

A Reference Book on  
**KEYWORD SEQUENCE  
IMPORTANCE (KSI)**

**A NOVEL METHOD FOR SCIENTIFIC WRITING**



Publication

Thesis



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**A Reference Book on Keyword  
Sequence Importance (KSI):**  
A Novel Method for Scientific Writing

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*“The method of science is logical and rational; the method of the humanities is one of imagination, sympathetic understanding, indwelling.”* Andrew Louth

To begin, I would like to thank the authors for dedicating a significant amount of their time and effort into the production of this excellent book on scientific writing. It is my great pleasure to congratulate Associate Professor Dr. Md. Kamal Uddin and other editors and contributors for introducing a novel method for scientific writing and its application to writing thesis and articles.

This book is an inspirational resource for thesis writing, research, and publication based on the method called “Keyword, Sequence, and Importance (KSI) technique”-a methods considered as logical, simple, and easy to understand. This method guides researchers in producing high-quality research and publications within short time. The idea of KSI technique was basically initiated by Assoc. Prof. Dr. Md. Kamal Uddin, three years ago, here at the Universiti Putra Malaysia. Since then, he conducted many workshop for the students and early career researchers who noted it as an instrumental for writing of high-quality theses and publications, which in turn facilitated their on-time graduation.

*“If you can’t explain it to six-year-old, you don’t understand it yourself”* Albert Einstein

This book contains comprehensive information for research and publication and is recommended to be read by all and sundry.

Finally, I would like to express my gratitude to you for bringing the attention of UPM and the world in general to this book.

Professor Dr Ismi Arif Ismail  
Deputy Vice Chancellor (Academic and International)  
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## Preface

Early career researchers including post-graduate students often face challenges in planning research, analyzing data and writing a thesis or manuscripts although it is often easy to carry out the research. Therefore, a clear understanding on research and scientific publication process is necessary. However, students receive almost no training on how to make a good plan of research, analyze data and organize data to produce high quality thesis or manuscripts. As a results, many students often are in dilemma from where to start. This led to failure to complete the thesis within the stipulated time. Several research reports suggest that these problems exist in every discipline, from natural to social science. These lead us to think about a text book comprising with every details of research process, from research planning, data gathering, data analysis and interpretation, scientific writing, manuscript submission process, peer-review process to reference management. Here, we included a novel technique for scientific writing known as KSI (Keywords sequence importance) while also focusing on standard research findings sharing in conferences and public talks. This book is designed to help non-native English researchers with scientific publications in English. However, it can also be useful for native English speakers. The book will help to discover the conventions of structure, organization, grammar and vocabulary in scientific writing. This book is written with a lot of practical examples. Altogether, this text book will help early career researchers in building conferences for conducting research and getting high-quality publications.

We can provide training, lecture notes and a syllabus if anyone wants to adopt and teach the course at any University. For further training on the Keyword Sequence and Importance (KSI) noble methodology, Universities and higher institutions across the world are welcome to contact Associate Professor Dr Md Kamal Uddin, Universiti Putra Malaysia (mkuddin07@gmail.com) Shamim Mia, Patukhali Science and Technology University,

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The Keyword Sequence Importance (KSI) idea ALLAH Subhanawataala give in heart to the author Associate Professor Md Kamal Uddin. This idea was presented in many countries including Denmark, Sweden, Saudi Arabia, Australia, Indonesia, Japan, Australia, Malaysia, and Bangladesh. This noble technique is recognized by Universiti Putra Malaysia and is part of postgraduate courses taught at the UPM postgraduate school.

This book is for free distribution worldwide, and does not require or attract profit by any means. The book is for Khidmat (propagating knowledge for free) across the world. Please include us in your prayers.

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## Chapter One

### Insights into the Keyword Sequences Importance (KSI) Technique in Thesis and Publications

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#### Abstract

Scientific writing is often difficult for postgraduate students and early career researchers because it follows a strict format and writing roles. Therefore, proper guidelines are required to equip students and researchers to master this technique. Here, we propose a novel writing style known as Keyword Sequence Importance (KSI) technique. In science research, primary keywords are identified based on the subject, treatments, and parameters. In addition, primary keywords are determined based on the respondent, independent, and dependent variables in social science research. These keywords are then organized on their preference and importance, while fractions of their contents are included based on their relative importance. Altogether, KSI provides a novel insight into scientific writing for researchers with any background.

---

## **Introduction**

Scientific writing, including a thesis, research paper, and technical reports, is often the most challenging task for graduate students and early-career researchers. Students can easily carry out their research since they can learn experimental procedures and techniques from their supervisors, lab mates, and laboratory technicians. However, they receive little training in organizing data, interpreting and explaining results, and, thus, facing the most challenges in scientific writing, often leading to mental stress in their academic life. Additionally, students receive additional pressure in logically combining several chapters of a thesis to have a complete story. As a result, a postgraduate student remains in a dilemma about putting things together in writing the thesis. In extreme cases, students fail to complete the thesis and give up the study within the stipulated time. These problems extend across disciplinary boundaries and are a common issue for postgraduate researchers in social and natural sciences (Welsh, 1979). Therefore, students should be equipped with comprehensive training while providing simple but important guidelines to walk along the path and produce a quality thesis on time.

The challenges in scientific writing can be eased if certain skills are provided to graduate students at the beginning of their programs through postgraduate studies that follow strict scientific rules.

Training will reduce the misconceptions and uncertainties in the mind of new students and prepare them on how to plan research proposals, data collection, and presentation of research clearly and precisely. These skills can be provided to the students through various ways, including organizing workshops, student-supervisor/expert interactions, group learning, and self-learning from online sources such as Elsevier documentaries (Zuber-Skerritt & Nick, 1986). However, the learning process can be eased if a suitable technique with a comprehensive approach is offered.

The thesis writing difficulties will be eliminated when graduate students provide specific skills at the beginning of their programs. The training can remove the misconceptions and uncertainties of new students related to scientific writing and prepare them how to write clearly and precisely. It is argued that one approach which can assist the student in overcoming these problems is the conduction of a workshop on research skills comprising practical guidance, group support, discussion, and reflection (Zuber-Skerritt & Nick, 1986). However, a systematic approach should be followed for such training to make the path easy for the new students.

Torrance et al. (1993) focus on three different methods: product-centered, cognitive, and general writing courses for postgraduate students on thesis writing. Their findings show the benefit of teaching and research writing to graduate students. However, they focus only on generating text instead of strategies for generating ideas before writing the thesis. These underscore the innovation of a novel method for scientific writing.

Here we propose a novel method, Keywords Sequence Importance (KSI), for scientific writing that will yield high-quality text in a short period. This method underscores the selection of keywords based on the thesis or manuscript's story, organizes them logically, and then discusses each of the topics according to their relative importance.

### **Description of KSI**

#### **How to prepare a thesis according to KSI technique**

The KSI technique is applicable for thesis writing in all fields of study, including engineering, social sciences, medical sciences, agriculture, etc. The KSI technique identifies all the keywords from the thesis title and arranges them in sequence based on their importance or relevancy. For example, the essential keyword comes first, followed by the second most important, followed by the third most important, and so on. For instance, given the thesis

title ‘Salinity effect on the growth, antioxidant and mineral compositions of Purslane.’ According to the sequence, the primary keywords are purslane, treatment is salinity, and parameters are growth, antioxidant and mineral compositions. Thus, the researcher can simply use these keywords to sequence their importance in writing all their thesis chapters.

### **Standard ratio/ importance for science and social science**

Science research consists of subject matter, treatment (s), and parameters. The standard importance ratio of text words/volume of subject matter, treatment, and the parameter are 1:2:7 or 1:3:6, respectively. Social Science research consists of Respondent, independent variable (s), and dependent variables. The standard importance ratio of respondent, independent variable (s), and dependent variables are 1:4:5 or 2:3:5, respectively.

### **General Introduction**

The general introduction can be easily prepared when using the KSI technique appropriately using the formula.

*“Required citation number for each keyword =  
Citation number per page × required page number”*

For example, preparing a five-page general introduction, a student can follow the following steps. Given that the number of target pages and keywords are five thus, each keyword is getting tentatively one page. Still, it is not proper because every keyword does not have equal importance for the introduction. However, the accurate way of doing it is to make the volume of each keyword based on its relevancy to make the presentation more qualitative and precise. Therefore, text volume was assigned to each keyword based on its impact on the thesis objectives; Purslane (10%), salinity (30%), growth (10%), antioxidant (30%), and mineral compositions (20%). This clearly demonstrates that both the target plant (Purslane) and the growth

require only general information. However, the treatment (salinity) and the antioxidant effects have been the two major significant research factors that need much volume for proper clarification.

Moreover, the Purslane has 0.5 pages, which is equivalent to 10% of the total number of pages required for the general introduction. Similarly, the page numbers for other keywords are calculated based on their percent contributions. For 5-page introduction (background) the citation should be 50, double space, Times New Roman, 12 font size. That is one page equivalent to 20 lines and 10 citations. That means each citation gets two lines.

