

**“AN EXPERIMENTAL STUDY TO ASSESS THE EFFICACY OF MNEMONICS,
CHUNKING IN ENHANCING MEMORY BASED ON THE PREFERRED
LEARNING STYLE OF THE STUDENTS IN EDUCATIONAL INSTITUTION OF
HONAVAR,UTTARA KANNADA ”**

BY

Ms. Christel Salu D’souza

Submitted to

Rajiv Gandhi University of Health Sciences, Bangalore, Karnataka



**Under Short term Research Grants for Undergraduate Students of Institutions Affiliated
to RGUHS for the year 2024-25**

And

In Partial fulfillment of the requirements for the degree of

Bachelor of Sciences in Nursing

Under the guidance of

Sr. A Susai Mari



St. Ignatius Institute of Health Sciences

Honavar, Uttara Kannada

2024-25

DECLARATION BY THE CANDIDATE

I hereby declare that this project titled “**AN EXPERIMENTAL STUDY TO ASSESS THE EFFICACY OF MNEMONICS, CHUNKING IN ENHANCING MEMORY BASED ON THE PREFERRED LEARNING STYLE OF THE STUDENTS IN EDUCATIONAL INSTITUTION OF HONAVAR,UTTARA KANNADA**” is a bonafide and genuine work carried out under the guidance of Vice Principal **Sr. A Susai Mari**, St. Ignatius Institute of Health Sciences, Honavar.

Date:

Ms. Christel Salu D'souza

Place:

Third year B.Sc. Nursing

CERTIFICATE BY GUIDE

This is to certify that the project“**AN EXPERIMENTAL STUDY TOASSESS THE EFFICACY OF MNEMONICS, CHUNKING IN ENHANCING MEMORY BASED ON THE PREFERRED LEARNING STYLE OF THE STUDENTS IN EDUCATIONAL INSTITUTION OF HONAVAR, UTTARA KANNADA**” is a bonafide and genuine work carried out by **Ms. Christel Salu D’souza** under the Short-term Research Grants for Undergraduate Students of Institutions Affiliated to RGUHS for the year 2024-25.

Date:

Signature of the guide

Place:

Sr. A Susai Mari

Vice Principal

St. Ignatius Institute of Health

Sciences, Honavar

ENDORSEMENT BY THE PRINCIPAL/HEAD OF THE INSTITUTION

This is to certify that the project entitled “**AN EXPERIMENTAL STUDY TO ASSESS THE EFFICACY OF MNEMONICS, CHUNKING IN ENHANCING MEMORY BASED ON THE PREFERRED LEARNING STYLE OF THE STUDENTS IN EDUCATIONAL INSTITUTION OF HONAVAR,UTTARA KANNADA**” is a bonafide and genuine work carried out by **Ms. Christel Salu D’souza** under the Short-term Research Grants for Undergraduate Students of Institutions Affiliated to RGUHS for the year 2024-25 under the guidance of **Sr. A Susai Mari**, Vice Principal, St. Ignatius Institute of Health Sciences, Honavar

Date:

Signature of the principal

Place:

A Sagaya Arockia Mary

Principal

St. Ignatius Institute of Health Sciences,

Honavar

ST. IGNATIUS INSTITUTE OF HEALTH SCIENCES, HONAVAR
SHORT TERM RESEARCH GRANTS FOR UNDER GRADUATE STUDENTS

2024-2025

FINALREPORT

| | | |
|-----------|--|---|
| 1. | TITLE OF THE PROJECT | “AN EXPERIMENTAL STUDY TO ASSESS THE EFFICACY OF MNEMONICS, CHUNKING IN ENHANCING MEMORY BASED ON THE PREFERRED LEARNING STYLE OF THE STUDENTS IN EDUCATIONAL INSTITUTION OF HONAVAR, UTTARA KANNADA.” |
| 2. | RGUHS PROJECT CODE | UG24NUR0612 |
| 3. | NAME OF THE STUDENT | MS. CHRISTEL SALU D’SOUZA |
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| 4. | NAME OF THE GUIDE | SR. A SUSAI MARI |
| | DESIGNATION | VICE PRINCIPAL |
| | E-MAIL ID | <u>susaisra@gmail.com</u> |
| | MOBILE NUMBER | 9916529004 |
| 5. | NAME OF THE DEPARTMENT | NURSING |
| 6. | DATE OF COMMENCEMENT OF THE RESEARCH ACTIVITY | 31/12/2024 |
| 7. | DATE OF COMPLETION | 04/04/2025 |

| | | |
|-----------|--------------------------|---|
| 8. | OBJECTIVES STATED | The objectives of the study <ol style="list-style-type: none">1) To assess the pre and post efficacy of mnemonics, chunking in enhancing memory based on the preferred learning style among students.2) To determine the efficacy of mnemonics, chunking in enhancing memory based on the preferred learning style among students before and after intervention.3) To associate the pretest memory based on the preferred learning style with selected demographic variables of students. |
|-----------|--------------------------|---|

