

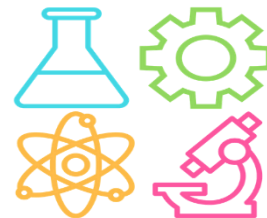


Colegio de la Inmaculada Concepcion

A del Rosario, cor. CD Seno Streets, Tipolo, Mandaue City
Member: Daughters of Charity-St. Louise de Marillac Educational System (DC-SLMES)

JUNIOR HIGH SCHOOL – SCIENCE DEPARTMENT

School Year 2017 – 2018



A PRIMER ON SCIENCE INVESTIGATORY PROJECT PAPER

What is a Science Investigatory Project?

- is a type of research about a scientific problem that requires thorough investigation
- a problem-solving process using the scientific method and basic science process skills
- a research study in nature wherein it is:
 - *searching for theory, testing of a theory or solving a problem
 - *systematic because it follows certain steps or stages

What are the goals of making an IP?

- Stimulate interest in Science
- Provide educational opportunities
- Share what you have learned to discuss a certain topic.
- Application of concepts learned
- Application of scientific method

LANGUAGE AND STYLE

1. The language expression of a research report is distinctly scientific.
2. Simplicity, conciseness and straightforwardness are main characteristics of scientific writing.
3. There is also a need for consistency in the terms used and in the form of expression.
4. There must be continuity from chapter to chapter & from section to section.
5. The language and style should reflect the accurate rules in grammar, correct spelling & correct punctuation. Passive voice of the verb should be used.
6. The first person is not used in order that the style does not become personal. The words, I, MY, ME & MINE should be avoided.
7. Description of methodology should be in the PAST (except in the proposal). Regarding numbers that begin a sentence, these numbers should always be written as words. In the middle of sentences numbers under 10 should be spelled out as words but 10 above should be written as number.

ETHICS STATEMENT

Scientific fraud and misconduct are not condoned at any level of research or competition. **Plagiarism**, use or presentation of other researcher's work as one's own, forgery of approval signature and fabrication or falsification of data will not be tolerated. **FRAUDULENT PROJECTS will NOT BE ACCEPTED** and is **SUBJECT TO DISCIPLINARY SANCTIONS.**



WRITING THE SCIENCE INVESTIGATORY PROJECT PAPER

Generally, the investigatory report should be typeset in **paragraph form, double-spaced** on 8.5" x 11" size bond paper and using a common word processing program (**12 font size** of the content, **Arial** font style or **Times New Roman** and **justified**). Must be placed on a green short size folder with fastener. Note the following parts of an organized investigatory report:

i. TITLE PAGE

- it is patterned from the question, however it must contain only the essential words
- title of the project must be brief, simple and formal.

It must contain the following information:

- ✓ Name of the school (including address)
- ✓ Title of the Investigatory Project (UPPER CASE, **bold**, centered)
- ✓ Name of the researchers (last name, first name, middle initial)
- ✓ Grade Level and Section
- ✓ Name of the teacher

Note: See attached sample Title Page on page 10.

ii. APPROVAL SHEET

-shows the names of the researchers, panel of examiners with their approval and rating of the research paper after oral defense.

Note: See attached sample Approval Sheet on page 11.

iii. ACKNOWLEDGEMENT

-contains the names of people & agencies that helped in the conduct of the work described.

Note: See attached sample Acknowledgement on page 12.

iv. DEDICATION

-contains the names of people & agencies whom you dedicate your output to.

Note: See attached sample Dedication on page 13.

v. ABSTRACT

-should consist of short, concise descriptions of the problem & its solution. It must be one page only, single-spaced (with a maximum of 250 words), typewritten in Times New Roman style; font size 12.

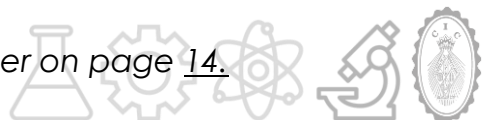
Sometimes judges do not have time to study all the details of your work, they only read the abstract, and thus it's called the SHOW WINDOW of your project.