The target number of citations must also be carried out according to the number of pages assigned to each keyword; for example, the number of citations required for half a page will 5 citations and 1.5 pages will be 15 citations. Similarly, the priority of the citation's setup should be according to the important information.

Hence, the problem statement and research objectives can also be formulated using the keywords summary. The keywords contain basic ideas on the research problems, their importance, and possible ways to solve them. In this case, how does salinity affect the growth, antioxidant and mineral compositions of the Purslane plant? The literature review might partially answer the questions, giving a hint on how to proceed with the research.

### **Literature Review**

Initially, the number of pages for the literature review will be decided according to each keyword size. Subsequently, the heading and sub-headings for each keyword should be prepared before the beginning of the data collection. Also, the keywords sequence and the number of required citations for each keyword should be initially set. Finally, the target citation can be added to the appropriate sub-headings for each keyword. For instance, the

preparation of 25 pages' literature review using the sequence and size of the keywords will provide the volume of each keyword as follows; 10%, 30%, 10%, 30%, and 20% for purslane, salinity, growth, antioxidant, and mineral compositions, respectively. However, the number of pages might increase or decrease tentatively, but the target number of citations should be maintained. The literature review is considered the most significant aspect of any thesis, and when it is done early, the researcher will become more knowledgeable about the work. The benefits of using the KSI technique to prepare the literature review include reducing mental stress and achieving the target goal within a short period.

### **Implications of KSI**

The KSI is a systematic approach to selecting the thesis keywords, arranging them in chronological order of significance, and keeping the text volume of each keyword according to its importance on the chosen topic. Generally, the thesis keywords characterize the words or phrases used to identify the primary significance of the subject, so it is the backbone of any meaningful scientific writing. Thus, the present tool will provide a standard platform for students from different fields of studies as a first-hand guide to achieving the target of the postgraduate program (i.e., graduation on time). The technique of KSI has several advantages that include fast problem invention, comprehensive literature review, rapid publication, good quality thesis, mental stress reduction, and graduation on time. The article aimed at solving two issues; student and supervisor tasks defining the research problem and the planning aspect of the thesis writing. The systematic collection of words and phrases will help improve the linguistics part of the thesis while maintaining the standard and quality of the write-up. The paper aimed to improve the quality of the postgraduate thesis, enable fast publication, reduce mental stress associated with the postgraduate degree, and provide a platform for graduation on time.

**Conclusion**

After identifying the problems, students were introduced to an approach in academic writing, namely the KSI approach. The time of thesis writing will be shortened if this method is used.

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## Chapter Two

### Types of Citation and Identification, and Grading of Different Articles

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#### Abstract

In-text citations for academic journals require a reference, which lists the author(s), publication date, title, journal name, volume and issue number, and page range, as well as the URL (Digital Object Identifier). However, the paper also discusses the application of the KSI methodology in writing original and review research, collection, and grading of articles for review, citation modification and application, types of citation and their application, and the application of different Subject (S) Treatment (T) and Parameter (P) models for parameter citation. Altogether, we presented a novel method for scientific writing that will help early-career researchers to produce a good quality thesis or manuscript in time.

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#### Introduction

A “citation” is the way you tell your readers that certain material in your work came from another source. It also gives your readers the information necessary to find the location details of that source on the reference or Works Cited page. A citation must include a set of parentheses.

Citations are used to show your reader(s) where the information in your paper was originally published.

Citations are important because they show your reader(s):

- ◆ when the information was published
- ◆ who is the author of the information
- ◆ which journal or group published the information
- ◆ which version the information was published in (usually just for literature)

All of this information about the information you cite in your papers is important because it keeps you from plagiarizing other people's ideas and helps you prove to your reader(s) that you know your topic.

After the selection of a topic for a review article, previously published research articles should be collected based on the issue of the review. Before collecting the articles, some points to be considered with the purpose of writing a quality article. According to the KSI technique, the term SQL should be followed to collect literature. Here, S denotes the similarity of subject, treatment, and parameter of the review article. Q denotes the quality of the collected articles, which is determined by the indexing of the journal. In this context, literature should be collected from the journals under the lists of journal citation reports (JCR) and Scopus. Concurrently, L denotes the latest year, which indicates the literature should be elected from recently published articles and not older than ten years from submitting time. However, there are some exceptions in some fundamental methods and quotes from previous studies. Furthermore, based on the SQL literature can be classified into four grades i.e. A, B, C and D. The collected documents which cover all the criteria i.e., SQL (similarity, quality and latest, respectively) are classified as grade A, whereas the articles cover SL (similarity and latest) criteria are categorized as grade B. Nevertheless, the articles covering SQ and QL criteria should be categorized as grade C and D, respectively. The grade of an article is based on the criteria illustrated in the Table below.

### **Article grading according to the criteria of article**

| <b>Criteria for classification of an article collection</b> | <b>Grade</b> | <b>Remarks</b>     |
|---|--------------|--------------------|
| SQL   | A            | Highly recommended |
| SL  | B            | Recommended        |
| SQ  | C            | Not recommended    |
| QL  | D            | Not applicable     |

Notes: The characters S, Q and L stand for similarity (Subject Treatment Parameters or Responded Independent Variable and Dependent Variable), quality (JRC Q1, Q2, Q3 Q4 OR Scopus Q1, Q2, Q3, and Q4 (recent year) latest, respectively).

### **Types of citation & their identification**

During synthesizing citations from the relevant articles obtained from the reputed journals, we've to focus on three types of citations such as i) Subject focusing citations, ii) Treatment focusing citations and iii) Parameters representing citations, to put citations accordingly to the respective research component.

**i) Subject citations:** In this case, citations should be chosen only by prioritizing the subject matter. Treatment and parameter keywords will be absent in this kind of citation. The tense will always be present form. However, the stated data will be in the past tense. In the subject citation no value or unit (e.g., 3kg).

**ii) Treatment citations:** This sort of citation focusses on treatment components. Subject and parameter components will be absent here. The tense should always be present, but the stated data will be in the past tense. However, in treatment citation no value or unit (e.g., 3kg).

**iii) Parameter citation:** Citations focusing on a parameter component are regarded as parameter citations. The data or results of parameters are the outcomes of treatment of the relevant subject. So, citations of the relevant treatments for

relevant subject matter also have to be taken into consideration. The sentences should be in the past tense. If the parameter citation is in discussion part there is need value or unit citation, but if the parameter citation under introduction part no need of value or unit.

Using citations in a scientific article is essential. These citations should be accurate, relevant, and recent (at least the last five years). To extract the latest citation from a published article, the following step should be followed-

- Search from the web and download recent and relevant articles based on research words (subject, treatment, and parameter).
- Try to find the result of the major parameter in the abstract section.
- Other than the major parameter, the author can also extract the findings from the results section of the relevant article.
- If the findings are similar, the author can cite that article as recent.

| Type of citation   | Identification     | Tense   | Example   |
|--------------------|--------------------|---|---|
| Subject citation   | T and P absent     | Present, but stated data will be in past tense. | <b>Rice (S)</b> is our staple food (Uddin 2019). The total production of rice was 4,536 mt in 2020. |
| Treatment citation | S and P absent     | Present   | <b>Salinity (T)</b> is an environmental factor for plants (Uddin 2019).                             |
| Parameter citation | S, T and P present | Past  | <b>Yield (P)</b> of <b>rice (S)</b> was decreased due to salinity (T) (Uddin 2019).                 |

### Research Area: Crop Science

**Title:** Evaluation of Multiple Responses Associated with Arsenic Tolerance and Accumulation in *Pteris vittata L.* Plants Exposed to High as Concentrations under Hydroponics.

| Type of citation   | Information  | Identification      | Tense   | Example  |
|--------------------|--|---------------------|---------|--|
| Subject citation   | Pterisvittata L.   | T and P absent      | Present | Chinese brake fern (Pterisvittata L.) is recognized as an arsenic hyperaccumulating plant (Pietrini et al., 2020).   |
| Treatment citation | Arsenic (As)   | S and P absent      | Present | Arsenic (As) is a natural element, classified as a toxic and carcinogenic metalloid, that is widely distributed throughout terrestrial ecosystems and living organisms (Pietrini et al., 2020).  |
| Parameter citation | Accumulation of Arsenic, Nutrient concentration, Photosynthesis activity | S, T, and P present | Past    | Results confirmed the ability of fern plants (S) to accumulate (P) an amount of As (T), especially in fronds. As treatment (T) affected macro and micronutrient concentrations (P) in fronds of treated plants (S). All photosynthetic activity (P) of treated plants (S) were affected by As treatment (T). |

**Title: Correlation Structure Network (T) Based on Minimum Spanning Tree (Mst) (P) Of Financial Market (S).**

| Type of citations  | Example  | Tense   |
|--------------------|--|---------|
| Subject citation   | Many authors have recently focused on graph-theoretical representation and analysis of the <b>financial market(S)</b> . (Rešovský, M., et. al 2013).   | Present |
| Treatment citation | This paper proposes a stock market filtering model using the <b>correlation - based financial networks (T)</b> in which network nodes represent the potential stocks and network edges indicate the correlation coefficients of corresponding stock pairs. (Esfahanipour, A., et. al. 2015). | Present |
| Parameter citation | The construction of <b>minimum spanning trees (MSTs) (P)</b> from <b>correlation network (T)</b> is an often-used method to study relationships in the <b>financial markets (S)</b> . (Millington, T., et. al. (2021)  | Past    |

