) any award.

(N.Rukmani)

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I further extend my sincere thanks to my family members who helped me to accomplish in this project.

(N.Rukmani)

CONTENT

1. INTRODUCTION

Introducing standard VIII students to the intricacies of atomic structure through demonstrative methods offers a hands-on approach that goes beyond traditional classroom lectures. By incorporating visual aids, practical demonstrations, and interactive sessions, students are encouraged to actively participate in their learning journey. This approach not only enhances their comprehension of complex scientific concepts but also cultivates a sense of excitement and wonder about the underlying principles governing the universe at the atomic level.

To ignite interest in the learning of atomic structure among standard VIII students, employing demonstrative methods can be highly effective. Atomic structure, a fundamental concept in science, forms the basis of understanding matter at its most fundamental level. By delving into the arrangement of atoms, their composition, and the interactions that govern them, students can develop a deeper appreciation for the physical world around them. The use of demonstrative methods, such as models, simulations, and interactive experiments, not only makes learning engaging but also allows students to visualize abstract concepts, fostering a sense of curiosity and exploration.

Furthermore, the use of demonstrative methods in teaching atomic structure to standard VIII students facilitates a multidimensional learning experience. It allows students to explore the relationship between theory and practice, bridging the gap between abstract concepts and real-world applications. By engaging in hands-on activities like building atomic models, conducting simulated experiments, and observing scientific phenomena firsthand, students develop critical thinking skills and analytical abilities. This interactive approach not only enhances their understanding of atomic structure but also encourages them to ask questions, seek answers, and develop a deeper passion for scientific inquiry.

The lack of interest among Standard VIII students in learning the complex topic of Atomic Structure poses a significant challenge to effective science education. Traditional teaching methods have failed to engage students adequately, leading to a disinterest that hampers their understanding and retention of crucial scientific concepts. To address this issue, there is a need to explore and implement demonstrative methods that can captivate the students' attention, enhance their comprehension, and foster a genuine interest in the intricate subject of Atomic Structure. This action research aims to investigate the effectiveness of employing demonstrative methods in the classroom to create a more engaging and stimulating learning environment, ultimately promoting a positive attitude towards the study of Atomic Structure among Standard VIII students.

ATOMIC STRUCTURE

The atomic structure refers to the arrangement and organization of atoms, which are the basic building blocks of matter. Atoms consist of a nucleus containing protons and neutrons, surrounded by electrons orbiting in energy levels or shells. The nucleus, composed of positively charged protons and neutrally charged neutrons, is held together by strong nuclear forces. Electrons, which have a negative charge, occupy specific energy levels around the nucleus based on their energy states. Understanding atomic structure is essential in chemistry and physics as it explains the properties, behavior, and interactions of elements and compounds, forming the basis of various scientific principles and applications.

DEMONSTRATION METHOD

Demonstration methods in education involve using visual aids, practical examples, and interactive activities to enhance learning experiences. Here are some key aspects of demonstration methods:

1. Visual Aids: These can include charts, graphs, diagrams, models, videos, and animations that help illustrate abstract concepts and make them more accessible to students. Visual aids enhance understanding by providing a visual representation of the topic being taught.

2. Practical Examples: Demonstrating concepts through real-world examples and experiments allows students to see how theoretical knowledge applies in practical scenarios. This hands-on approach fosters a deeper understanding and retention of information.

3. Interactive Activities: Engaging students in interactive activities such as group discussions, role-plays, simulations, and problem-solving tasks encourages active participation and critical thinking. These activities promote collaboration, communication, and exploration of ideas.

4. Experiential Learning: Demonstration methods often involve experiential learning, where students actively engage with the material, make observations, draw conclusions, and apply their knowledge in different contexts. This approach enhances retention and application of concepts.

5. Engagement and Motivation: Using demonstration methods can increase student engagement and motivation by making learning more dynamic, interesting, and relevant to their experiences. It sparks curiosity, encourages curiosity, and promotes a positive attitude towards learning.

Overall, demonstration methods play a vital role in education by catering to different learning styles, enhancing comprehension, fostering critical thinking skills, and creating an engaging and interactive learning environment.

2. NEED AND SIGNIFICANCE OF THE STUDY

The need and significance of the study on creating interest among standard VIII students in learning atomic structure through demonstrative methods are multifaceted. Firstly, at the educational level, this study addresses the challenge of engaging students in complex scientific concepts like atomic structure. Many students find such topics abstract and challenging to grasp, leading to disinterest and reduced learning outcomes. By using demonstrative methods such as models, simulations, and interactive experiments, this study aims to make the topic more tangible, relatable, and intriguing for students, thereby enhancing their engagement and understanding.

Secondly, from a broader perspective, fostering interest in science and technology among students is crucial for developing a skilled workforce and promoting scientific literacy in society. A study that successfully creates interest in learning atomic structure not only benefits individual students in their academic journey but also contributes to building a foundation for future scientific exploration, innovation, and problem-solving. This study's significance extends beyond the classroom to potential long-term impacts on students' career choices, scientific inquiry, and contribution to technological advancements.