It must also state the following: **Purpose, Procedure used, Results, Conclusion**

vi. TABLE OF CONTENTS

-lists the different parts of the whole report with the corresponding page number of each part. The wording & grammar of the chapter titles, heading & title of tables & figures should be consistent.

Note: See attached order of the parts of an Investigatory Paper on page 14.



CHAPTER I – INTRODUCTION

-informs the reader of the problem under study. It shows the nature of scope and the problem, its historical & theoretical background & a review of literature relevant to the problem.

Writing the Introduction

State clearly and concisely as possible the objectives of the research paper. These objectives may be preceded by few statements introducing the subjects. Keep the introduction brief, proportional to the length of the body.

A. Background of the Study

-informs the reader about the rationale of the study or why the investigation was undertaken. It explains briefly why the investigator chose this study to work on. It has a brief explanation on what the research is about, the problems sought by the investigator.

Rationale or the underlying principle should answer the following questions:

- ✓ How did you arrive at that kind of problem?
- ✓ Why do you like to investigate that kind of problem where in fact there are hundreds of problems out there?

B. Statement of the Problem

-it is stated as a question/scientific inquiry

-the nature & scope of the problem should be presented with clarity

-explain what possible scientific questions you would like to answer from the chosen topic or title. It also includes the sub problems. Write at least three main problems.

What are the characteristics of a good problem?

- ✓ It should be of great interest to you.
- ✓ It should have practical value to you.
- ✓ It should not be over researched.
- ✓ It should be within your experience.
- ✓ It can be finished within an allotted time.
- ✓ It should not carry legal or moral impediments

C. Hypothesis

-tentative answer to your given statement of the problem

Has three types:

1. Null Hypothesis (H_0) -proposes no statistical significant differences exists in a set of given observation
2. Alternative Hypothesis (H_1)-contrary to the null hypothesis, this hypothesis takes observations as a result of a real effect.
3. If and Then (to be used in our IP)

D. Significance of the Study

-explains the importance of the study to the people, society or community. Describes what the research can contribute to the general community.

E. Scope and Limitation

-states the coverage & extent of the study; states the parameters of what the project can and cannot explain or discuss



F. Definition of Terms

Has two types:

Conceptual-definitions which are indicated in dictionaries

Operational-definitions based on how the words were used in the study (to be used in our Investigatory Project)

CHAPTER II – REVIEW OF RELATED LITERATURE

-sufficient background information should be presented for readers to understand & evaluate the results of the present study. Only the most important studies and theories written on the topic should be included.

“This contains findings of other studies or investigations similar as yours.”

CHAPTER III – METHODOLOGY

-provides enough details so that a competent worker can repeat the experiments.

Materials/Equipment

-the exact technical specifications, quantities and source of method of preparation for all materials used should be given. Specifically built equipment used in the study must be described and the description accompanied by a picture.

“What are the things you need in solving your problem?”

Procedures

-explain in details the things you did to solve the problem. The proposal procedure is your guide in making this portion.

“What are the orderly steps you are going to do to solve your problem?”

“How are you going to present the data that you will gather? Will it be through graphs or tables?”

CHAPTER IV – RESULTS AND DISCUSSIONS

- this maybe divided into sub-sections describing each set of experiment or observations.

Findings -the data maybe presented in full & discussed descriptively in the text or these maybe summarized in tables, pictures & graphs. Tables, pictures & graphs should make the presentation of the data more meaningful.

Analysis of Data -the interpretation of the findings are discussed & the significant features shown in the table figures or graphs are pointed out.

“This shows the data you have gathered arranged or presented in tables or graphs. The data must already speak of the whole thing (general). You must discuss too the results. What do those data mean?”



CHAPTER V – SUMMARY, CONCLUSIONS AND RECOMMENDATIONS

Summary - briefly explains how the data are related to the findings of the research.

Conclusions - the general truth implied or illustrated by the results should be clearly stated. The evidence based on the results should be summarized for each statement.

“This briefly states the immediate answer/findings about the problem.”

Recommendations - consists of suggestions on future actions such as a new direction of research or further experiments to be performed, practices that might be adapted or discarded in order to attain certain goals or objectives

“If others would be doing your project, what would you advise them?”