**Title: Development of a New Mechanism to Control Population of Golden Apple Snail in Glutinous Paddy Field, Langkawi**

| Type of citations  | Example   | Tense   |
|--------------------|---|---------|
| Subject citation   | The existence of <i>Pomacea canaliculate</i> or also known as golden apple snail ( <b>S</b> ) became a serious pest that is highly invasive and can cause damage to rice fields (IRRI, 2022).   | Present |
| Treatment citation | Computer vision ( <b>T</b> ) is the science of teaching a machine to “see”. This device, which replaces the human eye with a camera and computer, identifies, tracks, and measures targets for subsequent image processing (Tian et al., 2019). An effective technique for counting paddy field pests ( <b>S</b> ) has been developed. By using computer vision techniques ( <b>T</b> ), the researchers were able to accurately recognize pests ( <b>P</b> ) in photos taken straight from a paddy field. This might be a useful way for field-based pest count automation (Yao et al., 2014). | Present |
| Parameter citation |   | Past    |

**Title: CRISPR-Cas13a guided (T) RNA-based Early Detection of Oil Palm Biomarkers (P) of Ganoderma Basal Stem Rot Disease (S)**

| Type of Citation   | Example   | Tense   |
|--------------------|---|---------|
| Subject Citation   | <b>Basal Stem Rot (BSR) (S)</b> in oil palm ( <i>ElaeisguineensisJacq.</i> ) is one of the most devastating oil palm diseases in Southeast Asia (SEA), particularly in Malaysia and Indonesia, and to a lesser extent in other countries in Africa, Papua New Guinea, and Thailand ( <i>Idris et al., 2004</i> ). | Present |
| Treatment Citation | Beyond its conventional applications in genome editing, <b>CRISPR/Cas (T)</b> has been harnessed for specific and ultra-sensitive detection of DNA or RNA ( <i>Wheatley and Yang, 2020</i> ).   | Present |
| Parameter Citation | Fluorescence signal was increased <b>from Cas13 detection (T) of CP4 EPSPS gene (P) in Glyphosate-Resistant soybeans (S)</b>  | Past    |

| Type of Citation   | Example  | Tense   |
|--------------------|--|---------|
| Subject citation   | The report of a large-scale trial confirms that patients with mixed anxiety disorder ( <b>S</b> ), who participated in a group tCBT which is incorporated into usual care, found improved outcomes with a significant difference in self-reported and clinician-rated anxiety symptoms | Present |
| Treatment citation | Patients with mixed anxiety disorders and had a significant difference in self-reported and clinician-rated anxiety symptoms in favor of tCBT( <b>T</b> )  | Present |
| Parameter citation | The report of a large-scale trial confirms that incorporating group tCBT( <b>T</b> ) into usual care can improve outcomes for patients ( <b>P</b> ) with mixed anxiety disorders and found a significant difference in self-reported and clinician-rated anxiety symptoms.             | Past    |

| Type of citation   | Example   |
|--------------------|---|
| Subject citation   | According to the Global Agricultural Information Network (2017), out of 891,000 metric tonnes of total rice imported into Malaysia, roughly 15% was glutinous rice (S).   |
| Treatment citation | Improvements in the display of grain loss sensor (T) signal data in meaningful units of absolute grain loss will assist operators and farm managers in making better economic choices and managing grain loss throughout the harvest season, respectively (Fleury, 2019). |
| Parameter citation | A cleaning loss (P) monitoring system based on PVDF piezoelectric film sensor and a grain threshing and cleaning test bench (T) were developed to realize the online monitoring of the cleaning loss test bench of the wheat harvester (S) (Tan et al., 2019).            |

#### “TYPE OF CITATION AND THEIR IDENTIFICATION”

##### Research Area: Mariculture

**Thesis Title:** Sustainable Growth Performances (P) in the Bi-culture (T) of *Litopenaeus vannamei* (Boone, 1931) and *Macrobrachium rosenbergii* (De Man, 1879) (S) Using Biofloc (T) System.

| Type of Citation   | Example  | Tense   |
|--------------------|--|---------|
| Subject Citation   | <i>Litopenaeus vannamei</i> and <i>Macrobrachium rosenbergii</i> (S) are one of the most popular crustaceans in aquaculture, as seen by the large amount of land dedicated to cultivation (Martínez-Porchas et al., 2021). | Present |
| Treatment Citation | Bi-culture (T) is a culture system of two aquatic species within the same body of water (Rohmana et al., 2015), allowing farmers to achieve productive efficiency and superior profits (De-shang & Shuang-lin, 2000).      | Present |
| Parameter Citation | The result demonstrated that the feasibility of increasing yield (P) up to 31.2% by integrating <i>L. vannamei</i> and <i>Macrobrachium rosenbergii</i> (S) in a biofloc (T) system (Poli et al., 2019).                   | Past    |

**Research Area:** Biochemistry

**Thesis Title:** Impact of Metformin (IR) (T) Compared to Metformin (XR) (T) Formulations on Gastrointestinal Tolerability (P), Glycemic Control (P), and Treatment Satisfaction (P) among Type II Diabetic Patients (S) in Tabuk, Saudi Arabia.

| Type of Citation   | Example   | Tense   |
|--------------------|---|---------|
| Subject Citation   | <b>Type II diabetes (S)</b> is a vascular disease affecting both microvascular and macrovascular systems, with substantial physical, psychological, and economic burdens on the patients, their families, and healthcare providers (Einarson et al., 2018). | Present |
| Treatment Citation | <b>Metformin (T)</b> is the first-line oral drug for patients with type II diabetes due to its lower risk of hypoglycemia, low-neutral effect, and glucose-lowering ability (Jabbour & Ziring, 2011).   | Present |
| Parameter Citation | Many <b>patients with type II diabetes (S)</b> could not tolerate <b>Metformin (T)</b> in the desired doses due to unwanted <b>gastrointestinal side effects (P)</b> , even when started with minimal doses (Bonnet & Scheen, 2017).                        | Past    |

**Research Area:** Genetics & Breeding

**Thesis Title:** A Study on Genetic Characterization (P) and Meat Quality Assessment (P) of Broiler type Hybridized Duck (S) Produced through Three-way Crossing (T)

| Type of Citation   | Example  | Tense   |
|--------------------|--|---------|
| Subject Citation   | <b>Mule duck (S)</b> , although completely sterile in both sexes, has much merit as a meat producer, exhibiting a rapid growth, a strong constitution and good foraging qualities due to heterosis ( <b>Tai et al., 1999</b> ) | Present |
| Treatment Citation | Multiway <b>Crossing (T)</b> may help to reduce abdominal fat with the age and has a high growth rate that exceeds that of its parents ( <b>Sarker et al., 2005</b> )  | Present |
| Parameter Citation | <b>The fertility % (P)</b> of <b>Mule Duck(S)</b> increased due to <b>artificial insemination (T)</b> ( <b>Nwachukwu et al., 2015</b> )  | Past    |

**Research Area:** Agribusiness

**Thesis Title:** Role of gender (T) for reducing post-harvest losses (P) of modern variety of rice (S) in Bangladesh

| Type of Citation   | Example  | Tense   |
|--------------------|--|---------|
| Subject Citation   | Rice ( <b>S</b> ) is the staple food in Bangladesh, accounting for approximately 78 percent of the country's total net cropped areas cultivation (Mamun et al., 2021). | Present |
| Treatment Citation | Both men and women ( <b>T</b> ) actively participate in different post-harvest activities of crop production (Hasan et al., 2021).                                     | Present |
| Parameter Citation | Jahan et al., (2020) reported that 0.5% post-harvest losses ( <b>P</b> ) of rice ( <b>S</b> ) reduced due to 1% increased of women ( <b>T</b> ) farming experience.    | Past    |

**Research Area:** Animal Science (Broiler Meat Processing)

**Thesis Title:** Assessing the effect of lactic acid bacteria post-biotic on improving the quality and safety of broiler meat

| Type of Citation   | Example   | Tense   |
|--------------------|---|---------|
| Subject Citation   | Presently, most <b>broiler meat [S]</b> is traded at live bird slaughter market which is currently one of the biggest remaining markets in our country (Rahman <i>et al.</i> , 2019).   | Present |
| Treatment Citation | Lactic acid bacteria <b>post-biotic [T]</b> have a long history to use as potential bio-preservatives to meat and meat products (Chakchouk- Mtibaa et al., 2017)  | Present |
| Parameter Citation | In marinated <b>broiler meats [S]</b> , the inhibitory activity of <b>bacteriocins [T]</b> produced by LAB was evaluated by the reduced number of <b>pathogenic microorganisms [P]</b> with improved <b>shelf life [P]</b> (Hernández-Aquino et al., 2019). | Past    |