The need for this study stems from the recognized challenges that Standard VIII students encounter in comprehending the abstract and complex principles of atomic structure. Establishing a solid foundation in this foundational scientific concept is pivotal for students as it forms the basis for more advanced scientific understanding in subsequent academic years. Furthermore, a gap exists in the current literature regarding the effectiveness of demonstrative methods in specifically addressing the difficulties associated with teaching atomic structure to students at this level. By investigating the impact of innovative pedagogical approaches, this study aims to not only address the existing gaps in knowledge but also contribute practical insights that can significantly enhance the quality of science education. The importance of this research extends beyond academic performance, as it strives to instill a genuine interest and curiosity in students about the microscopic world, fostering a lifelong passion for scientific inquiry and learning. The outcomes of this study hold the potential to influence educational practices, curriculum development, and teaching methodologies, thereby contributing to the broader goal of improving science education for Standard VIII students.

PROBABLE CAUSES OF THE PROBLEM

1. The abstract and theoretical nature of Atomic Structure may pose a challenge for Standard VIII students, making it difficult for them to grasp and maintain interest in the subject.
2. Traditional teaching methods often rely on theoretical explanations without providing sufficient hands-on experiences. The absence of practical demonstrations and experiments might contribute to students' disengagement.
3. Teachers may not be employing effective teaching strategies that cater to the diverse learning styles and preferences of Standard VIII students, leading to a lack of engagement.
4. The limited use of educational technology and interactive tools in the classroom might hinder the students' ability to connect with the topic on a more dynamic and interactive level.
5. Schools may lack the necessary resources, such as laboratory equipment or demonstration materials, to facilitate engaging and illustrative sessions on Atomic Structure.

6. Students may perceive the study of Atomic Structure as disconnected from their daily lives, leading to a lack of motivation and interest in the subject.
7. Teachers may not be adequately trained or prepared to implement demonstrative methods effectively, resulting in a failure to capture students' attention and interest.
8. Prevailing teaching methods may focus too much on memorization and rote learning, leaving little room for active engagement and exploration in understanding the complexities of Atomic Structure.

These probable causes through the implementation of demonstrative methods in the action research can potentially mitigate the lack of interest among Standard VIII students in learning about Atomic Structure.

3. OBJECTIVES OF THE STUDY

1. To assess the current level of understanding of atomic structure among Standard VIII students.
2. To design and implement demonstrative methods to teach atomic structure concepts.
3. To evaluate the impact of demonstrative methods on students' comprehension and interest in atomic structure.

4. HYPOTHESES

"**Demonstrative method** will create interest among standard VIII standard students in learning atomic structure"

5. METHODOLOGY

The investigator has adopted Experiment method with single group design for the present investigation.

6. SAMPLE

The VIII standard students 15 from PUMS Therthangal selected as sample of the present investigation

7. RESEARCH TOOL

The investigator-based achievement test has been used as tools of the present investigation.

8. RESEARCH PROCESS

The following phases have been involved in the present action research

- Finding the problem and selection of school for action research study
- Identifying the sample
- Preparation of pre test and post test question paper
- Conducting pre test
- Implementation of understanding activities
- Designing and adopting frequent practices
- Conducting post test
- Comparing the performance of the students in pretest and post test
- Testing of hypotheses
- Findings results as net gains

9. ADMINISTRATION OF PRE TEST

An account of assessing the previous knowledge of atomic structure framing questions among students, pre test was conducted.

10. TREATMENT

ACTIVITIES FOR LEARNING ATOMIC STRUCTURE

1.Preparation of Atomic Model (Plastic Ball) Oxygen ,Nitrogen, chlorine, Ammonia

In this activity, students will create atomic models using plastic balls to represent Oxygen (O_2), Nitrogen (N_2), Chlorine (Cl_2), and Ammonia (NH_3). For the Oxygen model, two red plastic balls are used to symbolize oxygen atoms, connected by a black rod to depict the double covalent bond between the atoms, highlighting the diatomic nature of oxygen molecules. Moving on to Nitrogen, two blue plastic balls represent nitrogen atoms, joined by a blue rod to illustrate the triple bond characteristic of nitrogen molecules, emphasizing nitrogen's stability due to this bond. The Chlorine model employs two green plastic balls for chlorine atoms connected by a green rod, showcasing the single covalent bond in chlorine molecules and discussing its diatomic properties and chemical reactivity. Lastly, the Ammonia model uses a larger yellow plastic ball for the nitrogen atom, linked to three smaller white plastic balls representing hydrogen atoms with white rods, demonstrating the pyramidal shape and polar nature of ammonia molecules, aiding in understanding its molecular structure and properties. These hands-on activities engage students visually and conceptually in grasping the molecular structures and bonding configurations of these essential compounds.

2 Finding the valence of different atom

In this activity used in this study, students explore the concept of finding the valence of different atoms. They use various materials such as colored balls representing atoms and rods to depict bonds. For example, they use red balls for Oxygen, blue balls for Nitrogen, green balls for Chlorine, and yellow balls for Hydrogen. By creating models and counting the number of bonds each atom can form, students determine the valence of these atoms. This activity helps in understanding the chemical properties of elements and their bonding behaviors, which are crucial for further studies in chemistry and related fields.