BIBLIOGRAPHY

- a list of the references used in guiding the research work and writing and paper.

Guidelines in Preparing Bibliographies:

1. Separate these 3 parts (and any additional items of information) with periods followed by two spaces.
2. Give the author's last name first followed by the authors' first name.
3. For more than 3 authors, list only the first (author's last name only), followed by “et al.”
4. Always include the **authors' name, complete title of the book** and the **complete publication information**.
5. Indicate an editor or compiler by the abbreviation ed. or comp. or eds. / comps. If there is more than one.
6. In the publication information for books, you may use the shortened form of publisher's names. give the name of the city. Add the state or country only if the city alone would not be familiar to the readers.
7. In publication dates, for periodicals, abbreviate the names of all months except May, June and July. Put the dates in parentheses for periodicals with continuous pagination.
8. Include page numbers for a periodical article. A work that is part of an anthology or collection, or an introduction, preface, foreword or after word do not use p or pp.

Examples:

Book

Ronan, C.A. (1993). *Science Explained*. London, UK: Marshall Editions Development, Ltd.

Internet

Klein, Joel. (2008). *Kawasaki Disease*. Retrieved from <http://kidshealth.org/parent/medical/heart/Kawasaki.html>.



APPENDICES

-additional texts or materials that support the write-up of the research.

Documentations – pictures as evidences on how you made your investigations including the materials needed, procedures and the finish product. Attach also the approved topic proposal, letters if there any.

CURRICULUM VITAE

- describes the personal and background information of the researchers or investigators.

Note: See attached sample format of Curriculum Vitae on page 17.

PHASES OF CONDUCTING AN INVESTIGATORY PROJECT

✓ **PHASE I: THE PROPOSAL (20 points)**

The proposal is a detailed written plan of how the project will be done. It is like designing an experiment. Since it is yet to be done, the future tense of the verb is used.

BEGINNING AN INVESTIGATORY PROJECT

How do you start an investigatory project? An investigatory project begins with a topic proposal which is approved by the Science Teacher. The topic proposal allows the researchers to go over the important details needed to make the project successful. The following is a guide on how to prepare a topic proposal:

I. Proposed Topic

What specific ideas or suggestions do I want to show or explain in my project?

II. Statement of the Problem

- ✓ What do I want to address?
- ✓ What questions do I want to answer?

III. Background of the Problem

- ✓ What is the significance or relevance of this study?
- ✓ Who else has worked on this or something similar to this?
- ✓ What methods were used to obtain the results?
- ✓ What were the results or conclusions of the previous studies?

IV. Hypotheses

- ✓ What are the possible answers of my science proposal?

V. Research Design

- ✓ What are the materials I need to conduct this project?
- ✓ What are the step-by-step procedure I need to follow to arrive at my conclusion
- ✓ How will you present and interpret my results



Remember that the proposal is not a fixed design that you should strictly follow. It only serves as a guide on how you can go about your research and to monitor the progress of your work. The proposal can also indicate errors or weak points in your research. This can help you save time, effort and resources.

The following is an example to the creation of a Project Proposal.

PROJECT PROPOSAL

Submitted by: _____ **Grade and Section:** _____ **Date:** _____

_____ **Group No.** _____ **IP Adviser:** _____
_____ **Remarks:** _____

Observations: Karen noticed some small circular plastic containers with charcoal in the lockers of her teammates. Her teammates said that those are used to remove bad odor in the locker room. When Karen got home, she researched on the contents of these so called – “odor removers”. She found out that activated carbon when can be used to absorb bad odor. Karen remembered that charcoal is a form of carbon.

Proposed Topic: Charcoal as Odor Remover in Locker Rooms

Statement of the Problem: This study would like to know the effectiveness of the Carbon in removing bad odor in the locker rooms. Specifically, the researchers would like to answer the following problems:

1. How does activated Carbon remove bad odor in the locker room?
2. What is in the Carbon that helps remove the bad odor in the locker room?