1. **Field/ Experimental work giving full details of summary of methods adopted supported by necessary tables, charts, diagrams and photographs.**

Statement of the problem

“An experimental study to assess the efficacy of mnemonics , chunking in enhancing memory based on the preferred learning style of the students in educational institution of Honavar ,Uttara Kannada ”

Hypotheses

H₁: There is a significant difference in memory based on the preferred learning style among students before and after intervention.

H₂: There is a significant association of pre test memory based on the preferred learning style with selected demographic variables of students.

Research approach: Research approach used was Quantitative approach.

Research design: Research design adopted was pre-experimental one group pre test and post test design.

Variables

Dependent variable: Memory based on preferred learning style.

Independent variable: Training session using mnemonics and chunking.

Baseline variables: The baseline variables were age, sex, education of the father, education of the mother, occupation of the father, occupation of the mother, family income per month, religion, place of residence, favorite subject and favorite method of learning.

Setting: The study was conducted in Holy Rosary School, Honavar Taluk and Uttara Kannada District.

Target population: Target population for the study was students studying in 8th to 10th standard.

Accessible population: Accessible population for the study was students studying in 8th to 10th standard in Holy Rosary School, Honavar Taluk, Uttara Kannada District.

Sample: The sample for the study was the students who were studying in 8th to 10th standard in Holy Rosary School, Honavar Taluk and Uttara Kannada District and who fulfilled the inclusion and exclusion criteria

Sampling technique: The non probability convenience sampling technique was used.

Sample size: The sample size for the study was 100 students studying in 8th to 10th standard

Inclusion criteria

- Students who were studying in 8th to 10th Standard
- Boys and girls
- Students who were available at the time of data collection

Exclusion criteria

- The students who are diagnosed with physical disorder
- The students who were diagnosed with mental disorders

Instrument used

Section A: Proforma to collect baseline variables of students

Baseline variables were age, sex, education of the father, education of the mother, occupation of the father, occupation of the mother, family income per month, religion, place of residence, favorite subject and favorite method of learning.

Section B: Structured questionnaire to assess the preferred learning style

Structured questionnaire consists of 10 multiple choice questions regarding the preferred learning style. This tool was used to assess the preferred learning style of the students.

Section C: Structured questionnaire to assess the memory regarding cardiovascular system

Structured questionnaire consists of 20 multiple choice questions regarding structure and functions of cardiovascular system. Each question consists of a stem and 4 alternatives. In 4 alternatives 1 was correct response and other 3 were incorrect responses. The rating of the alternatives as follows, “Correct response = score of 1” and for “Incorrect response=score of 0”. The maximum score was 20 (20 questions x 1 =20). To interpret the score, the scores were classified and interpreted into 2 categories i.e., Poor memory (Scores between 0 – 10) and Good memory (Score between 11-20)

Validity and reliability of the tool

The content validity was obtained for the tool and training content from 5 mental health nursing experts. The reliability for the structured questionnaire to assess the memory based on preferred learning style was done using test and retest method, Karl Pearson’s correlation co-efficient and spearman prophecy formula and r value was “0.64”

Pilot study

The ethical clearance was obtained from institutional ethical committee. A formal permission was obtained from the Principal, St. Ignatius Institute of Health Sciences, Honavar and from Headmistress, Arogya Matha High School, Gundabala, Honavar Taluk. The study was conducted from 06.02.25 to 14.02.25. 10 students were selected using non probability convenience sampling technique based on inclusion and exclusion criteria. **Pretest:** The researcher introduced herself and explained about the study and its purpose. Written consent was obtained. Proforma was used to collect baseline variable, structured questionnaire with

10 MCQ was used to assess the preferred learning style and structured questionnaire with 20 MCQ was used to assess the memory. Tool was self administered. 15-30 minutes was taken to administer the tool. **Administration of intervention:** Students were trained to learn the structure and functions of cardiovascular system using mnemonics and chunking for 1 hour. **Post test:** Post test was done after 7 days of training session. Structured questionnaire with 20 MCQ was used to assess the memory after intervention. Tool was self administered. 15-25 minutes was taken to administer the tool.