3. Model of L aw of conservation of mass

In this study, a model was created to demonstrate the Law of Conservation of Mass, engaging students in an educational and interactive activity. The materials included two labeled containers, one for baking soda and the other for vinegar, along with measuring spoons or cups. Equal amounts of baking soda and vinegar were measured and placed in their respective containers. A balloon or plastic bag was securely attached over the vinegar container's opening. The baking soda was then added to the vinegar, initiating a chemical reaction that produced carbon dioxide gas, visibly inflating the balloon or bag. Through observation and discussion, students learned that despite the visual changes, the total mass of the system (containers, contents, and inflated balloon) remained constant, aligning with the Law of Conservation of Mass. After the reaction, the mass of the entire setup was measured, confirming that the mass before and after the reaction was the same. This hands-on model effectively demonstrated the principle that mass is conserved in a closed system during chemical reactions.

4.Electron Emission working model preparation and explanation

In this study, a working model demonstrating electron emission was prepared and explained to enhance students' understanding of atomic processes. The model required several materials, including a power source, wires, a cathode, and an anode placed in a vacuum tube. Initially, the setup was carefully assembled with the cathode connected to the negative terminal of the power source and the anode to the positive terminal. Once the vacuum tube was sealed, the power was turned on, creating an electric field between the cathode and anode. This electric field caused the cathode to emit electrons due to thermionic emission or field emission, depending on the setup. The emitted electrons were accelerated towards the anode, creating a visible current flow. By observing the electron emission and current flow, students gained insight into electron behavior and the principles of electron emission in a controlled environment. This model effectively illustrated concepts such as electron movement, electric fields, and the conditions necessary for electron emission, contributing to a deeper understanding of atomic phenomena among the study participants.

5. Plum Pudding model preparation and explanation

In this study, a Plum Pudding model was prepared and explained to elucidate the structure of atoms. The model required various materials, including a spherical object representing the nucleus (such as a small ball), smaller objects symbolizing electrons (such as beads or smaller balls), and a larger container to represent the entire atom. Initially, the nucleus was placed at the center of the container, signifying the positively charged protons and neutral neutrons concentrated in the atom's core. Electrons, represented by the smaller objects, were then dispersed throughout the container, symbolizing their negative charge and orbiting the nucleus in various energy levels or shells. This model visually depicted J.J. Thomson's concept of electrons embedded in a positively charged "pudding" or matrix, illustrating the neutral charge of the atom as a whole. By observing and discussing the Plum Pudding model, students gained insight into the early atomic model and the distribution of charges within an atom, contributing to their understanding of atomic structure and subatomic particles in this study.

6.Students are identified the elements which starting with their name in first letter

In this study, students were tasked with identifying elements whose names start with the first letter of their own names. The activity began by providing each student with a list of elements and their symbols. Students then searched for elements whose names began with the same letter as their own names. For example, a student named Sarah might identify sulfur (S) or selenium (Se). This activity encouraged students to explore the periodic table, understand element names and symbols, and recognize patterns in elemental naming conventions. It also promoted engagement and familiarity with the elements, fostering a deeper understanding of chemistry concepts in a personalized and interactive manner within the study.

7. Matching scientist name with their image and laws

In this study, participants engaged in an activity where they matched scientist names with their corresponding images and associated scientific laws. The activity involved providing students with a set of scientist names, such as Isaac Newton, Albert Einstein, and Marie Curie, along with images representing these scientists. Additionally, students were given a list of scientific laws or theories attributed to each scientist, such as Newton's Laws of Motion, Einstein's Theory of Relativity, and Curie's Law of Radioactivity. Participants were then tasked with matching each scientist's name with their respective image and the scientific law or theory they are known for. This activity aimed to enhance students' knowledge of prominent scientists, their contributions to scientific understanding, and the fundamental laws and theories associated with their work. Through this interactive exercise, students gained a deeper appreciation for the history and significance of scientific discoveries and advancements within the context of the study.


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9. Balancing the given chemical equation

In this study, participants were tasked with balancing a given chemical equation to ensure conservation of mass and atoms. The equation provided was for the reaction between hydrogen gas (H2) and oxygen gas (O2) to produce water (H2O). Initially, the equation was unbalanced, with two hydrogen atoms on the left side and two oxygen atoms on the reactant side, while the product side had only one oxygen atom in water. Participants followed a systematic approach to balance the equation. They added coefficients in front of the compounds to adjust the number of atoms on both sides of the equation. Through careful examination and application of the balancing principles, participants successfully balanced the equation as follows: 2H2 + O2 -> 2H2O. This balanced equation demonstrated that the number of atoms of each element is conserved before and after the chemical reaction, a fundamental concept in chemistry explored during this study.