Background of the Problem: Often times locker rooms are invaded by offensive perspiration, body, foot, smoke, bacterial, fungal, mold, and mildew odors. Unfortunately, most ventilation systems only recirculate room air and remove large particulate matter such as dirt, dust, and lint. Pungent locker room odors are left free to recirculate in the air you breathe and could increase in concentration if left untreated. Covering up nasty locker room odors with masking agents like perfumes pollute the air with chemicals and often times result in even more offensive smells.

Charcoal was specially developed to adsorb, neutralize, and encapsulate many pungent locker room odors on contact. The use of charcoal will truly cleanse the air of offensive odors, complement existing ventilation systems and result in a fresh smelling environment. This will help create a healthy, chemical free atmosphere that will be appreciated by employees and students.

Hypothesis: If Carbon has been known to absorb odor, then, it can be used as a cheap substitute to remove bad odor in the locker room.

Research Design:

- A. Materials: 3 bags of Charcoal, mortar and pestle, water,
- B. Procedures (state the steps on how to use the materials needed)

Aside from the proposed topic presented previously in the Project Proposal, the following format may also help and guide you in the creation of your Topic Proposal. Samples for each column are provided to serve as your guide.



THE TOPIC PROPOSAL

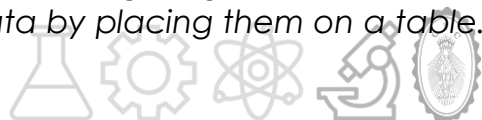
Research Problem	Background of the Research Problem	Reasons for wanting to do the study

SOME EXAMPLES FOR TOPIC PROPOSALS

Research Problem	Background of the Research Problem	Reasons for wanting to do the study
1. How does charcoal affect the germination of a seed plant?	Germination is the process by which a plant grows from a seed. In an addition of a charcoal, it will help the plants on its seed germinating ability and seedling development.	<ul style="list-style-type: none"> • To know what is in the charcoal that affects the growth of a seed
2. How effective is tamarind leaves as jelly compared to commercialized jellies?	Jellies are one of the most favorite fruit spread made from sweetened fruit juice and is set using its naturally occurring pectin. With this project we want to try using leaves of a Tamarind in making jelly.	<ul style="list-style-type: none"> • To compare our Tamarind jelly with the commercialized ones • To know how it taste like
3. How effective and efficient is the fuel made from Mahogany oil extract?	What most people do not know is that Mahogany can be a good substitute of charcoal and firewood, much more a fuel as well. In this study we will use its oil extract used as fuel in order people can save more financially.	<ul style="list-style-type: none"> • To know the effectiveness of mahogany as fuel • To know its limitations as fuel • To help people save

✓ **PHASE II: THE INVESTIGATION (20 points)**

As soon as your proposal is approved you can now start investigating. Your procedure will be your guide. Keep track of all your observations and data by placing them on a table. Document also your works by photographs, videos, etc.



✓ **PHASE III: THE OUTPUT (60 points)**

After conducting the investigation you are now ready to organize your gathered data and present your findings. The output has three levels:

1. THE WRITTEN REPORT (100 points)

A recall of all the things you did to solve your problem. The mode of the verb is in the past tense.

2. THE EXHIBIT (to Grade Ten students only)

It is a showcase of your IP mounted on a board. It must attract viewers so that they may get interested to your IP.

3. THE ORAL DEFENSE (100 points)

You will present your work to a panel of judges and they will ask you questions about your project.

TIMETABLE OF ACTIVITIES:

TASKS	TARGET DATE	TEACHER'S DEADLINE
1. Submission of Project Proposal		
2. Submission of Chapter 1		
3. Submission of Chapter 2		
4. Submission of Chapter 3		
5. Investigation Period	ASAP	
6. Submission of Chapter 4		
7. Submission of Chapter 5		
8. Abstract, Table of Contents, Acknowledgement, Bibliography		
9. Oral Defense		

The documents as follows herein are sample formats prescribed in writing your Science Investigatory Project.