Data collection Method for main study: The ethical clearance was obtained from institutional ethical committee. A formal permission was obtained from the Principal, St. Ignatius Institute of Health Sciences, Honavar and from Headmistress, Holy Rosary School, Honavar Taluk. The study was conducted from 21.02.25 to 01.03.25. 100 students were selected using non probability convenience sampling technique based on inclusion and exclusion criteria. **Pretest:** The researcher introduced herself and explained about the study and its purpose. Written consent was obtained. Proforma was used to collect baseline variable, structured questionnaire with 10 MCQ was used to assess the preferred learning style and structured questionnaire with 20 MCQ was used to assess the memory. Tool was self administered. 15-30 minutes was taken to administer the tool. **Administration of intervention:** Students were trained to learn the structure and functions of cardiovascular system using mnemonics and chunking for 1 hour. **Post test:** Post test was done after 7 days of training session. Structured questionnaire with 20 MCQ was used to assess the memory after intervention. Tool was self administered. 15-25 minutes was taken to administer the tool.

Data analysis plan

- The frequency and percentage was used to describe the baseline variables of students.

- The Frequency, percentage, mean, SD and Mean% was used to assess the memory of students before and after intervention.
- Paired t test was used to determine the efficacy of mnemonics, chunking in enhancing memory based on the preferred learning style among students before and after intervention.
- Chi Square was used to associate the pretest memory based on the preferred learning style with selected demographic variables of students.