**Research Area:** Biocomposite Technology and Design

**Thesis Title:** Railway Sleeper pilot scale production utilising nanoclay hybrid polyamide biocomposite

| Type of Citation   | Example   | Tense   |
|--------------------|---|---------|
| Subject Citation   | Several <b>composite sleeper (S)</b> technologies have been developed in different parts of the world and becoming effective alternatives to traditional timber sleepers due to their good performance (Ferdous et al., 2015)   | Present |
| Treatment Citation | The structural behaviour of these sleepers is mainly <b>polymer (T)</b> driven (Ferdous et al., 2015).  | Present |
| Parameter Citation | The <b>sleepers (S)</b> with <b>short or no fibre (T)</b> reinforcement represented by <b>recycled plastic sleepers (S)</b> (TieTek, 2019; Axion, 2019; intergriTies, 2019) are mainly used in the US but suffer a <b>low anchorage capacity (P)</b> and exhibited an inferior <b>pull-out resistance (P)</b> of 31.6-35KN using the 180.5 mm-long screws with 16 mm- diameter threads and 24 mm shank (Yu et al., 2021). | Past    |

**Research Area:** Entomology (Soil-transmitted Helminths)

**Thesis Title:** Soil-transmitted Helminth (T) infection rate (P), Distribution (P) and Diagnosis (P) Among School Children (S) in Northern Nigeria.

| Type of Citation   | Example  | Tense   |
|--------------------|--|---------|
| Subject Citation   | School-age children (S) have the highest (42.5%) prevalence due to geophagy (Nur et al., 2022).  | Present |
| Treatment Citation | In 2021, World Health Organisation (WHO) annual report (WHO/DTR/TRS/09/2021) point out Soil transmitted Helminths (T) account for 23% morbidity and mortality rate in Tropical and Sub-tropical countries.                     | Present |
| Parameter Citation | Infection rate (P) of Trichuris trichiura and Ascaris lumbricoides among Soil-transmitted Helminths (T) was heavy (125.4epg) between 6-7 years of age among female School Children (S) (Adamu et al., 2021; Yaro et al., 2022) | Past    |

**Research Area:** Cognitive Aesthetics

**Thesis Title:** Investigating **aesthetic preferences (P)** for **typicality (P)** and novelty **(P)** of **wearable devices (S)** through **multisensory stimulation(T)**

| Type of Citation   | Example  | Tense   |
|--------------------|--|---------|
| Subject Citation   | <b>Wearable devices (S)</b> , or called wearable is a computing technology device that can be worn on the human body, either a computer that is incorporated as an accessory or as part of material used in clothing (Tehrani & Andrew, 2014).                               | Present |
| Treatment Citation | Products and settings are increasingly being designed to appeal to consumers on both rational and emotional levels, as well as across <b>multisensory stimulation (T)</b> (Spinney, 2013).   | Present |
| Parameter Citation | Among <b>multisensory stimulation (T)</b> , <b>typicality (P)</b> in terms of vision significantly reduced purchase intention for females, whereas <b>aesthetic preference (P)</b> and purchase intention of <b>wearable devices (S)</b> had no effect on males (Lee, 2021). | Past    |

**Research Area:** Soil and Water Engineering (PHD)

**Thesis Title:** Optimization of **Fertilizer Intake (T)** On **Coconut MATAG (S)** Using **Precision Phenotyping Sensors (T)** Systems During **Growing Stages (P)** Under Nursery Condition.

| Type of Citation   | Example   | Tense   |
|--------------------|---|---------|
| Subject Citation   | Due to its modest size, ease of management, and ability to be planted in smaller areas, coconut Malayan Yellow Dwarf (MYD) is more popular among smallholders or individual planters (Hani et.al, 2018) <sup>2</sup> .  | Present |
| Treatment Citation | According to Maheswarappa et al. (2019) <sup>47</sup> , young and adult palms require different amounts of water depending on the soil type and agro-climatic area. Actual water use by the palms and crop-coefficient values for coconut has been determined using lysimetric tests. | Present |
| Parameter Citation | Nelson et al. 2019 <sup>77</sup> concluded by recommending best practices for increasing scientific rigour in plant biomechanics by focusing on measurement accuracy and uncertainty.   | Past    |

**Research Area:** International Economics

**Thesis Title:** The Effect of GVC Participation (IV) on Labor Productivity (DV), Competitiveness (DV), and Economic Growth (DV) of Electronic Industry in Indonesia

| Type of Citation   | Example   | Tense   |
|--------------------|---|---------|
| Subject Citation   | <b>The electronic sector (S/R)</b> is considered one of the fastest-growing industries in modern-day international trade (Ing et al., 2017).  | Present |
| Treatment Citation | <b>The global value chain (T/IV)</b> describes the tasks performed by firms and workers in producing goods and services from beginning to final consumption (Cattaneo et al., 2013).                    | Present |
| Parameter Citation | <b>GVC's participation (T/IV) in electronic industry (S/R)</b> demanded more sophisticated technological intensities to impact the sector's <b>labor productivities (P/DV)</b> (Battiati et al., 2020). | Past    |

**Research Area:** soil science

**Thesis Title:** The Effect of **Biochar(T)** Combine With Silicon And Phosphorus on **Maize(S) Yield(P)** in Acidic Soil

| Type of Citation   | Example   | Tense   |
|--------------------|---|---------|
| Subject Citation   | Maize ( <i>Zea mays</i> L.) ( <b>S</b> ) has high production and high export concentrations (Wang & Hu., 2021)  | Present |
| Treatment Citation | 32,000 tons of rice husk <b>biochar (T)</b> were generated from rice milling operations in Malaysia. (Manickam et al.,2015)   | Present |
| Parameter Citation | The high dose of biochar ( <b>T</b> ) combines with high nitrogen was showing more value for the maize( <b>S</b> ) <b>girth (P)</b> and <b>height (P)</b> developing compare to low and sole biochar application (Abukari et al.,2014). | Past    |

**Research Area:** Crop Genetics and Breeding

**Thesis Title:** Identification of Tagnanan with high yield and fruit quality via phenotypic and marker-assisted selection towards improving MATAG production

| Type of Citation   | Example  | Tense   |
|--------------------|--|---------|
| Subject Citation   | A diverse range of 150 <b>coconut genotypes (S)</b> is characterized using 12 quantitative variables with 54 genomic microsatellite markers.   | Present |
| Treatment Citation | Despite the perennial nature, analysis of genomic loci governing quantitative traits of economic importance in coconut is gaining impetus due to rapid strides in utilization of DNA markers and development of <b>linkage maps (T)</b> .  | Present |
| Parameter Citation | <b>RAPD molecular markers (S)</b> and three <b>coconut populations (T)</b> (susceptible-West African Tall- WAT; resistant-Malayan Yellow Dwarf-MYD; and resistant-Atlantic Tall-AT) were used to conduct association analyses (T) that dissect resistance to deadly yellowing disease <b>to get higher yield (P)</b> . | Past    |

**Research Area:** Industrial design

**Thesis Title:** Improve the user experience(P/DV) of older adults(S) when using intelligent healthy household products based on interactive design methods(T/IV)

| Type of Citation   | Example  | Tense   |
|--------------------|--|---------|
| Subject Citation   | The proportion of <b>older adults (S)</b> aged 60 years and above has risen rapidly to 18.7 % in 2020. (Statistics China, 2021)  | Present |
| Treatment Citation | Professor Xin xiangyang divides <b>interaction design(T/IV)</b> into five basic elements: people, actions, tools or media, purpose and occasion. (Yang, 2015)  | Present |
| Parameter Citation | In the face of diverse needs of <b>older adults (S)</b> and <b>improve the user experience (P/DV)</b> , how to define and choose these has become a question designers must face in <b>interaction design(T/IV)</b> practice (Dong, 2013). | Past    |

**THESIS TITLE:** Determination of **Antimicrobial Resistance (P)** of **Zoonotic Bacterial Pathogens (S)** in Shrimp Aquaculture Environment to **Antimicrobial (T)** using Disk Diffusion method

| Type of Citation   | Example  | Tense   |
|--------------------|--|---------|
| Subject Citation   | Shrimp aquaculture environment generally contains <b>zoonotic bacterial pathogens (S)</b> such as <i>Salmonella</i> , <i>Vibrio</i> and <i>Escherichia coli</i> (Syuhada et al., 2019).        | Present |
| Treatment Citation | <b>Antimicrobial (T)</b> is an agent or substance that acts against any type of microorganisms by killing or inhibiting their growth (WHO, 2019).  | Present |
| Parameter Citation | <b>Antimicrobial resistance (P)</b> of <b>zoonotic bacterial pathogens (S)</b> in shrimp aquaculture increased due to overuse and misuse of <b>antimicrobials (T)</b> (Thornber et al., 2020). | Past    |

**THESIS TITLE:** **Cognitive Function (P)** Restoration in **Obese Dam's Offspring (S)** via Gut Microbiota Manipulation Using *E.Tapos* **3'4'5'-Trimethoxyflavone Yoghurt (T)**.