- Title Page
- Approval Sheet
- Acknowledgements
- Dedication
- Table of Contents
- Chapter Title Page
- Curriculum Vitae



Sample Title Page

**THE EFFECTIVENESS OF ALOE VERA (*Aloe barbadensis*) AS AN ADDITIVE COMPONENT
TO HAIR GEL
S.Y. 2017 – 2018**

**An Investigatory Project
presented to the
Faculty of the Basic Education Department of
Colegio de la Inmaculada Concepcion
Tipolo, Mandaue City**

**In Partial Fulfillment of the Requirements in
Science and Technology 9**

Presented by:

**Baga , Hannah Lei R.
Go , Joseph Anthony T.
Paylado , Rabi V.
Soliano , Kyla B.
Turbiso , Jolly Anne A.
9 – Love Researchers**

Presented to:

**MR. JOHN VINCENT M. TANIOLA
Science Teacher**



APPROVAL SHEET

This investigatory project entitled **THE EFFECTIVENESS OF ALOE VERA (*Aloe barbadensis*) AS AN ADDITIVE COMPONENT TO HAIR GEL** prepared and submitted by **HANNAH LEI R. BAGA, JOSEPH ANTHONY T. GO, RABI V. PAYLADO, KYLA B. SOLIANO AND JOLLY ANNE A. TURBISO** in partial fulfillment of the requirements for **Science and Technology 9** has been examined and recommended for acceptance and approval for Oral Examination.

COMMITTEE

JOHN VINCENT M. TANIOLA, LPT
Adviser

MARVIN EARL O. RABINO, LPT
Member

PANEL OF EXAMINERS

Approved by the Committee on Oral Examination with a grade of **PASSED**.

ROSELA M. PALOMAR
Member

MARVIN EARL O. RABINO
Member

ROARIE MAE T. NAHOMAN
Member

JOHN VINCENT M. TANIOLA
Adviser

Accepted and approved in partial fulfillment of the requirements for Science and Technology 9.

Oral Defense : PASSED
Date of Oral Examination : February 27, 2017

JOHN VINCENT M. TANIOLA, LPT
Chairman



Sample Acknowledgement Sheet

ACKNOWLEDGEMENT

The researchers would like to express their sincerest gratitude to the following who have helped in the completion of this study:

Mr. John Vincent M. Taniola, their Class and Science Adviser for the input, insights and encouragement;

Their parents, who were always there supporting them;

Grade 9-Love Family, for the undying support and trusting them all the way with their study;

Lastly, to the ever-loving God, for His unconditional love and mercy and the Blessed Mother Mary for her love, utmost guidance and protection.

H.L.R.B.

J.A.T.G.

R.V.P.

K.B.S.

J.A.A.T.



DEDICATION

*To our ever-loving God, Father Almighty,
giver of life and source of all wisdom;
to our beloved Blessed Mother, Mary Most Holy,
guide and inspiration;
teachers and adviser;
family and friends,
our sincerest gratitude and thanks.*



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CHAPTER I

INTRODUCTION



CHAPTER I
INTRODUCTION

A. BACKGROUND OF THE STUDY

B. STATEMENT OF THE PROBLEM



2x2 Formal Picture

JOLLY ANNE ALFEREZ TURBISO
Pueblo El Grande, Tayud, Consolacion, Cebu
E-mail: jollyanneturbiso@yahoo.com
Contact No.: (032) 263-0329

PERSONAL INFORMATION

Nickname : **Jolly**
Date of Birth : **July 15, 2000**
Place of Birth : **Cebu City**
Age : **15**
Gender : **Female**
Nationality : **Filipino**
Religion : **Roman Catholic**

FAMILY BACKGROUND

Name of Father :
Occupation :
Name of Mother :
Occupation :

EDUCATIONAL BACKGROUND

Elementary : **(Name of School)** **(Inclusive Years)**
Secondary :

Honors Received/ Awards Received:



Cited Sources:

<http://www.geocities.com/egf94/2ndlongtest/ip.html>

<http://www.freesciencefairproject.com/requirements.htm>

<http://www.dost.gov.ph>

Research Methods (Revised Edition) by Consuelo Sevilla et. al. Rex Publishing House
Science Investigatory Project Samples lifted out from previous school years

Collated by:

MR. JOHN VINCENT M. TANIOLA • MR. MARVIN EARL O. RABINO •

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