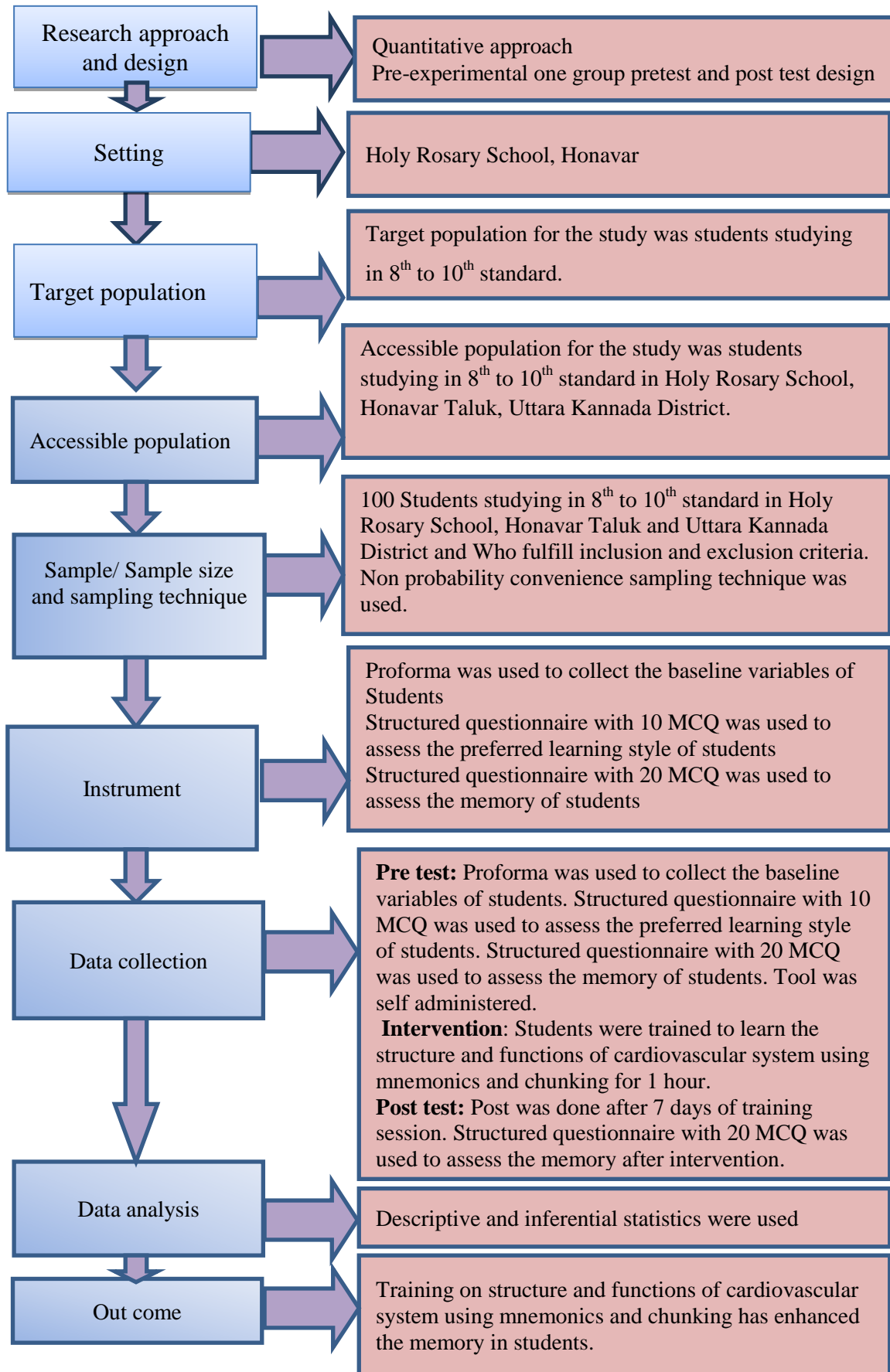


Figure 1: The research design of the study

2. **Detailed analysis of results:** This section deals with the analysis and interpretation of data collected to assess the efficacy of mnemonics , chunking in enhancing memory based on the preferred learning style of the student in educational institution of Honavar ,Uttara Kannada.

Presentation of data

Section1: Description of baseline variables of students.

Section 2: Description of memory based on the preferred learning style of students

Section3: Determining the efficacy of mnemonics, chunking in enhancing memory based on the preferred learning style among students before and after intervention

Section 4: Association of pretest memory based on the preferred learning style with selected demographic variables of students

Section 1: Description of baseline variables of the students

Table 1a: Frequency and percentage distribution of the baseline variables such as age, sex and education of father **n=100**

| S No | Baseline Variables | Frequency (f) | Percentage (%) |
|------|----------------------------|----------------|----------------|
| 1 | Age in years | | |
| | 13-14 years | 83 | 83 |
| | 15-16Years | 17 | 17 |
| 2 | Gender | | |
| | Boys | 54 | 54 |
| | Girls | 46 | 46 |
| 3 | Education of father | | |
| | No formal education | 2 | 2 |
| | Upto high School | 18 | 18 |
| | Pre university | 63 | 63 |
| | Graduate and above | 17 | 17 |

Table 1a indicates that 83 % of subjects belong to the age group of 13-14years. 54 % children are boys. 63% of subject's fathers studied upto pre- university

Table 1b: Frequency and percentage distribution of the baseline variables such as education of mother, occupation of father and occupation of mother **n=100**

| S No | Baseline Variables | Frequency (f) | Percentage (%) |
|-------------|-----------------------------|-----------------------|-----------------------|
| 1 | Education of mother | | |
| | No formal education | 8 | 8 |
| | Upto high School | 16 | 16 |
| | Pre university | 56 | 56 |
| | Graduate and above | 20 | 20 |
| 2 | Occupation of father | | |
| | Coolie worker | 26 | 26 |
| | Government employee | 11 | 11 |
| | Private employee | 25 | 25 |
| | Self employee | 38 | 38 |
| 3 | Occupation of mother | | |
| | Home maker | 61 | 61 |
| | Daily wages | 16 | 16 |
| | Government/ Employee | Private 14 | 14 |
| | Self Employee | 9 | 9 |

Table 1b indicates that 56 % of subject's mother studied upto Pre University. 38% subject's fathers are self employed and 61% subject's mothers are home makers

Table 1c: Frequency and percentage distribution of the baseline variables such as monthly income, religion and place of residence **n=100**

| S No | Baseline Variables | Frequency (f) | Percentage (%) |
|-------------|---------------------------|-----------------------|-----------------------|
| 1 | Monthly income | | |
| | Upto Rs.10000 | 42 | 42 |
| | Rs. 10001-15000 | 18 | 18 |
| | Rs. 15001-20000 | 27 | 27 |
| | Above 20000 | 13 | 13 |
| 2 | Religion | | |
| | Hindu | 41 | 41 |
| | Muslim | 19 | 19 |
| | Christian | 40 | 40 |
| 3 | Place of residence | | |
| | Rural | 68 | 68 |
| | Urban | 32 | 32 |

Table 1c indicates that 42% subject's monthly income is upto Rs. 10000. 41% subjects belong to Hindu religion and 68% are living in rural area.

