

# Quality Theory Paper Writing for Medical Examinations

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## ABSTRACT

**Aim & Objectives:** Developing a tactful paper writing skill, through delivery and depiction of the necessary expressions required for in standard or superior essay writing.

Understanding relevance and tact of theoretical expression in exam paper writing

Learning Indices of standard or quality theory/essay answer (SAQ/LAQ).

Applying knowledge and skill gained through these theory writing exercises and assignments to achieve high or better scores in examinations

**Methods and Materials:** The study subjects were divided into two groups- Group A (17 students) and Group B students (10 students). The students were selected from II M.B.B.S 4<sup>th</sup> term.

Students of Group A were sensitized on how to write a theory paper and went through 4 phases namely pre-sensitization test, sensitization (imparting them with skills of good theory paper writing through home assignments and deliberations/ guidance), post-sensitization test and Evaluation. Students of Group A (17 students) undertook theory tests (twice, i.e. before and after

sensitization) and Students of Group B (10 students) who were not sensitized and took the theory test with post-sensitized Group A students (random 10 students). Both groups were given general pathology as the test syllabus, taught to both groups in didactic lectures during the last 6 months. The results of pre and post-sensitization tests from both groups were analyzed. Intra group comparisons (pre-sensitized Group A with post-sensitized Group A) and inter-group comparisons (Non-sensitized group B with Sensitized Group A) were made.

**Results:** Significant results were found between results of pre and Post-sensitization tests in Group A (intra group analysis) and inter-group (Group A and B) Post-sensitization tests, as there was remarkable improvement in student theory paper writing skills post sensitizing the students of Group A.

**Conclusion:** Medical students should be mandatorily guided and exposed to the nuances and tact of writing the theory paper for their examinations, as it definitely gives them better understanding of presentations ultimately improving their score in the theory exams.

**Keywords:** Theory, Essay, Paper writing, Sensitization, Writing skills

## INTRODUCTION

Most undergraduate disciplines identify student mastery of writing skills and student mastery of cognitive skills as important goals, usually related to the specific content of the discipline [1-4]. Writing skills are specific abilities which help writers to put their thoughts into words in a meaningful form and to mentally interact with the message. Theoretical knowledge is a significant aspect of medical science teaching. Theoretical intellect is a valuable instrument to measure or assess the cognitive domain of the student or subject. Cognitive domain is the mother of all domains. From the cognitive domain arise the psychomotor and the affective domains. Without apt intelligence of the subject or specialty knowledge, it is imperative that the candidate can excel in skill or behavior.

Improvising on theoretical knowledge requires exceptional aptitude to study, memorize and express. The present study is all about managing the expressive quotient of the medical student. Irrespective of the amount of intelligence and memorizing capability within a candidate, art of expression and a writing presentation is of paramount importance and significance.

In medical curricula, expression of cognitive domain is through theory paper writing. In certain schools and colleges, besides evaluating the score achieved by the student for that essay paper, and then analyse the level of cognitive domain utilization of that candidate, there are other evaluation tools like, The Cognitive Level and Quality Writing Assessment (CLAQWA) [5] which is a 16-point

rubric, based on a 2-scale system, designed to evaluate both writing quality and cognitive levels. Professors can use the scale separately or in combination for writing assignments. The cognitive levels of the 2-point scale were derived from the work of Bloom [6].

The CLAQWA grouped the cognitive levels as follows: 1) knowledge, 2) comprehension, 3) application, and 4) analysis, synthesis, and evaluation. Both cognitive level and writing quality are evaluated on a 5-point continuum (Flateby TL and Metzger E) [7].

This particular study has been carried out not only to judge student intellect and their competency levels but also to assess the functioning of the cognitive aspect of their mind through their skill inputs in theory paper writing. It will help the students gain independence, comprehensibility, fluency and creativity in writing. The students will develop skill of expression and art of assimilating and dispensing knowledge through quality theory paper writing.

## AIM AND OBJECTIVES

### Aim

- Developing a tactful paper writing skill, through delivery and depiction of the necessary expressions required for in standard or superior essay writing.

### Objectives

- Understanding relevance and tact of theoretical expression in exam paper writing

- Learning Indices of standard or quality theory / essay answer (SAQ/LAQ).
- Applying knowledge and skill gained through these theory writing exercises and assignments to achieve high or better scores in examinations

## MATERIALS AND METHODS

This particular study was carried out on quality theory paper writing in the undergraduates at the department of Pathology, JNMC, DMIMS University, Wardha.