| Type of Citation   | Example   | Tense   |
|--------------------|---|---------|
| Subject Citation   | <b>Obese dam's offspring (S)</b> have a high risk of having cognitive deficit (Sanchez et al., 2017)  | Present |
| Treatment Citation | <i>E.tapos</i> <b>3'4'5'-Trimethoxyflavone yoghurt (T)</b> is a flavone compound that inhibit the adipogenesis by reducing the transcriptional activity of PPARy (Li et al., 2015)        | Present |
| Parameter Citation | <b>Cognitive function (P)</b> was improved with the intervention of yoghurt containing <b>3'4'5'- Trimethoxyflavone (T)</b> in <b>F1 generation / offspring (S)</b> (Balan et al., 2019). | Past    |

**THESIS TITLE:** Network Indicator Analysis based on Complex Network Theory Approach(T) on Public Transportation Network in Klang Valley(S) By Calculating Characteristics Measurements (P)

| Type of Citation   | Example   | Tense   |
|--------------------|---|---------|
| Subject Citation   | <b>Public transportation network in Klang Valley (S)</b> is one of the most connected networks in Southeast Asia (Ding et al., 2015).   | Present |
| Treatment Citation | <b>Accessibility analysis (T)</b> is one of the network indicators that can describe the performance of the complex network and a method to study the connection between nodes (Tundulyasaree, 2019).   | Present |
| Parameter Citation | <b>Closeness centrality (P)</b> measures was utilised for <b>accessibility analysis (T)</b> in <b>transportation network (S)</b> such as cargo transportation such if there are accidents happen midway, by locating the location of which cargo depot to receive assistance (Bombelli et al., 2020). | Past    |

**THESIS TITLE:** The Impact of China's **All-For-One Tourism Policy (Iv)** to **Rural Public Space (R)** on **Spatial Form (DV)** And **Symbolic Meaning (DV)**

| Type of Citation              | Example  | Tense   |
|-------------------------------|--|---------|
| Respondent Citation           | As a space of relations, <b>rural public space (R)</b> can not only reflect the sense of belonging and identity of personal, local and national ( <b>Ye et al., 2020</b> ).  | Present |
| Independent Variable Citation | Developing the <b>All-for-one Tourism (IV)</b> is to take a specific region as a complete tourist destination for the overall planning layout ( <b>B. Xiong et al., 2021</b> ).  | Present |
| Dependent Variable Citation   | The <b>All-for-one Tourism policy (IV)</b> had put forward a new direction for the development of <b>rural public space (R)</b> , which is conducive to improving the supply of <b>spatial form (DV)</b> and <b>symbolic meaning (DV)</b> ( <b>Yu, 2021</b> ). | Past    |

**THESIS TITLE:** Technology Transfer of Agroforestry Practices on Climate Variability Adaptation Among Farmers In South-East, Nigeria

| Type of citation                            | Example   | Identification   | Tense   |
|---|---|--|---------|
| Subject/Respondent Citation (TOPO)          | Farmers like to adopt Agroforestry technology as a solution to promote sustainable Agricultural System (Pello et al 2021)   | Citation that may have only the subject(S)   | Present |
| Treatment/Independent citation (SOPO)       | Agroforestry farmers accepted the technology as a solution to promote sustainable Agriculture due to good knowledge (IV) (Pello, et al 2021)                                | Citation that may have treatment(T)  | Past    |
| Parameter/Dependent variable Citation (STP) | Majority of the farmers(R) practiced (DV)Agroforestry technology as a solution to sustainable Agricultural system due to their level of awareness (IV). (Pello, et al 2021) | Citation that consist of three elements,subject (S),Treatment (T), and Parameters(P) | Past    |

**THESIS TITLE:** An Assessment of Relationship between Growth (P) of Fish (S) And Water Salinity (T) in Sungai Selangor, Malaysia

| Type of citation         | Example  | Tense   |
|--------------------------|--|---------|
| Subject citation         | Fish (S) is considered as one the most important source of protein in tropical countries (Uddin & Jeong, 2021).  | Present |
| Treatment citation       | Water salinity (T) is the measure of the dissolved ions in a water body (Saha et al., 2020)  | Present |
| Parameter citation (STP) | Growth (P) and species abundance of fish (S) depended largely on the quality of the water body, including the salinity (P) of the (Amah-Jerry et al., 2017). | Past    |

**THESIS TITLE:** To determine the effect of different **Art and Design (T)** by **Emotional Psychology (P)** of **Contemporary Youth (S)**.

| Type of citation          | Example   | Tense   |
|---------------------------|---|---------|
| Subject/respondent (TOP0) | <b>Contemporary youth(s)</b> are those between the ages of 14 and 35 ( <b>Medium and Long Term Youth Development Plan (2016-2025)</b> ) | Present |
| Treatment/IV (SOP0)       | <b>Art and Design (T)</b> have a 'healing' nature in contemporary fine art ( <b>Maxixiazi, 2017</b> )                                   | Present |
| Parameter/DV (STP)        | <b>Mental Health (P)</b> of <b>Youth People's(S)</b> of the guiding role of <b>Art Design (T)</b> ( <b>Xiaoning Wang,2013</b> )         | Past    |

**THESIS TITLE:** The effect of **light intensity (T)** and **light photoperiod (T)** on **growth performance (P)** and **yield (P)** of **rice (S)**.

| Type of citation          | Example   | Tense   |
|---------------------------|---|---------|
| Subject/respondent (TOP0) | <b>Rice (Oryza sativa L.) (S)</b> is a staple food widely consumed by half of the world's population where it is cultivated on every continent except Antarctica (Muthayya et al., 2014).             | Present |
| Treatment/IV (SOP0)       | <b>LEDs (T)</b> is the best option due to their low electricity consumption, low cost of ownership, and the ease of implementing customized lighting recipes for different crops (Wong et al., 2020). | Present |
| Parameter/DV (STP)        | Adjusting <b>photoperiod (T)</b> to 10 hrs with additional <b>far-red light (T)</b> accelerated flowering (P) for rice (S) at <b>60 days</b> post sowing (P) (Jähne et al., 2020).                    | Past    |

**THESIS TITLE:** Perception the **emotional (IV)** experience of the **elderly (R)** through landscape **installation (DV)** art

| Type of Citation              | Example  | Tense   |
|-------------------------------|--|---------|
| Respondent Citation           | <b>Elderly (R)</b> residents are a prominent user group of open spaces ( <b>Pleson et al., 2014</b> ).   | Present |
| Independent Variable Citation | The <b>emotional (IV)</b> experience includes instinct, actions, and reflection, and the relationship between these three complements each other and influences each other ( <b>Deana. 2009</b> ). | Present |
| Dependent Variable Citation   | The <b>elderly (R)</b> could better meet their <b>emotional (IV)</b> needs by using <b>landscape installation (DV)</b> interactivity ( <b>Bowers et a.,2021</b> ).                                 | Past    |

**THESIS TITLE:** The Impact of household income and food security (DV) on social harmony and wellbeing (IV) among smallholder farmers (R) in Langkawi, Malaysia

| Type citation        | Example   | Tense   |
|----------------------|---|---------|
| respondent           | Smallholder farmers (R) make up a significant portion of the world's population, with data from 450-500, representing 85% of the world's agriculture (Nagayets, 2005).                            | Present |
| Independent Variable | The wellbeing (IV) of farmers is a dynamic process that provides a feeling of security, and comfort (Peel <i>et al</i> , 2016), and is sufficient for them to develop (Fatoki and Ajibola, 2020). | Present |
| Dependent Variable   | Smallholder farmers (R) <u>was experienced</u> food insecurity (DV) and <u>reduced</u> income during (DV) the dry season, which has an impact on social harmony and wellbeing (IV).               | Past    |

**THESIS TITLE: CHARACTERIZATION AND PATHOGENICITY OF DIE-BACK CANKER, CHRYSOPORTHE DISEASES IN EUCALYPTUS PLANTATIONS, MALAYSIA**

| Type of citation   | Example  | Tense   |
|--------------------|--|---------|
| Subject citation   | Stem canker disease caused by <i>Chrysoporthe</i> spp. are considered amongst the most important diseases of plantation-grown <i>Eucalyptus</i> spp. <b>(S)</b> in the tropics and sub-tropics (Wingfield, 2003).  | Present |
| Treatment citation | Consequently, the search for antifungal substances with novel structures and outstanding bioactivity compounds <b>(T)</b> from natural products derived from natural sources, such as microorganism and developing them into commercial fungicide has become a research hotspot in forest plantation (Ikram <i>et al.</i> , 2019). | Present |
| Parameter citation | Increasing number of active substances with unique chemical structures has been isolated from endophytic fungi <b>(S)</b> using a combination of morphological, phylogenetic and metabolomics analyses <b>(P)</b> (dos Santos <i>et al.</i> , 2015).   | Past    |

**THESIS TITLE: The impact of path planning(T) in theme parks(S) for the distribution of tourists(P).**

| Type of citation   | Example   | Tense   |
|--------------------|---|---------|
| Subject citation   | Strengthening the construction of urban cultural <b>theme park (S)</b> can effectively improve residents' happiness. (Yu Hui & Zhang Fan, 2022)   | Present |
| Treatment citation | All the <b>path planning (T)</b> and design in the theme park serve the overall creative planning of the park, and the ultimate purpose of creative planning is to provide tourists with the best entertainment experience (Liu Ying 2019).   | Present |
| Parameter citation | The <b>distribution of tourists (P)</b> under reasonable <b>path planning (T)</b> was an important part in the <b>theme park (S)</b> and management and demand prediction, and was the key link to realize the effective protection and benign development of scenic spots. (Wen najuan, sun Fengzhi & Jia Yanju, 2022) | Past    |