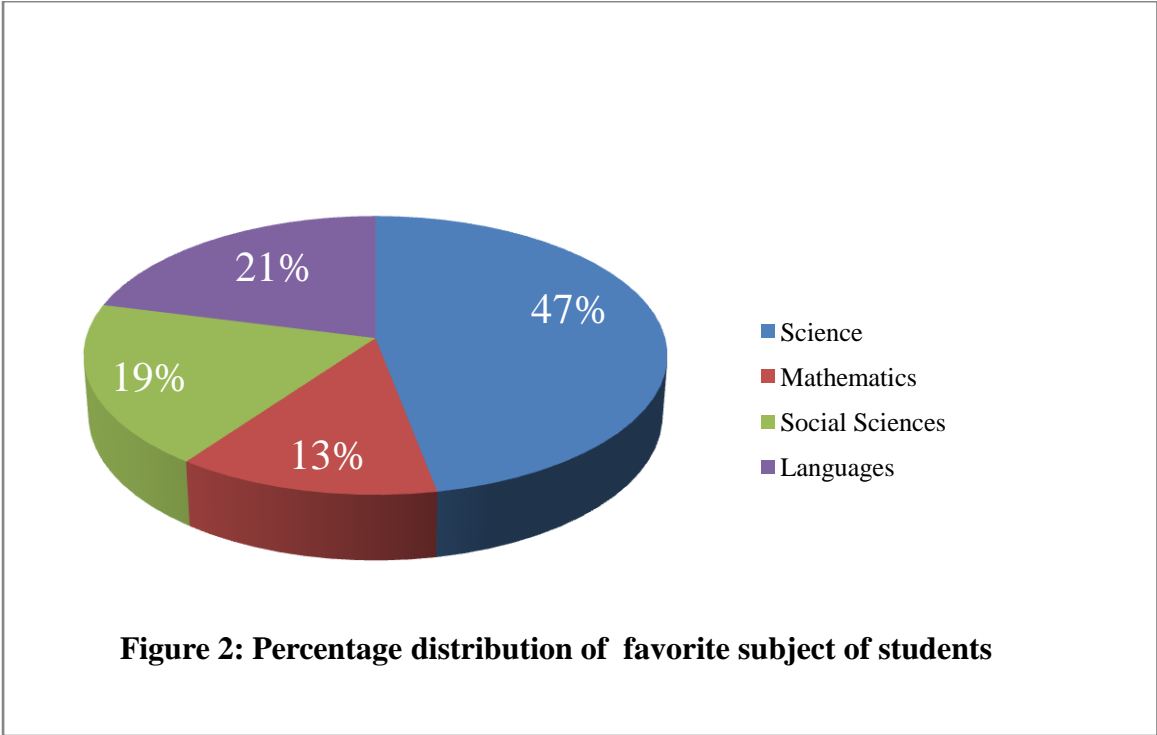


Figure 2 reveals that 47% of the subject's favorite subject is science

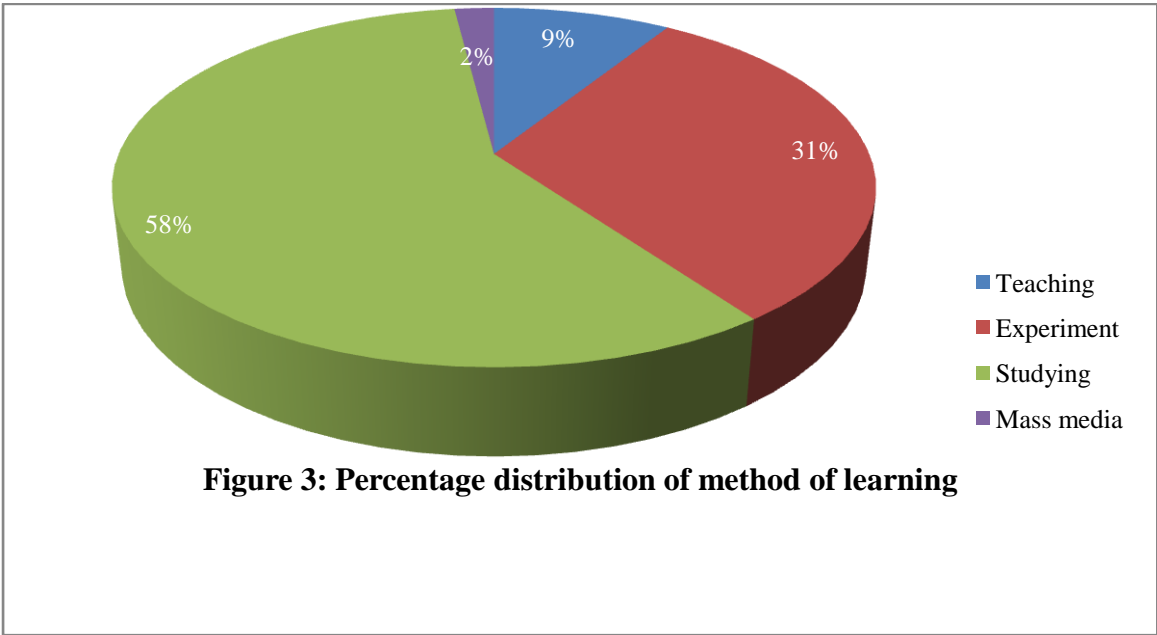


Figure 3 reveals that 58 % of the subject's method of learning is studying

Section 2: Description of memory based on the preferred learning style of students

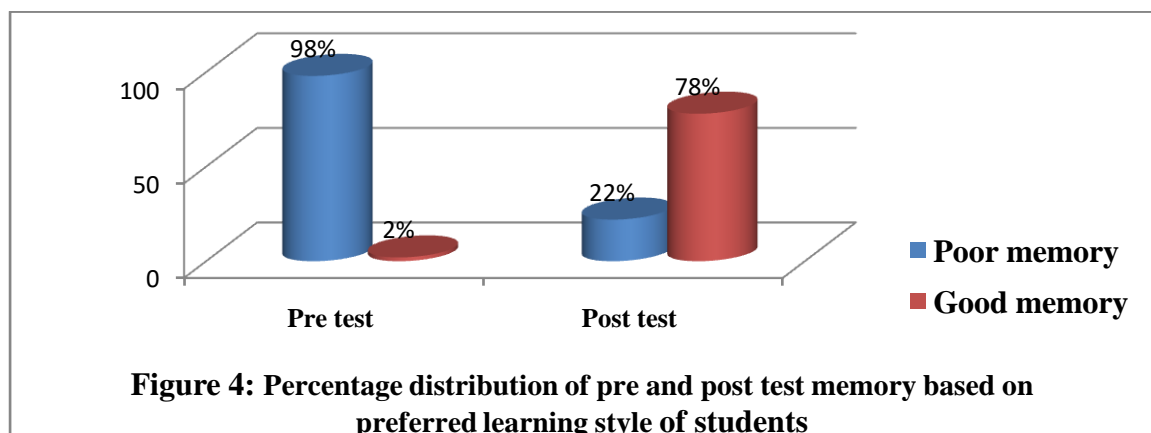


Figure 4 reveals that in pre test, 98% of students have poor memory and 2% of students have good memory. In post test 22% of students have poor memory and 78% of students have good memory.

Table 2a: Scale score, Range of score, Mean, Mean% and SD of pre and post test memory based on preferred learning style of students **n=100**

| Assessment | Scale score | Range of score | Mean | SD | Mean% | Mean% difference |
|------------|-------------|----------------|-------|------|-------|------------------|
| Pre test | 0-20 | 2-11 | 6.64 | 1.83 | 33.2 | 28 |
| Post test | 0-20 | 8-17 | 12.24 | 1.98 | 61.2 | |

Table 2a depicts that the pre test mean score \pm SD is 6.64 ± 1.83 with the range of score is 2-11, the mean% is 33.2% and the post test mean score \pm SD is 12.24 ± 1.98 with the range of score is 8-17, the mean% is 61.2%. The mean difference of pre and post test is 28%

Table 2b: Frequency and percentage distribution of preferred learning style of the students **n=100**

| Preferred learning style | Frequency | Percentage |
|--------------------------|-----------|------------|
| Visual | 27 | 27 |
| Aural | 24 | 24 |
| Read and Write | 27 | 27 |
| Kinesthetic | 22 | 22 |

Table 2b depicts that 27% subjects preferred visual learning, 27% preferred learning style of reading and writing, 24% preferred aural learning and 22% preferred kinesthetic style of learning

Section3: Determining the efficacy of mnemonics, chunking in enhancing memory based on the preferred learning style among students before and after intervention.