The 2011 batch of MBBS participated for the study.

The students were made aware that the syllabus for the present study is from the chapters of General pathology which was covered in their routine class schedule during their third term (July 2012 to Dec' 2012) as didactic lectures.

Total 27 students, divided into two groups-

Group A (17)

Group B (10)

## THE ENTIRE STUDY WAS CARRIED OUT IN FOUR PHASES (6 WEEKS)

- **Phase 1:** Randomly selected students distributed in Group A (17) were subjected to a *Pre-sensitization test*, which involves writing theory exam - Short Answers Questions (SAQ) and Long Answers Questions (LAQ) (4<sup>th</sup> week of February), on basis of knowledge acquired through conventional didactic lectures as mentioned above.
- **Phase 2:** The Group A (17) students are sensitized through discussion and guidance (1<sup>st</sup> & 2<sup>nd</sup> week of March), as well as through home assignments and tasks, which were subsequently critically reviewed and rectified (3<sup>rd</sup>, 4<sup>th</sup> week of March).
- **Phase 3:** The students of Group A, Post-sensitization were subjected to a Post-sensitization theory test, (same syllabus is utilized for framing the theory papers for Post-sensitization test)  
A second written theory exam was carried out involving the sensitized Group A and a new randomly selected group of Non-sensitized students, known as Group B in the 1<sup>st</sup> week of April. Both group A and B students were aware of the syllabus for the theory exam.
- **Phase 4:** The Pre and Post-sensitization theory papers have been set (3<sup>rd</sup> week of February) and evaluated by the same examiner, (single blinded for the study).
- Evaluation involved three set of papers, namely theory paper of Group A (Pre-sensitization), Theory paper of Group A (Post-sensitization) and Theory paper of Group B (Non-sensitized). Parallels were drawn between Group A pre and post sensitized (intra group test results) and Group A-sensitized and Group B -Non-sensitized (inter-group analysis).
- Results were then tabulated and analysis was done using the "t" paired and unpaired tests for intra-group and inter-group analysis respectively.
- Pre-sensitized Group A (17) and Post-sensitized Group A (17) (t test paired)
- Non-sensitized Group B (10) and Post-sensitized Group A (10 random students) (t test unpaired), By 2<sup>nd</sup> week of April
- Data analysis was carried out in 3<sup>rd</sup> & 4<sup>th</sup> week of April.

Performance was evaluated and conclusions drawn based on the scores achieved by the students from the pre and Post-sensitization theory tests.

Statistical Analysis is based on of pre and Post-sensitization scores, by application of Student paired as well as unpaired 't' test, level of significance was evaluated through p-value.

## OBSERVATIONS AND RESULTS

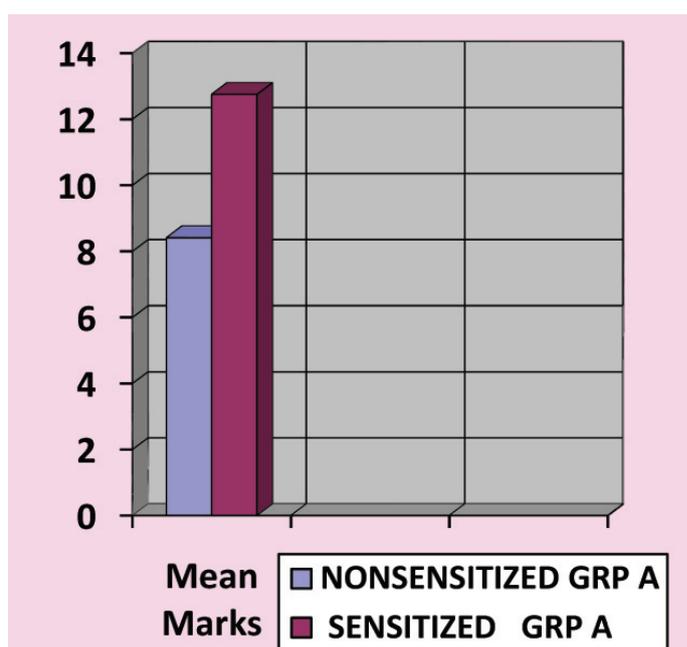
Serial No.	Pre Sensitized Group A (total 17 students)	Post-sensitized Group A (total 17 students)
1	9	15
2	9	12
3	9.5	10
4	8	16
5	12	14
6	6.5	11
7	8	12
8	9	9
9	8	15
10	8	13
11	7	17
12	8	12
13	7	16
14	9	9
15	8	9
16	9	14
17	8	17

[Table/Fig-1]: Depicting marks of pre-sensitized Group A and post-sensitized Group A

In [Table/Fig-1-3] Intra group Comparisons were made between Pre-sensitized Group A (17) and Post-sensitized Group A (17) , paired t test was applied.