**THESIS TITLE: Chemopreventive effect of *Boeau Macrophylla* Yogurt (T) on Dmh-Induce Rats with High Fat Diet (S) ameliorates the Colorectal Cancer Development (P)**

| Type of Citation         | Example  | Tense   |
|--------------------------|--|---------|
| Subject Citation         | <b>DMH-Induce rats with high fat diet (S)</b> have high risk of having colorectal cancer as high-fat diets trigger bile acid production and secretion, which correlates positively with mucosal markers of proliferation and inflammation in humans and susceptibility to intestinal tumor formation in rodent models (Ocvirk and O'Keefe, 2017) | Present |
| Treatment Citation       | <b><i>Boeau macrophylla</i> (T)</b> fruit has higher anthocyanin content which exhibit anti-cancer, antioxidant, anti-inflammatory as well as anti-atherogenesis (Castañeda-Ovando et al. 2009; Rajan and Bhat, 2016)  | Present |
| Parameter Citation (STP) | <b>Low level of inflammatory cytokines (P)</b> demonstrates the slow progression and inflammation of colorectal cancer development were observed on serum treated with <b><i>Boeau Macrophylla</i> (T)</b> , in <b>DMH-Induce rat with high fat diet (S)</b> (Dechsupa et al. 2019 and Nguyen et al. 2020)                                       | Past    |

**Conclusion**

Academic writing requires two methods of citing your sources: in-text citations and bibliographies. There is need to identify the best articles to be included in your research and grade them accordingly. The grading is according to the quality of the research paper, for example Journal indexed under JCR and Scopus has high reputation compared to other indexing databases.

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## Chapter Three

### Research Elements for Science and Social Science Research

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#### Abstract

Keyword selection is an inevitable part of scientific writing in research papers and review papers. In scientific research, major keywords are identified based on the subject, treatments and parameters. Major keywords are identified in social science research based on the respondent, independent variables, and dependent variables. These keywords are then organized on their preference and importance, while the fraction of their contents are included based on their relative importance. We can distribute different keywords according to their importance by identifying the research elements. It will help to write a quality scientific paper.

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#### Introduction

The research element is an important component in selecting science and social science keywords. The research words are those words directly involve/focus on the research. E.g, subject/respondent, treatment/independent variables, parameter/dependent variables. Typically, this category of words are expressed by nouns. Non-research words are those words not directly involved in the research. The words that are used to structure any part of the research. eg, Effect, impact, of, on, and, efficiency, characterization, and these words come from verb, adverb, adjective, preposition The research elements of any

scientific research are subject, treatment, and parameter. The subject is the element on which the research focuses. Treatment is a variable that stands alone and isn't changed by the other measured variables: application of any materials imposed on the subject to find out its effect on the subject. *After the application of a treatment, collected data is called a parameter.* The parameter is the variable being tested and measured in an experiment, and it is "dependent" on the variation of the treatment. The research element of any Social Science research is Respondent, independent variables, and dependent variables. Respondents are those persons who have been invited to participate in a particular study and have taken part in the study. An Independent variable is a variable that stands alone and isn't changed by the other variables that are measured. Finally, the dependent variable is the variable being tested and measured in a study and is 'dependent' on the independent variable.

### **Mediator**

A mediator can be a potential mechanism by which an independent variable can produce changes on a dependent variable. When you fully account for the effect of the mediator, the relationship between independent and dependent variables may go away. The words represent three research elements (subject/respondent, treatment/independent variables, and parameter/dependent variables) of research are termed as research words. The words that do not include these three research elements of research are termed non-research words. These words are used for grammatical purposes or/create a meaningful sentence. Unnecessary words are meaningless words that do not have any function. The examples below are adopted/adapted from Universiti Putra Malaysia Institutional Repository.

### **Research Area: Agronomy**

Title : The influence difference agronomic practices towards glutinous rice growth performance, and productivity  
Subject : Glutinous rice  
Treatment : SRI system, direct seeding, transplanting, fertilizer, soil amendments  
Parameter : Growth, Physiology, Nutrient, productivity yield, productivity cost

### **Research Area: Land Management**

Title : Enhancement of maize yield through biochar enriched phosphorus and biofertilizer  
Subject : Maize  
Treatment : biochar, phosphorus, and biofertilizer  
Parameter : Physical and chemical properties of activated biochar, Elemental composition analysis, Surface charge, specific surface area, CEC determination, and C sequestration  
Title : Field Evaluation and Proteomic Analysis (P) of Salt-Tolerant Plant Growth-Promoting Rhizobacteria (PGPR) (T) as a Consortium and Their Effects on Rice (S) Growth and Yield at Salt-Affected Areas.  
Subject : Rice  
Treatment : Plant growth-promoting rhizobacteria, Liquid carrier amendments, salinity level.  
Parameters: Shelf-life, compatibility test, bacterial population, protein identification, protein expression, growth, and yield parameters.

### **Research Area: Crop Science**

Title : Development of weed competitive rice variety under water deficit conditions through marker-assisted backcross breeding  
Subject : rice variety  
Treatment : water deficit  
Parameter : marker-assisted backcross breeding  
Title : Growth, Physiology, and Quality of Watermelon (*Citrulluslanatus*) as influenced by Paclobutrazol

Concentration and Frequency of Application on under  
Greenhouse

Subject : Watermelon (*Citrulluslanatus*)  
Treatment : Paclobutrazol hormone  
Parameter : Vegetative growth, physiology, and quality

#### **Research Area: Horticulture**

Title : Growth, nutrient, and phytochemical composition of  
*Zingiberofficinale* Roscoe cv. Bentong in relation to  
different irrigation regimes, light intensity, nitrogen, and  
potassium level  
Subject : Ginger  
Treatment : Water, Light, Nitrogen, and Potassium  
Parameter : Growth, Physiology, Nutrient, Phytochemical,  
Cytotoxicity

#### **Research Area: Agriculture Technology**

Title : Plant growth-promoting *rhizobacteria* enhanced salinity  
stress tolerance in okra through ROS-scavenging enzymes  
Subject : Okra  
Treatment : ROS-scavenging enzymes, *rhizobacteria*  
Parameter : Salinity stress tolerance

#### **Research Area: Agribusiness and Bioresource Economics**

Title : Comparative analysis of technical efficiency for different  
production culture systems and species of freshwater  
aquaculture in Peninsular Malaysia  
Subject : Freshwater aquaculture  
Treatment : Analysis of technical efficiency  
Parameter : Production culture systems

#### **Research Area: Plant Protection**

Title : Marker-assisted selection for rice brown planthopper  
(*Nilaparvatalugens*) resistance using linked SSR markers  
Subject : Rice  
Treatment : Linked SSR markers  
Parameter : Brown planthopper (*Nilaparvatalugens*) resistance

### **Research Area: Insect Pathology**

Title : Entomopathogenic Virus Agents the Beetle, *Oryctes rhinoceros* in Coconut  
Subject : Coconut  
Treatment : Entomopathogenic Virus  
Parameter : *Oryctes rhinoceros*

### **Research Area: Pest Management**

Title : Development of plant-based nano-emulsion formulations, characterization, and bio-efficacy evaluation against *Bemisiatabaci*  
Subject : *Bemisiatabaci*  
Treatments: *Cymbopogon citratus*, *Cymbopogon nardus*, *Allium sativum*, *Allium cepa*  
Parameters: Pesticide formulation, Characterization of nano-emulsion formulations, Bio-efficacy, Repellency

### **Research Area: Aqua Culture**

Title : Improvement of feed pellet characteristics by dietary pre-gelatinized starch and their subsequent effects on growth and physiology in tilapia  
Subject : Tilapia  
Treatment : Dietary pre-gelatinized starch  
Parameter : Growth, physiology  
Title : Improvement of Growth-Related Traits in Catfish (*Clarias fuscus* LINNAEUS, 1758) through Mitochondrial DNA and Microsatellite Markers  
Subject : *Clarias fuscus*  
Treatment : Mitochondrial DNA and Microsatellite Markers  
Parameter : Growth-Related Traits

### **Research Area: Fish Disease**

Title : Development of Probiotics as a Disease Control for *Pangasiusnasutus* (PatinBuah)  
Subject : *Pangasiusnasutus* (PatinBuah)  
Treatment : Probiotics  
Parameter : Disease control, Pathogen inhibition, Growth promoter, Improvement of water quality, improvement of nutrient digestion.