9.Differentiate between atom and molecules

In this study, students engaged in an activity to differentiate between atoms and molecules, emphasizing their fundamental differences in composition and structure. The activity began by defining atoms as the smallest units of an element that retain its chemical properties and cannot be further divided without losing its identity. Molecules, on the other hand, were defined as combinations of two or more atoms held together by chemical bonds, forming a stable entity with distinct properties from its constituent atoms. Participants were then presented with examples of atoms (such as hydrogen, oxygen, and carbon) and molecules (such as water, oxygen gas, and carbon dioxide). They were tasked with identifying whether each example represented an atom or a molecule based on its composition and bonding arrangement. This activity not only reinforced the basic concepts of atoms and molecules but also promoted critical thinking and understanding of chemical structures within the context of the study.

10.Preparation of molecular models and explanation

In this study, participants prepared molecular models and provided explanations to deepen their understanding of molecular structures. The activity involved using various materials like colored balls to represent atoms and connectors to symbolize chemical bonds. Participants chose specific molecules to model, such as water (H2O), carbon dioxide (CO2), and methane (CH4). They carefully assembled the molecular models by connecting the appropriate atoms with the corresponding bonds according to the molecules' chemical formulas. After creating the models, participants explained the structural features of each molecule, including the arrangement of atoms and the types of bonds present (such as covalent bonds in water and carbon dioxide). This hands-on approach to molecular modeling allowed participants to visualize and comprehend the three-dimensional structures of molecules, enhancing their conceptual understanding of molecular chemistry within the study's framework.

12. ADMINISTRATION OF POST TEST

Even after the implementation of activities, the investigator engaged the students in post-test so as identifying how far the students got benefits in learning of atomic structure.

13. DATA COLLECTION

Data were collected with the help of questionnaire and they were analysed and tabulated by the application of percentage, mean, SD and ‘t’ value for which pre test and post test scores could be compared.

14. STATISTICAL TECHNIQUES

- Mean and S.D
- ‘t’ test

15. DATA ANALYSIS

Pre test and Post test scores

S.No	Pre test	Post test
1	8	12
2	7	15
3	10	20
4	10	20
5	10	20
6	10	20
7	9	18
8	8	18
9	9	16
10	9	18
11	8	15
12	8	19
13	9	20
14	8	18
15	10	20

Table 1

The level of Pre and post test Score

Test	**%**
Pre test	33.08%
Post test	66.91%

The above table shows that the level of post test 66.91% and pre test 33.08%. of understanding the concept of atomic structure. The post test level is high.

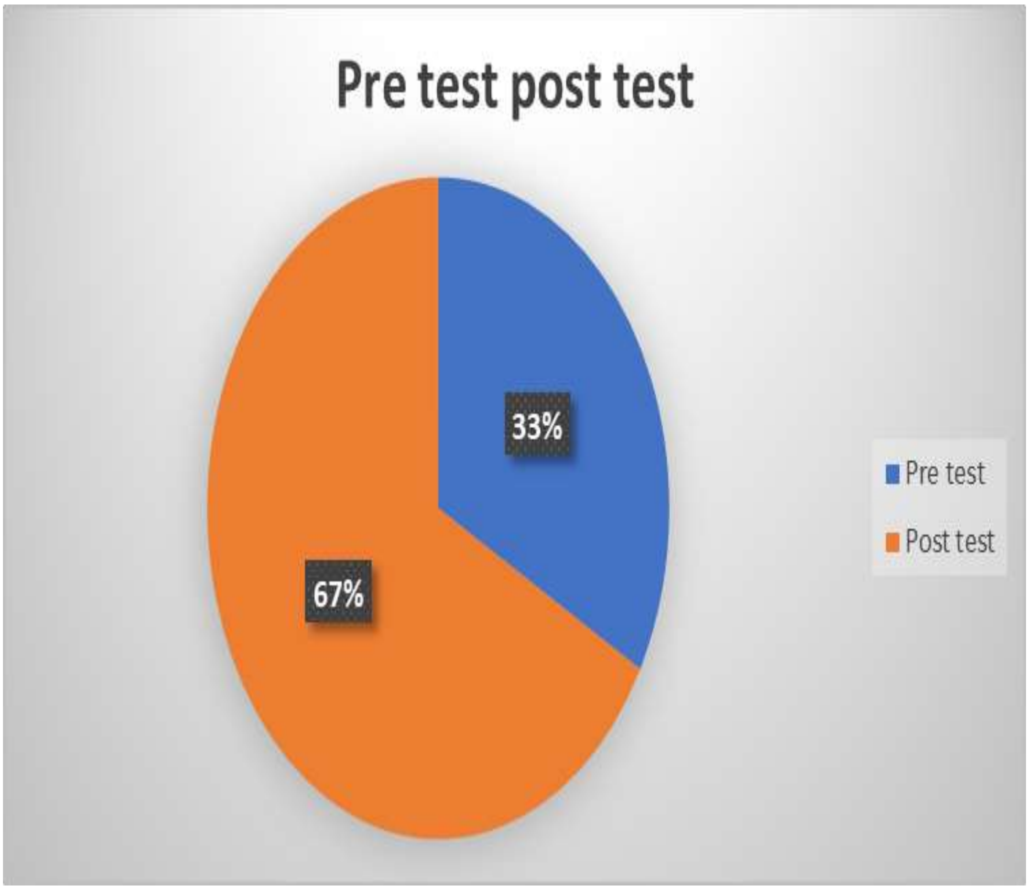


Table 2

Significant difference between the pre and post test

	Mean	**SD**	**'t' value**	**Level of Significance**
Pre test	8.86	0.95	13.83	S
Post test	17.93	2.35		

