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A study of developing the skill of memorise the periodic table through Mnemonics

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Abstract

Mnemonic techniques have been studied by educational techniques in detail during the last decades. It is widely acknowledged by educationist that any activity that has elements of interest as well as and enthruses students. Most secondary and senior secondary school teachers teach through lecture. Even science is taught through lecture which does not give justice to it because science is essentially a process driven discipline.

The study aims at developing the skill of remember periodic table through mnemonics. The study was conducted on 55 students selected through purposive sampling using pretest- posttest single group design. A 20 item test developed by the investigation was used as a pretest as well as the post test. The 3 phase treatment was geared up to teaching periodic table of all elements and rules for deriving these through activities.

Gain scores (%) were calculated and mean gain score was sufficiently high to support the conclusion that the exposure given to students through Mnemonics based teaching and learning of science is effective in enthusing them and increasing their achievement.

Keywords: Skill, Memorise, Mnemonics

Introductions

Science has many branches. Chemistry is perhaps the most important one as it involves in all other branches chemistry deals with the study the great scientist and introduces the periodic table.

Statement of problem: The students of secondary and senior secondary find it difficult to identify and memorise the elements. Therefore, the study was based on the problem “Developing the skill of memorise the periodic table through mnemonics.”

Need of the study: The students of secondary and senior secondary school find it difficult to handle a large number of elements keeping a systematic record and memorize the elements had been a great challenge to students therefore this study was based on the problem developing the skills to memorize periodic table through mnemonics.

Significance of the study: The following describe the significance of the study:

- The study of the handling of large number of elements is important for understanding of the periodic table.
- The study of the periodic table is important for understanding and learning chemistry.
- The study can facilitate to explain the basis of trends in modern periodic table.
- This study can enable practicing teachers to teach chemistry more effectively and engage students’ attention through mnemonics.
- It can promote interest among the learners in the field of chemistry.

Objectives of the study

The following were the objectives of the study:

- To enable students to name the elements with atomic number.
- To enable the students to correlate the sequence of arrangement of elements in periodic table with electronic configuration of elements.
- To facilitate students understanding about recall the designations of group in the periodic table.
- To help the students to explain the basis of trends in the modern periodic table.

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Hypothesis

- Learning periodic table through the mnemonics significantly improves students' achievement.
- When taught through the mnemonic, students learnt to explain the basis of trends in the modern periodic table.

About the Mnemonic

The investigator decided to use mnemonics for developing interest among students in learning chemistry; especially to enthuse students about periodic table and periodic law.

Mnemonic is a learning technique to aid information retention order of elements in periodic table. It consists of short sentences to remember the sequence.

If the students are allowed to learn the sequence, they will be able to acquire associated mental concepts.

The students can gain confidence and the classroom can become a lively place where students enjoy their learning. Joy of learning can reduce the dropout rate increased attention at school.

Categorisation of element into blocks

- A) If the last electron of the elements goes to S subshell then element belongs to S Block elements;

Alkali and Alkaline earth metals

H	Li	Na	K	Rb	Cs	Fr
	हालीना		की	रब	से	फरियाद

Be	Mg	Ca	Sr	Ba	Ra
बेटा	मांगे	कार	स्कूटर	बाप	राजी

- B) The last electron of the element goes to p subshell then element belongs to p Block elements;

All elements of group number 13 to group no 18.

Group 13

B	Al	Ga	In	Tl
बैंगन	आलू	गाजर	इन	थैला

Group 14

C	Si	Ge	Sn	Pb
कौन	सी	गीता	स्नेहा	प्रभु

Group 15

N	P	As	Sb	Bi
न	पी	ऐसे	सब	के बीच

Group 16

O	S	Se	Te	Po
O	style	से	टीपो	

Group 17

F	Cl	Br	I	At
फिर	कल	बाहर	आई	आंटी

Group 18

He	Ne	Ar	Kr	Xe	Rn
हीना	नीना	और	करीना का	X-Ray	रंगीन

- C) If the last electron of the element goes to d subshell then element belongs to d Block elements. These are the elements of group 3 to 12 in the centre of the periodic table.

3d series:

Sc	Ti	V	Cr	Mn	Fe	Co	Ni	Cu	Zn
सकती		वक्र		मन		फीको	नी		कजन

4 d Series

Y Zr Nb Mo Tc Ru Rh Pd Ag Cd

Why जरनब मु तक रू रह पढ Ag Cd

5 d Series

La Hf Ta W Re Os Ir Pt Au Hg

ला हफता w रे ओसामा इधर पिटाई और होगी

Periodicity in Atomic Properties

Here, the term periodicity is used when some characteristic physical and chemical properties repeat itself after some definite intervals.

These are following

Valency, atomic size, ionic size and metallic- non-metallic properties.

Design of the study and Data analysis

The investigator selected as the study sample of 55 students of standard X of Government schools of District Jhajjar, Haryana. These students were selected through purposive sampling. Pretest-Posttest single group design was used for this study. A test paper was developed by the investigator. Data was collected through pretest and posttest. Data was tabulated and the gain scores (%) were calculated.

Treatment

The pretest revealed that the most students gained a score below 10 marks. They were not able to correlate the sequence of arrangement of elements in periodic table with electronic configuration of elements. The investigator began the treatment and started teaching with the help of mnemonics. The treatment was consists of three phases which are briefly discussed below:

Phase I: Firstly students were asked warm-up questions.

Phase II: This phase aimed at making the students observe and learn about the position of elements in modern periodic table with the help of mnemonics. The students were divided into 11 groups. Each group was provided with flash cards with mnemonics. There were total 11 cards were used. These are following:

S Block: 2 flash cards

P Block: 6 flash cards

D Block: 3 flash cards

Each groups were asked to speak the mnemonics written on flash cards one after the other.

Phase III: This phase aimed at enabling the students to explain the basis of periodic properties in modern periodic table. The investigator describes the variation of valency, atomic size, ionic size and metallic-nonmetallic properties in a group and in a period with the help of mnemonics.

At the end of the treatment, students were given the post test and their responses were scored.

Data Analysis

Students' scores on the pretest and the posttest were tabulated and the gain scores (%) were calculated.

Table 1: The pretest-posttest and gain score (%) (N=55)

Test	Mean Scores (%)	Gain Scores (%)
Pre Test	40.1	35.3
Post Test	75.4	

Findings

Using mnemonics to memorize periodic table and make the students understand the basis of periodic trends i.e: the variation of valency, atomic size, ionic size and metallic-non-metallic properties in a group and in a period in modern periodic table resulted in higher learning achievement and their greater involvement in classroom activities.

Educational Implications

The results of this study suggests that students enjoy the learning through mnemonics and this is true that students learn chemistry as well. It helps in memorise the difficult concepts of chemistry. There is need to think that how the teacher should teach students with the help of innovative techniques. For this, teachers need to be familiarized through in-service programmes with the innovative techniques like mnemonics. Teachers also need to be performed and shown how various innovative techniques like mnemonics can be used effectively for teaching various subjects as well as for various students of different standards. It is very useful for science teachers who teach secondary and senior secondary school students, whatever the branch of science.

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