### **Research Area: Animal Science**

Title : The effect of dietary bacterial organic selenium on growth performance, antioxidant capacity, and Selenoproteins gene expression in broiler chickens.  
Subject : Broiler chickens  
Treatment : Dietary bacterial organic  
Parameter : Growth performance, Antioxidant capacity, and Selenoproteins gene expression

### **Research Area: Marine and Freshwater Ecosystems**

Title : Impact of microalgae and bacteria diets on the population growth, reproductive capacity, and nutritional composition of zooplankton  
Subject : Zooplankton  
Treatment : Microalgae and Bacteria  
Parameter : The population growth, reproductive capacity, and nutritional composition

### **Research Area: Microbiology**

Title : Effects of xylano-pectinolytic enzymes by *Bacillus subtilis* ADI1 on biobleaching of kenaf (*Hibiscus cannabinus L.*) pulp.  
Subject : Kenaf (*Hibiscus cannabinus L.*) pulp  
Treatment : Xylano-pectinolytic enzymes by *Bacillus subtilis* ADI1  
Parameter : Biobleaching of kenaf (*Hibiscus cannabinus L.*) pulp

### **Research Area: Cell and Molecular Biology**

Title : Effects of Newcastle disease virus infection on cisplatin-resistant breast cancer cell line.  
Subject : Breast cancer cell line.  
Treatment : Newcastle disease virus infection.  
Parameter : Cisplatin-resistant.

### **Research Area: Bioprocess Technology**

Title : Optimization of oil palm biomass superheated steam treatment for improvement of fibre characteristics and polypropylene biocomposite performance.  
Subject : Oil palm  
Treatment : Oil palm biomass superheated steam.  
Parameter : Fibre characteristics and polypropylene biocomposite performance.

### **Research Area: Biochemistry**

Title : Effects of colonization of an endophytic fungus, *Hendersoniactoruloidea*, on thiamine biosynthesis in oil palm seedlings.  
Subject : Oil palm seedlings.  
Treatment : Colonization of an endophytic fungus and *Hendersoniactoruloidea*.  
Parameter : Thiamine biosynthesis.

### **Research Area: Plant Biotechnology**

Title : Estimation of Major Genetic Determinant of Grain Properties through Biochemical assay, genotypic and molecular analysis on of Selected Malaysian and Sri Lankan Rice (*Oryza sativa* L.)  
Subject : Rice  
Treatment : Grainquality/property, Antioxidants activities, Molecular analysis (Antioxidants activities: (biochemical assay) analysis)  
Parameter : TPC, DPPH, FRAP, TFC, Morphological genetic diversity, Molecular genetic diversity, Bioinformatics, DNA extraction, PCR, Gel electrophoresis, Gene sequencing

### **Research Area: Computer Science**

Title : Enhancements on hybrid coordination function-controlled channel access for video transmission in IEEE 802.11E network.  
Subject : IEEE 802.11E network.  
Treatment : Hybrid coordination function-controlled channel access.  
Parameter : Video transmission.

### **Research Area: Human-Computer Interaction**

Title : Detection of early depressive symptom using lexicon-based approach of sentiment analysis in bangla language from social media  
Subject : Social media  
Treatment : Lexicon-Based Approach  
Parameter : Text, Time, Linguistic Dictionary

### **Research Area: Multimedia**

Title : Efficient flow-based channel assignment schemes for congestion avoidance in wireless mesh networks.  
Subject : Wireless mesh networks.  
Treatment : Flow-based channel assignment schemes.  
Parameter : Congestion avoidance.

### **Research Area: Software Engineering and Information System**

Title : Workflow system for MapReduce in a cloud environment.  
Subject : Cloud environment.  
Treatment : Workflow system.  
Parameter : MapReduce.

### **Research Area: Communication Technology and Network**

Title : Deadline guarantee for a scientific workflow using dynamic scheduling algorithms on IaaS clouds.  
Subject : Deadline guarantee.  
Treatment : dynamic scheduling algorithms on IaaS clouds.  
Parameter : Scientific workflow

### **Research Area: Landscape Architecture**

Title : Place attachment process and its influence on neighborhood park utilization in Putrajaya, Malaysia  
Respondent : park users  
Independent variable: Place attachment process  
Dependent variable : neighbourhood park utilization

### **Research Area: Architecture**

Title : Effects of radiant cooling on thermal comfort in energy commission building in Putrajaya, Malaysia  
Respondent : Office workers  
Independent variable: Radiant cooling  
Dependent variable : Thermal comfort

### **Research Area: Industrial Design**

Title : User satisfaction toward baby room design and facilities in selected shopping centers in Klang Valley, Malaysia  
Respondent : Baby room users  
Independent variable: Design and facilities of baby rooms  
Dependent variable : User satisfaction

### **Research Area: Accounting and Finance**

Title : Market structure and performance of dual banking system in Malaysia.  
Respondent : Employees of Islamic and conventional bank  
Independent variable : structural changes  
Dependent variable : the degree of concentration, competition, and performance of the Islamic banking system

### **Research Area: Economics**

Title : Population, economic growth and environmental emissions in Nigeria  
Respondent : Population  
Independent variable: population growth and environmental emissions  
Dependent variable : Economic growth

### **Research Area: Management and Marketing**

Title : Impact of health capital on productivity and economic growth in Singapore  
Respondent : Population  
Independent variable: Health capital  
Dependent variable : productivity and economic growth

### **Research Area: Foundations of Education**

Title : Perceived learning as a mediator between institutional factors, instructor immediacy behaviour, learner characteristics, and course satisfaction among undergraduate distance learners.  
Subject (R) : undergraduate distance learners.  
Treatment (IV) : Perceived learning.  
Parameter (DV): institutional factors, instructor immediacy behavior, learner characteristics, and course satisfaction

### **Research Area: Sport Studies**

Title : Perceived learning as a mediator between institutional factors, instructor immediacy behaviour, learner characteristics, and course satisfaction among undergraduate distance learners.  
Subject (R) : Malaysian Super League (MSL) soccer players.  
Treatment (IV) : Small-sided games rule changes  
Parameter (DV): Time spent in different intensity zones, frequency of technical actions, and distance covered.

### **Research Area: Science and Technical Education**

Title : Relationship between entrepreneurial leadership practice, school culture, and school effectiveness with teacher empowerment in secondary schools of Zamfara State, Nigeria.  
Subject (R) : Secondary schools of Zamfara State, Nigeria.  
Treatment (IV) : Entrepreneurial leadership practice, school culture, and school effectiveness.  
Parameter (DV): Teacher empowerment.

### **Research Area: Language and Humanities Education**

Title : Effects of blended learning on reading comprehension and critical thinking skills of undergraduate ESL students.  
Subject (R) : Undergraduate ESL students.  
Treatment (IV) : Blended learning.  
Parameter (DV): Reading comprehension and critical thinking skills.

### **Research Area: Professional Development and Continuing**

Title : Influence of ethical work climate and ethical leadership on organizational performance and mediating role of organizational trust among employees in Malaysian SMEs.  
Subject (R) : Employees in Malaysian SMEs.  
Treatment (IV) : Ethical work climate and ethical leadership.  
Parameter (DV): Organizational performance, organizational trust

### **Research Area: Counsellor Education and Counselling Psychology**

Title : Effects of schema therapy and schema-focused mindfulness therapy on marital satisfaction, marital communication, and conflict resolution among Iranian women in Malaysia.  
Subject (R) : Iranian women in Malaysia.  
Treatment (IV) : Schema therapy and schema-focused mindfulness therapy.  
Parameter (DV): Marital satisfaction, marital communication, and conflict resolution.

### **Research Area: Chemical and Environmental Engineering**

Title : Covalent immobilization of  $\alpha$ -CGTase on cellulose nanofiber derived from kenafbast for enzymatic membrane reactor.  
Subject : Cellulose nanofiber derived from kenafbast  
Treatment :  $\alpha$ -CGTase  
Parameter : Covalent immobilization of  $\alpha$ -CGTase

### **Research Area: Aerospace Engineering**

Title : Influence of stiffener on aluminum perforated plates subjected to in-plane shear loading.  
Subject : In-plane shear loading.  
Treatment : Stiffener.  
Parameter : Aluminum perforated plates.

### **Research Area: Mechanical and Manufacturing Engineering**

Title : Effects of particle size and weight percentage of waste rubber crumbs on the performance of compounded tires.  
Subject : Performance of compounded tires.  
Treatment : Particle size and weight percentage.  
Parameter : Waste rubber crumbs.

### **Research Area: Biological and Agricultural Engineering**

Title : Daily operation of Bukit Merah reservoir with stochastic dynamic programming under climate change impact.  
Subject : Daily operation of Bukit Merah reservoir  
Treatment : Climate change.  
Parameter : Stochastic dynamic programming.

### **Electrical and Electronic Engineering**

Title : Harsh environmental impact on the performance of low voltage underground power cables in hot countries.  
Subject : Hot countries.  
Treatment : Harsh environmental.  
Parameter : Performance of low voltage underground power cables.

### **Research Area: Computer and Communication Systems Engineering**

Title : Hydrogen sensors using tapered optical fiber coated with metal oxide nanostructures synthesized via chemical bath deposition technique.  
Subject : Hydrogen sensors.  
Treatment : Tapered optical fiber coated with metal oxide nanostructures synthesized.  
Parameter : Chemical bath deposition technique.