Significant at 0.05 level (2.04)

The above table shows that the mean scores of post test 17.93 is higher than the pre test 8.86. The calculated 't' value 13.83 is greater than the table value 2.04 significant at 0.05 level. Hence it is concluded that there is significant difference between the pre and post test of understanding the concept of atomic structure through demonstration method among VIII standard students

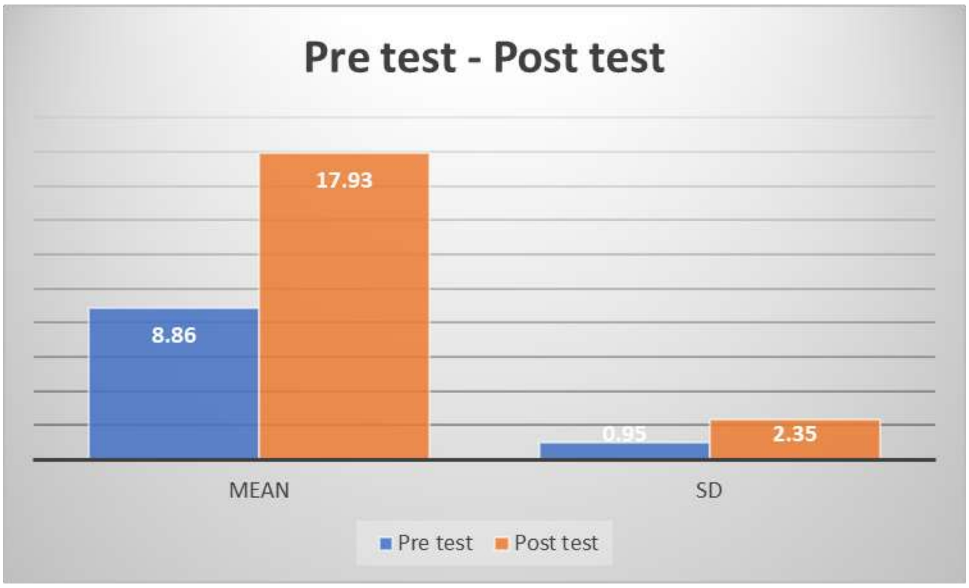


Table 3

The level of Pre and post-test of boys and girls

	Pre test	Post test
Boys	33.95%	66.04%
Girls	32.50%	67.50%

The above table shows that the level of post test of boys 66.29% and pre test of boys 33.70%. It is inferred that the level of post test of girls 68.58% and pre test of girls 31.41%. In overall post test of girls is higher than the boys.

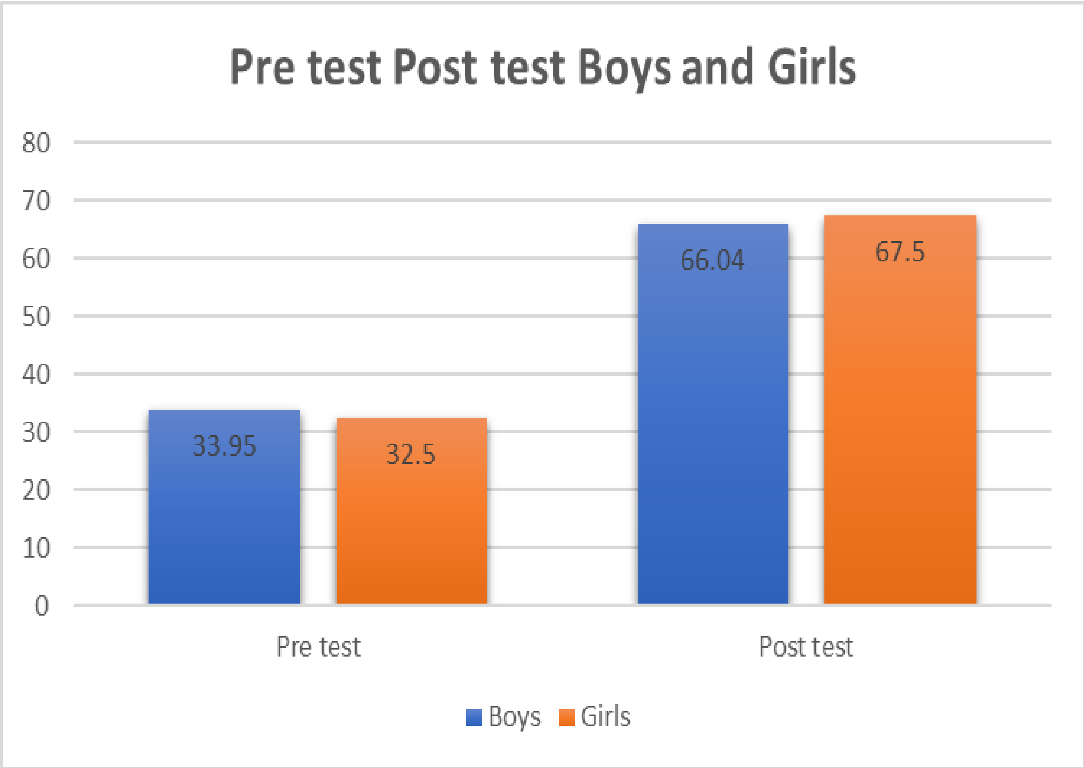


Table 4

Significant difference between the boys and Girls of Pre test

Pre test	Mean	SD	t test	Level of Significance
Boys	9.16	1.21	1.03	NS
Girls	8.66	0.66		