Table 3: Mean, SD and t value, df and table value to determining the efficacy of mnemonics, chunking in enhancing memory based on the preferred learning style among students before and after intervention. **n=100**

| Assessment | Mean | SD | t-value | df | Table value |
|------------|-------|------|---------------|----|-------------|
| Pre test | 6.64 | 1.83 | 35.97* | 99 | 1.66 |
| Post test | 12.24 | 1.98 | S | | |

***S: Significant at 0.05 level**

Table 3 depicts that there is a significant difference in memory based on the preferred learning style among students before and after intervention, since the pre test, mean score \pm SD is 6.64 ± 1.83 , post test mean score \pm SD is 12.24 ± 1.98 , t value is “35.97” which is more than the table value (1.66; df=99 at 0.05 level). Hence **H₁**: There is a significant difference in memory based on the preferred learning style among students before and after intervention is **accepted**

Section 4: Association of pretest memory based on the preferred learning style with selected demographic variables of students

Table 4a: Frequency, Chi Square value, df and table value to associate the pretest memory based on the preferred learning style with age, sex and family income. **n=100**

| Demographic Variable | Frequency | Score of memory based on the preferred learning style | | Chi Square value | df | Table value |
|----------------------------|-----------|---|---------------------|------------------|----|-------------|
| | | < Mean Score (6.64) | ≥ Mean Score (6.64) | | | |
| Age in Years | | | | | | |
| 13-14 years | 83 | 38 | 45 | 0.29 NS | 1 | 3.84 |
| 15-16Years | 17 | 9 | 8 | | | |
| Gender | | | | | | |
| Boys | 54 | 23 | 31 | 0.53 NS | 1 | 3.84 |
| Girls | 46 | 23 | 23 | | | |
| Family income/Month | | | | | | |
| Rs. 5000-10000 | 42 | 19 | 23 | 0.34 NS | 3 | 7.82 |
| Rs. 10001-15000 | 18 | 9 | 9 | | | |
| Rs. 15001-20000 | 27 | 13 | 14 | | | |
| Above Rs.20000 | 13 | 6 | 7 | | | |

***S: Significant at 0.05 level; NS: Not Significant**

Table 4a depicts that, there is no statistically significant association of pretest memory based on the preferred learning style with age and gender since the Chi-square value = “0.29”, “0.53” is less than table value (3.84; df 1: at 0.05 level) and there is no statistically significant association of pretest memory based on the preferred learning style with family income per month since the Chi-square value = “0.34” is less than table value (7.82; df 3: at 0.05 level)

Table 4b: Frequency, Chi Square value, df and table value to associate the pretest memory based on the preferred learning style with religion, place of residence and favorite subject.

n=100

| Demographic Variable | Frequency | Score of memory based on the preferred learning style | | Chi Square value | df | Table value |
|---------------------------|-----------|---|---------------------|------------------|----|-------------|
| | | < Mean Score (6.64) | ≥ Mean Score (6.64) | | | |
| Religion | | | | | | |
| Hindu | 41 | 16 | 25 | 48.3*S | 2 | 5.99 |
| Muslim | 19 | 11 | 8 | | | |
| Christian | 40 | 20 | 20 | | | |
| Place of residence | | | | | | |
| Rural | 68 | 31 | 37 | 0.169 NS | 1 | 3.84 |
| Urban | 32 | 16 | 16 | | | |
| Favorite Subject | | | | | | |
| Science | 47 | 23 | 24 | 2.031 NS | 3 | 7.82 |
| Mathematics | 13 | 5 | 8 | | | |
| Social Sciences | 19 | 7 | 12 | | | |
| Language | 21 | 12 | 9 | | | |

***S: Significant at 0.05 level; NS: Not Significant**

Table 4 depicts that, there is a statistically significant association of pretest memory based on the preferred learning style with religion since the Chi-square value = “48.3” is more than table value (5.99; df 2: at 0.05 level). **H₂**: There is a significant association of pretest memory based on the preferred learning style with selected demographic variables of students is

accepted. Association of memory with education and occupation of mother and father and favorite method learning could not be done since all the categories do not have frequency of 5

3. Contributions made towards increasing the state of knowledge in the subject

Nursing Education: The findings of the study

- Emphasises the need for using the mnemonics and chunking by the students while learning and teacher while teaching to enhance the memory.
- Enlighten the nursing educators regarding the use of mnemonics and chunking in enhancing the memory of the nursing students.
- Revealed that in pre test, the memory score was only 2%, where in post test it was increased to 78%, hence it emphasis the need for conducting the academic sessions about the use of mnemonics and chunking in enhancing memory in nursing students.
- Emphasises the need for preparing the nursing student to conduct training sessions about use of mnemonics and chunking in enhancing memory in school and college students.
- Even training session about use of mnemonics can be conducted for parents who have school and college students
- Emphasises the need for motivating the nursing students to prepare the written educational material regarding the use of mnemonics in enhancing memory and it can be circulated to school and college students

Nursing Administration: The findings of the study

- Emphasises the need for incorporating the perspective of using mnemonics in enhancing memory in nursing curriculum.
- Emphasises the need to take initiative in organising training session to all school and college teachers about use of Mnemonics in enhancing memory.