Parameters	Pre-sensitization Group A	Post-sensitization Group A
Mean	8.412	12.750
SD	1.240	2.671
SEM	0.301	0.668
N	17	16

[Table/Fig-2]: Paired t-test results between pre-sensitized Group A (17) and Post-sensitized Group A



[Table/Fig-3]: Depicting intra group analysis of results of non sensitized Group A and sensitized Group A

**Intermediate values used in calculations:**  $t = 5.4744$

$df = 16$

standard error of difference = 0.788

**Confidence interval:**

Difference between mean score of pre and Post-sensitization group -4.313

95% confidence interval of this difference: From -5.992 to -2.633

p-value and statistical significance:

The two-tailed p-value is less than 0.0001

By conventional criteria, this difference is considered to be extremely statistically significant

Serial No.	Non Sensitized Group B (total 10 students)	Post Sensitized Group A (total 10 students)
1	8	15
2	6	16
3	8	14
4	8	15
5	9	13
6	12	17
7	5	12
8	9	16
9	6	14
10	11	17

**[Table/Fig-4]:** Marks achieved by non-sensitized Group B and post-sensitized Group A

In [Table/Fig-4-6] Inter-group Comparisons were made between – Non-sensitized Group B (10) and Sensitized Group A (10), unpaired t-test was applied

Group	Non Sensitized Group B	Post Sensitized Group A
Mean	8.20	14.67
SD	2.20	1.58
SEM	0.70	0.53
N	10	9

**[Table/Fig-5]:** Unpaired "T" test results between non-sensitized Group B and post-sensitized Group A

**Intermediate values used in calculations:**

$t = 7.2765$

$df = 18$

standard error of difference = 0.889

**Confidence interval:**

The mean of Group One minus Group Two equals -6.47

95% confidence interval of this difference: From -8.34 to -4.59

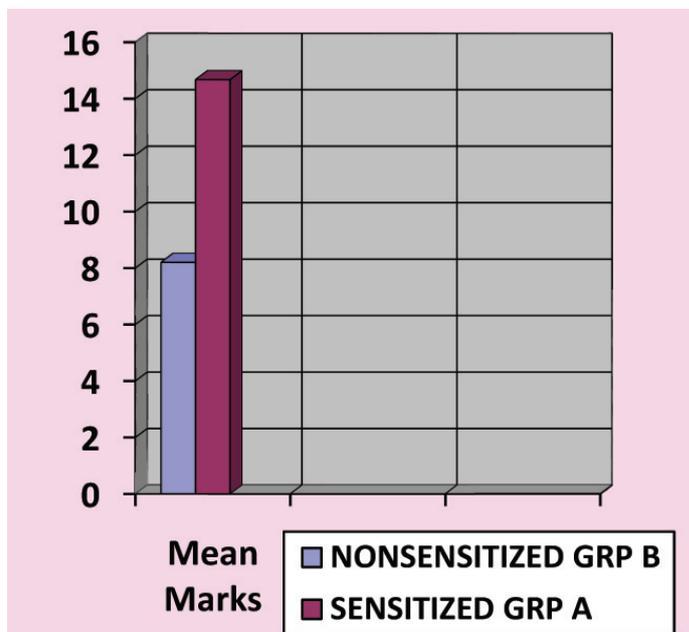
**p-value and statistical significance:**

The two-tailed p-value is less than 0.0001

By conventional criteria, this difference is considered to be statistically significant.

## DISCUSSION

This particular study was carried out on quality theory paper writing in the undergraduates at the department of Pathology, JNMC, DMIMS University, Wardha, India. The 2011 batch of MBBS participated for the study. Total 27 students, divided into two Groups-A (17 students), B (10 students). Sensitization for writing a good theory paper was carried out on Group A. Another Group B which was Non-sensitized for the same, these students



**[Table/Fig-6]:** Depicting inter-group analysis of results of non-sensitized Group B and sensitized Group A

were then made to give a theory test paper with sensitized group A students.

Sensitization towards, writing a quality theory paper was carried out for Group A. Sensitization and practice of good theory paper writing was carried out in accordance with Chickering AW and Gamson ZF, principles for good practice in undergraduate education, which they had implemented in various American centers of higher education [8].