Significant at 5% level (2.16)

The above table shows that the mean scores of pre test of boys 9.16 is higher than the pre test of girls 8.66. The calculated ‘t’ value 1.03 is less than the table value 2.16 significant at 0.05 level.. Hence it is concluded that there is no significant difference between the boys and girls in pre test

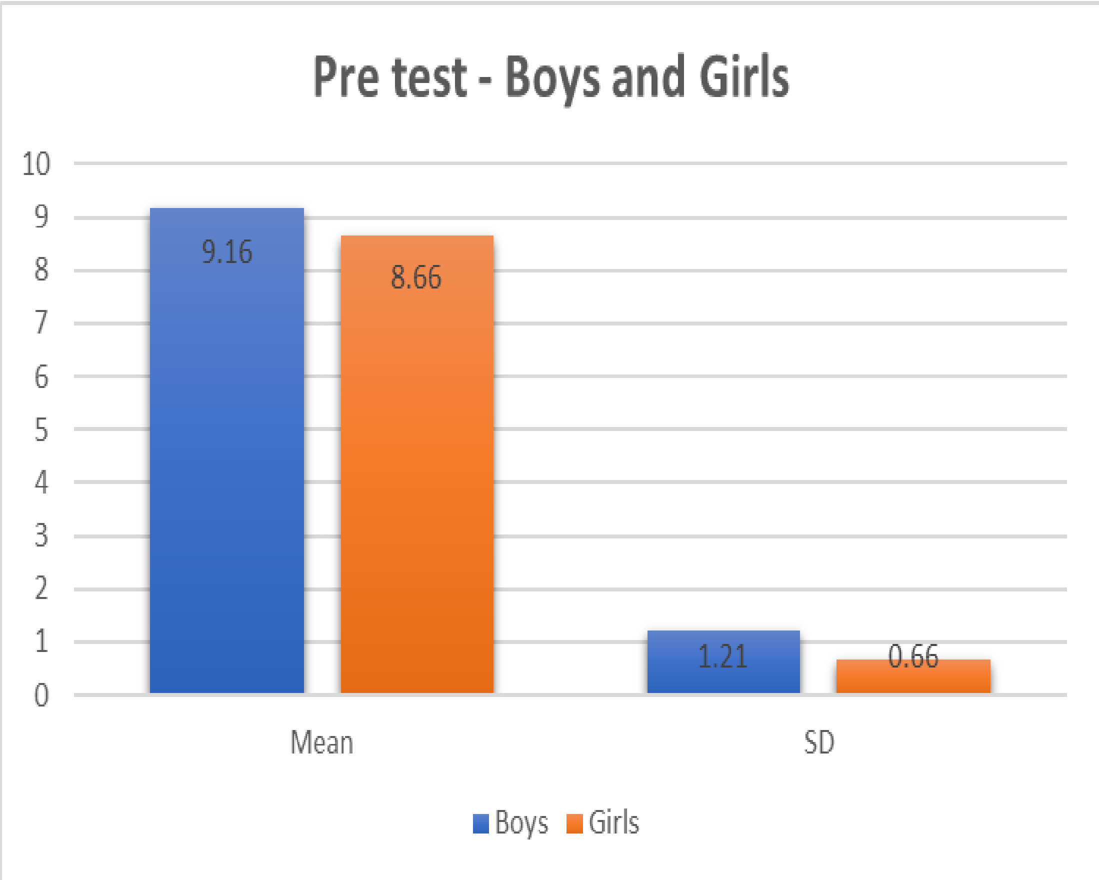


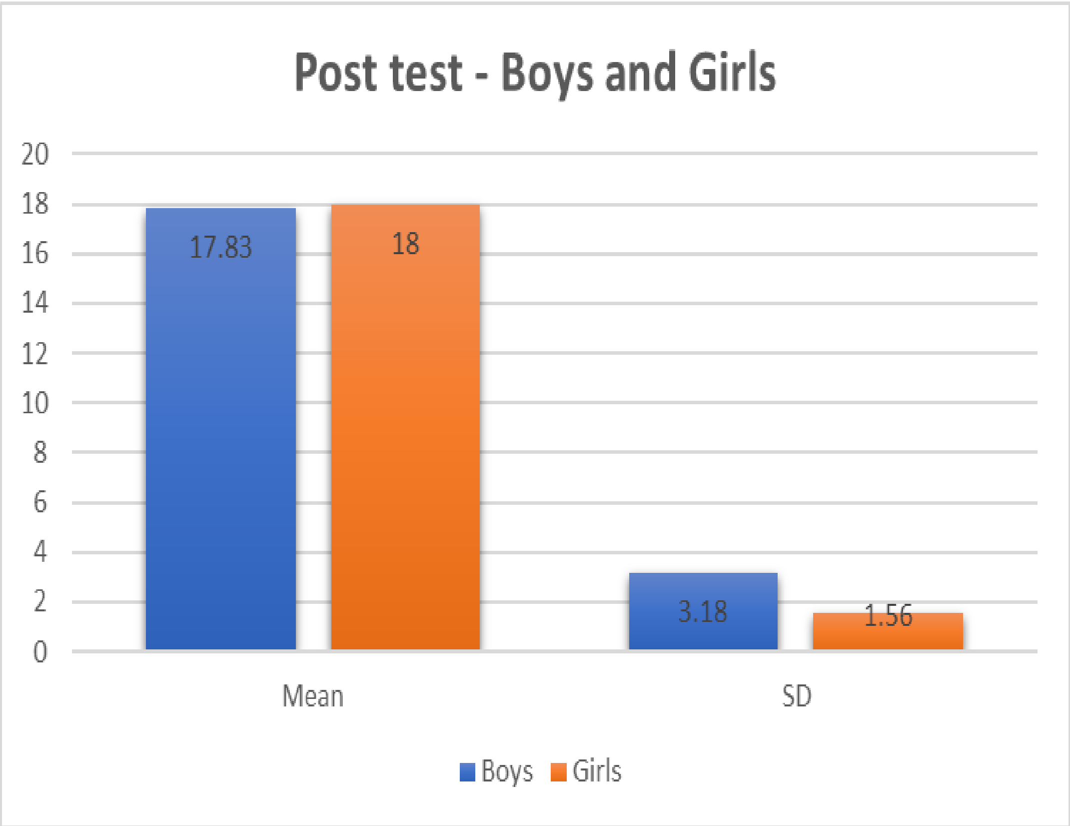
Table 5

Significant difference between the boys and girls in post test

Post test	Mean	SD	t test	Level of Significance
Boys	17.83	3.18	0.13	NS
Girls	18	1.56		

Significant at 5% level (2.16)

The above table shows that the mean scores of post test of girls 18 is higher than the post test of boys 17.83. The calculated ‘t’ value 0.13 is less than the table value 2.16 significant at 0.05 level.. Hence it is concluded that there is no significant difference between the boys and girls students of post test.



16. FINDINGS

1. The level of post test 66.91% and pre test 33.08%. of understanding the concept of atomic structure. The post test level is high
2. The mean scores of post test 17.93 is higher than the pre test 8.86. There is significant difference between the pre and post test of understanding the concept of atomic structure through demonstration method among viii standard students
3. The Level of post test of boys 66.29% and pre test of boys 33.70%. It is inferred that the level of post test of girls 68.58% and pre test of girls 31.41%. In overall post test of girls is higher than the boys.
4. The mean scores of pre test of boys 9.16 is higher than the pre test of girls 8.66. There is no significant difference between the boys and girls in pre test