Nursing practice: The findings of the study

- Emphasises that school mental health nurse need to conduct the academic session to school and college students regarding the use of Mnemonics in enhancing memory.
- Emphasises that school mental health nurse need to prepare the written educational material regarding the use of mnemonics in enhancing memory and it can be circulated to school and college students.

Nursing practice: The findings of the study

- Enlightens the need to conduct more interventional studies in learners regarding enhancing the memory using the Mnemonics and other techniques to make education more fruitful.
- Pave the pathway for the nurse researcher to conduct the explorative studies to identify the factors contributing to poor memory in learners and its influence on academic performance.

4. Conclusions, summarizing the achievements and indication of scope for future work:

Conclusion, summarizing the achievements

The findings of the study revealed that in pre test, the memory score based on preferred learning style was only 2%, where in post test it was increased to 78% and the mean% difference in pre test and post test was 28%. The pre test mean score \pm SD was 6.64 ± 1.83 , post test mean score \pm SD was 12.24 ± 1.98 , t value was “35.97” which was more than the table value (2. 66; df=99 at 0.05 level) indicated that training session on using mnemonics and chunking to enhance memory based on preferred learning style was effective. By conducting this study the researcher identified that the most children have problem in storing the information while listening to class and during learning. The training session on use of mnemonics and chunking in teaching and learning was very effective in enhancing the memory in the students.

Indication of scope for future work

- The findings of the study pave the pathway for the nurse researcher to conduct the explorative studies to identify the factors contributing to poor memory in learners and its influence on academic performance.
- The future researcher also can focus on training the teachers regarding the use of mnemonics and chunking while teaching.
- Interventional studies in learners regarding enhancing the memory using the Mnemonics and other techniques can be conducted in public and private schools
- Interventional studies in learners regarding enhancing the memory using the Mnemonics and other techniques can be conducted in lower classes and higher classes.
- Interventional studies in learners regarding enhancing the memory using the Mnemonics and other techniques can be conducted in large setting using multistage sampling for better generalisation.


5. Abstract (300 words for possible publication in *RGUHS Journals/Other Journals*).


Introduction: Memory is a critical component of academic success. Mnemonics are techniques for improving memory. Indeed, a growing body of evidence suggests that the implementation of mnemonic strategies can have a profound impact on student learning and academic achievement. **Objective:** To determine the efficacy of mnemonics, chunking in enhancing memory based on the preferred learning style among students before and after the intervention. **Methodology:** Quantitative pre experimental one group pre test and post test design was used. 100 students studying in 8th to 10th standard were selected by using non probability convenience sampling technique. The study was conducted in Holy Rosary high School, Honavar Taluk. Written consent was obtained. Pretest was done using baseline

design was used. 100 students studying in 8th to 10th standard were selected by using non probability convenience sampling technique. The study was conducted in Holy Rosary high School, Honavar Taluk. Written consent was obtained. Pretest was done using baseline proforma, structured questionnaire with 10 MCQ to assess the preferred learning style and structured questionnaire with 20 MCQ to assess memory. Tool was self administered. Training session about structure and functions of cardio vascular system was conducted by using Mnemonics and chunking for 1 hour. The post test was done after 7 days using same tool. **Result:** The findings of the study revealed that in pre test, the memory score based on preferred learning style was only 2%, where in post test it was increased to 78% and mean% difference in pre test and post test was 28%. The pre test mean score \pm SD was 6.64 ± 1.83 , post test mean score \pm SD was 12.24 ± 1.98 , t value is "35.97" which was more than the table value (2.66; df=99 at 0.05 level) indicated that training session on using mnemonics and chunking to enhance memory based on preferred learning style was effective. **Conclusion:** The findings of the study concluded that the mnemonics and chunking techniques are effective in enhancing the memory.

Key Word: Mnemonics, Chunking, Memory, Preferred learning style

Name and signature with date

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