## QUALITY THEORY PAPER FOR THE PRESENT STUDY INVOLVES

- An immaculate presentation of an answer.
- Specific yet thorough intellectual outputs.
- Expression of knowledge (subject and Language based) to its best.
- Importance of an attractive and legible handwriting.
- Terminology and technical writing avoiding colloquial language
- Drawing attractive sketch/diagrams.
- Spacing constraints and well distributed (paragraphed) phrases and sentences.
- Using highlights and bold as and when required.
- Demarcation and heading based writing format.
- Adequate words to penned, (not too much or too less).
- Using tables, flow diagrams, charts where ever applicable.
- Time management.

Tests and exams often play a significant role in the overall assessment of students' learning and thereof emanating cognitive evaluation. Therefore, as instructors, it is essential that we pay particular attention to the manner in which we construct the question papers. A student has to understand that writing a theory exam is not only a test of passing, but also a significant opportunity to express the best of his skills and knowledge on that subject, also an art in presenting and writing a theory paper, with simple yet technical terminologies keeping in mind the nuances of English language and grammar.

Test paper format set by the teacher in the present study both during a Pre-sensitization test and Post-sensitization test was in accordance of the norms and methodologies as set by Anderson LW and Krathwohl DR, and mentioned in Taxonomy of Learning, Teaching and Assessing [9].

In the present study, the teachers made the undergraduates to incorporate certain good practices to enhance the quality of the written theoretical material in an exam paper, the writing plan was adapted based on strategies laid out by Friend R, mentioned in strategy instruction on summary writing for college students in contemporary educational psychology. Following are in concise the strategies and format employed by the undergraduates of this study [10].

## STRATEGIES FOR GOOD QUALITY PAPER WRITING [10]

- Understand the question.
- Plan out the answer before start writing.
- Convey the view point and thoughts in an organized manner.
- Use relevant technical terminology to answer the question.
- Making a drawing can often assist you in your answer.
- Support the answer with evidence and/or examples from class lectures and reading.

## MISTAKES THAT THE STUDENT SHOULD ALWAYS AVOID

- Do not write a lengthy paper.
- Do not write a good answer to the wrong question.
- Do not expect the instructor to figure out what is meant to by the candidate.

Rosa A and Eschholz P, and Lunsford AA, [11,12] mentioned extremely significant and important advice on writing short as well as long essay answers respectively, these suggestions were incorporated by teachers in the present study and the same were conveyed and taught to the students to incorporate when they wrote the short as well as long essays.

These suggestions are center staged on

- Grammar and comprehension – English language based.
- Analysis of hand writing and art of presentation.
- Utilization of models and strategies to improve writing presentations, diagrams, charts.
- Utilizing larger comprehensive daily practices to habituate oneself in expression.

The present study found similar improvement in candidates Post-sensitization, in their theory performance, at expression of better language and grammatical rubric command as in studies shown by Jacob S, and Shuman RB, [13,14].

The present study adapted the hand writing expressive strategies as that of Hillocks G, and Sanders et al and came to an important conclusion of observing a practically significant or remarkable improvement of scores in the undergraduate Post-sensitization tests, when hurdle in interpretation of hand writing were eliminated through healthy prescribed practices [15].

Strategies adapted by Cross KP, which were research based were emphasized to the undergraduate students in the present study as well and this remarkably helped the students to form a scientific approach to an answer and widened their avenues in formulating an essay [1].

Most significantly it was repeated exposure to short test and exams which helped the student assess oneself on important areas of theory paper writing as in language comprehension, description, examination patterns, time management, this particular strategy was devised on the basis of the studies and findings of Cazort et al., [16].

Ultimately, the observations made on basis of result in the present study have shown a dramatic improvement in the theory based cognitive domain of the target students and has helped them improve in Quality theory Paper writing.

## SUMMARY AND CONCLUSION

Good or quality essay or theory paper writing depends on how much a student utilizes his or her skills, knowledge and artistic presentation. The ultimate outcome of a perfect essay paper depends on his ability to create or reproduce the knowledge through expression of good language and legible appreciable hand writing, well placed presentation, diagrams charts and a perfect use of terminologies.

This study was a significant attempt in making the world of medical education aware of the importance of putting science into words, through theory or essay writing. The undergraduate students when exposed to the critical nuances, strategies and tact of theory paper writing showed a dramatic improvement in their writing skills, making them realize that what matters is not memorizing but expression of thought in a scientifically channelized way.

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