5. The mean scores of post test of girls 18 is higher than the post test of boys 17.83. There is no significant difference between the boys and girls students of post test.

17. CONCLUSION

The study aimed to create interest among 8th standard students in learning about atomic structure using a demonstrative method. Through engaging activities such as molecular modeling, differentiation between atoms and molecules, and balancing chemical equations, students actively participated in hands-on learning experiences. The demonstrative approach enhanced students' understanding of atomic concepts by providing visual and tangible representations of abstract ideas. The results of the study showed that utilizing demonstrative methods in teaching atomic structure not only increased students' interest but also improved their retention and comprehension of the subject matter. This approach not only made learning more enjoyable but also laid a strong foundation for further exploration of complex scientific concepts. Overall, the study concluded that incorporating demonstrative methods is an effective strategy for fostering interest and enhancing learning outcomes in atomic structure among 8th standard students.

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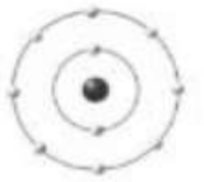
மாவட்ட ஆசிரியர் மற்றும் பயிற்சி நிறுவனம்

மஞ்சூர்

முன் தேர்வு மற்றும் பின் தேர்வு

பாடம் அணுஅமைப்பு   வகுப்பு :8   மதிப்பெண் 20

1.கீழ்கண்ட படங்களில் எப்படம் தாம்சன் அணு மாதிரியை குறிக்கின்றது

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2. நியூக்ளியான்கள் என்பது…………………….

(1) புரோட்டான்கள் மட்டும்   (2) புரோட்டான்கள் மற்றும் எலக்ட்ரான்கள்

(3) பு புரோட்டான்கள் எலக்ட்ரான்கள் மற்றும் நியூட்ரான்கள்

(4) புரோட்டான்கள் மற்றும் நியூட்ரான்கள்

3 கால்வாய் கதிரகள் என அழைக்கப்படுவை?

(1) ஆனோடு கதிர்கள் (2) கேதோடு கதிர்கள் (3) எதிர் மின்வாய்க் கதிர்கள்

(4) இவை அனைத்தும்

4 பொருத்துக.

i. புரோட்டான்கள் - அ. எர்னஸ்ட் ரூதர்போர்டு

ii. எலக்ட்ரான் - ஆ. கோல்ஸ்டீன்

iii. நியூட்ரான் -இ. சர்ஜொன் ஜோசப் தாம்ஸன்

iv. அணுக்கரு - ஈ. ஜேம்ஸ் சாட்விக்

(1) i - இ ii - ஈ ili – அ iv - ஆ (2) i - ஆ ii - இ iii - அ iv - ஈ

(3) i - ஆ ii - இ iii – ஈ iv - அ (4) i - இ ii - ஈ iii - ஆ iv – அ

5 ${}_{20}Ca^{40}$ மற்றும் ${}_{18}Ar40$ என்பவை………………………..

(1) ஐசோடோப்புகள் (2) ஐசோமர்கள் (3) ஐசோடொன்கள் (4) ஐரசொபர்கள்

6. பின்வருவனவற்றுள் சரியாக சமன் சமன்செய்யப்பட்ட சமன்பாட்டை தேர்வு செய்க.

(1) $Na + Cl \rightarrow NaCl$ (2) $2\ Na + 2CI \rightarrow 2NaCI$

(3) $2Na + Cl2 \leftarrow 2NaCl$ 4) $Na2 + 2CI \rightarrow 2NaCI$

7. இணைதிறன் கூடு எனப்படுபவை………………………………..

(1) உட்கருவிற்கு அருகிலுள்ள எலக்ட்ரான் கூடு (2) கடைசி எலக்ட்ரான் கூடு

(3) கடைசி எலக்ட்ரான் கூட்டிற்கு முந்தய கூடு (4) எதுவுமில்லை

8.கூற்றை ஆய்க

கூற்று: மந்த வாயுக்கள் அதிக நிலைப்புதன்மை உடையவை.

காரணம்: அவை தனது இணைதிறன் கூட்டில் இரண்டு அல்லது எட்டு எலக்ட்ரான் பெற்றுள்ளன.

(1) கூற்றும் காரணமும் தவறு

(2) கூற்று சரி, காரணம் தவறு

(3) கூற்று தவறு காரணம் சரி

(4) கூற்றும் காரணம் சரி, காரணம் கூற்றுக்கென சரியான விளக்கம்

9. ஒரு அணுவின் வேதிப் பண்புகளை தீர்மானிப்பவை………………….

(1) புரோட்டான்கள் (2) எலக்ட்ரான்கள் (3) நியூட்ரான்கள் (4) இனைதிறன் எலக்ட்ரான்கள்

10 H_2SO_4 ல் SO_4^{2}- ன் இணைதிறன்…………………….

(1) இரண்டு (2) ஒன்று (3) மூன்று (4) 0

11 மாறா விகித விதியை கூறியவர்……………………

(1) ஜோசப் ப்ரெளஸ்ட் (2) லவாய்சியர் 3) தாம்சன் (4) ரூதர்போர்டு

12. கேதோடு கதிர்கள்…………………………ஆல் உருவாக்கப்படுகின்றன.

1) மின்சுமையற்ற துகள்கள் 2) நேர்மின்சுமை பெற்ற துகள்கள்

3) எதிர்மின்சுமை கொண்ட துகள்கள் 4)மேற்கண்ட எதுவுமில்லை

13 கார்பந்-டை-ஆக்சைடு எம்முறையில் தயாரிக்கப்பட்டாலும் அதி கார்பன் மற்றும் ஆக்சிஜன் நிறைவிகிதம் மாறாதிருப்பது………………..விதியை நிரூபிக்கின்றது.

1) தலைகீழ் விகித விதி 2) பொருண்மை அழியா விதி

3) பெருக்கல் விதி 4) மாறா விகித விதி

14. நீரில் ஹைட்ரஜன் மற்றும் ஆக்சிஜன் ஆகியவை………………….நிறை விகிதத்தில் இணைந்துள்ளன.

1) 1:8 2) 8:1 3) 2:3 4) 1:3

15……………….என்பது ஒரு தனிமத்தின் மிகச்சிறிய துகள்

16.ஒரு தனிமமானது ஒரே வகையான……………….அணுக்களால் உருவாக்கப்பட்டுள்ளது

17.எதிர்மின்சுமை கொண்ட அயனி……………… எனவும் நேர்மின்சுமை கொண்ட அயனி எனவும் அழைக்கப்படுகின்றன.

18 பொருன்மை அழியா விதியை கூறியவர்…………………..

19. வினைபடு பொருளும் வினைவிளை பொருளும் நிறை விகிதம் சமம்……………………….. (என்ன விதி)

20. கீழ்கண்ட தனிமத்தின் இணைதிறனை கூறுக!

1) உ 2) N_2 3) P 4) 0

ACTION RESEARCH PHOTOS


2024/01/19 12:04
Thethangal, India
CHOKKANATHAN S


2024/01/24 12:06
Thethangal, India
CHOKKANATHAN S


2024/01/24 12:20
Thethangal, India
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