### **Research Area: Process and Food Engineering**

Title : Mathematical modelling of combined infrared and hot air drying of Sliced sweet potato (*Ipomoea batatas* L.).  
Subject : Sliced sweet potato (*Ipomoea batatas* L.).  
Treatment : Mathematical modelling  
Parameter : Combined infrared and hot air-drying

### **Research Area: Security in Computing**

Title : Mutual authentication and Encryption based key management scheme by using ECCT in advanced metering infrastructure of smart grid  
Subject : Smart grid, advanced metering infrastructure  
Treatment : ECC=Elliptic curve cryptography, key Agreements  
Parameter : Encryption, mutual authentication

### **Research Area: Electronics Engineering**

Title : Synthesis and conductivity studies of conducting poly (methylmethacrylate) PMMA by copolymerization with polyaniline (PANi)  
Subject : Poly (methylmethacrylate) (PMMA)  
Treatment : Polyaniline (PANi)  
Parameter : Synthesis, Conductivity studies

### **Research area: Engineering**

Title : Effects of the virtual inertia on frequency stability of the power system integrated with renewable energy sources.  
Subject : Power generation system  
Treatment : Frequency control and virtual inertia  
Parameter : Inertia of distributed generators, frequency stability, proportional integral derivative parameters, power deviation, load fluctuation, and Inertia enhancement.

### **Research Area: Geospatial Engineering**

Title : GIS-MCDM hybrid model for Site suitability assessment of wind-solar farms, a case study of Iraq.  
Subject : Wind-solar farms.  
Treatments: Multi-criteria decision-making (MCDM), geographic information system (GIS).  
Parameters: Site efficiency, comprehensiveness indicators design, weighting suitability indicators, Ranking suitability alternatives, site sensitivity analysis.

### **Research Area: Environmental Sciences**

Title : Composition, concentration, and distribution of linear alkylbenzenes in surface sediments from selected locations in Malaysia.  
Subject : Surface Sediments  
Treatment : Composition, concentration, and distribution  
Parameter : Linear Alkylbenzenes

### **Research Area: Environmental Management**

Title : Economic valuation for improved conservation among communities of yankari game reserve, Nigeria.  
Subject : Communities of yankari game reserve, Nigeria  
Treatment/IV : Economic valuation  
Parameter/DV : Improved conservation

### **Research Area: Food Science**

Title : Occurrence of commonly used pesticides in personal air samples and their associated health risk among paddy farmers  
Subject : Paddy farmers  
Treatment : Pesticides  
Parameter : Air samples, health risk

### **Research Area: Food Technology**

Title : Optimization of enzymatic esterification of dihydrocaffeic acid with hexanol in ionic liquid using response surface methodology.  
Subject : ionic liquid  
Treatment : surface methodology  
Parameter : enzymatic esterification, dihydrocaffeic acid

### **Research Area: Food Service and Management Division**

Title : Price, people, location, culture, and reputation: determinants of Malaysia as study destination by international hospitality and tourism undergraduates.  
Subject : International hospitality and tourism undergraduates  
Treatment : Price, people, location, culture, and reputation  
Parameter : Study destination

### **Research Area: Food Science**

Title : Effect of Fractionation on Structural Characteristics, Functional and Rheological Properties of Dietary Fibre from Kenaf (*Hibiscus cannabinus* L.) Seeds  
Subject : Kenaf Seeds  
Treatment : Fractionation of dietary fibre  
Parameter : Structural characteristics, functional and rheological properties

### **Research Area: Department of Forest Production**

Title : Assessing paddy rice yield sensitivity to temperature and rainfall variability in Peninsular Malaysia using DSSAT model  
Subject : Paddy rice  
Treatment : DSSAT model  
Parameter : Sensitivity, vulnerability, temperature, rainfall variability

### **Research Area: Department of Forest Management**

Title : Identification of wound-response proteins associated with gaharu formation in *Aquilariamalaccensis Lam* via proteomic analysis  
Subject : *Aquilariamalaccensis Lam*  
Treatment : Proteomic analysis  
Parameter : Wound-response proteins

### **Research Area: Department of Recreation and Eco-tourism**

Title : Exposure of the endangered Milky stork population to cadmium and lead via food and water intake in Kuala Gula Bird Sanctuary, Perak, Malaysia  
Subject : Milky stork  
Treatment : Food and water intake  
Parameter : Cadmium and lead

### **Research Area: Forest and Plantation**

Title : Propagation of an endangered gymnosperm tree species (*Podocarpusneriifolius* D. Don.) by stem cuttings in a non-mist propagator  
Subject : (*Podocarpusneriifolius* D. Don.)  
Treatment : stem cuttings in a non-mist propagator  
Parameter : Propagation

### **Research Area: Human Ecology and Family Studies**

Title : Effects of mastery and material value on life satisfaction among adults in the Klang Valley, Malaysia

Respondent : Adults in the Klang Valley, Malaysia

Independent Variable: Mastery and material value

Dependent Variable : Life satisfaction

### **Research Area: Social and Development Sciences**

Title : Deprivation, subjective well-being, frustration, and tendency of aggressive behaviour among youth inmates in a prison in Nigeria.

Respondent : Youth inmates in a prison in Nigeria

Independent Variable: Deprivation, subjective well-being, frustration

Dependent Variable : Aggressive behaviour

### **Research Area: Resource Management and Consumer Studies**

Title : Effects of a financial capability intervention program on financial wellbeing of medical practitioners in Selangor, Malaysia

Keywords:

Respondent : Medical practitioners in Selangor, Malaysia

Independent Variable: Financial capability intervention program

Dependent Variable : Financial wellbeing

### **Research Area: Music**

Title : Factors Influencing the implementation of music activities by government preschool teachers in Selangor.

Respondent : Preschool teachers in Selangor

Independent Variable: Factors influencing implementation

Dependent Variable : Music activities

### **Research Area: Government and Civilization Studies**

Title : The Influence of youth dependency on social media for political purposes, political knowledge and political culture in dun Kajang, Selangor, Malaysia.  
Respondent : Youth  
Independent Variable: Political purposes, political knowledge and political culture  
Dependent Variable : Dependency on social media

### **Research Area: Biomedical Science**

Title : Effects of a new sensory re-education training tool on hand sensibility, manual dexterity and functional activities of daily living in people with traumatic brachial plexus injury  
Subject : Traumatic brachial plexus  
Treatment : Sensory re-education  
Parameter : Manual dexterity; functional adl; hand sensibility

### **Research Area: Nutrition and Dietetics**

Title : Household Food Insecurity and Its Association with Diet Quality and Weight Status among Orang Asli (MahMeri) Women in Kuala Langat, Selangor, Malaysia.  
Subject : Orang Asli (MahMeri) women in Kuala Langat, Selangor, Malaysia.  
Treatment / IV : Household food insecurity  
Parameter / DV : Diet Quality and weight status

### **Research Area: Community Health**

Title : Factors affecting uptake of cervical cancer screening among African women attending selected churches in the Klang Valley, Malaysia.  
Subject : African women attending selected churches  
Treatment / IV : Factors affecting  
Parameter / DV : Uptake of cervical cancer screening

### **Research Area: Environmental and Occupational Health**

Title : Risk factors of occupational stress among non-destructive testing radiographers in Saudi Arabia.  
Subject : Radiographers in Saudi Arabia  
Treatment / IV : Risk factors  
Parameter / DV : Occupational stress

### **Research Area: Pathology**

Title : Immunomodulatory Activity of MoringaOleiferaL. Leaf Ethanol Extract on Normal Lymphocytes and Leukaemic Cell Lines.  
Subject : Lymphocytes and Leukaemic cell  
Treatment / IV : Moringaoleifera L. leaf ethanol extract  
Parameter / DV : Immunomodulatory activity

### **Research Area: Radiology**

Title : Agreement between various measurements of standardised uptake value normalised by lean body mass in detecting background 18F-FDG Activity in PET/CT oncologic imaging.  
Subject : PET/CT oncologic imaging  
Treatment / IV : Measurements of standardised uptake value normalised by lean body mass  
Parameter / DV : Agreement

### **Research Area: Medicine**

Title : Fabrication of nanoemulsion loaded with cefuroxime for efficient translocation across the blood-brain barrier.  
Subject : Blood-brain barrier  
Treatment / IV : Cefuroxime  
Parameter / DV : Fabrication of nanoemulsion

### **Research Area: Medical Microbiology and Parasitology**

Title : Knowledge, Attitude, Belief and Preventive Practices of Leptospirosis among Residents in Hulu Langat Rural Areas in Selangor, Malaysia.  
Subject : Residents in Hulu Langat Rural Areas  
Treatment / IV : Knowledge, Attitude, Belief  
Parameter / DV : Preventive Practices of Leptospirosis

### **Research Area: Surgery**

Title : Potential effect of 1,25Dihydroxyvitamin D<sub>3</sub> on thioacetamide-induced hepatotoxicity in rats  
Subject : Rat  
Treatment : 1,25 Dihydroxyvitamin D<sub>3</sub>  
Parameter : Hepatotoxicity, oxidative stress, thioacetamide

### **Research Area: Psychiatry**

Title : Prevalence and predictors of depression and anxiety among oncology patients receiving chemotherapy in public hospitals in Peninsular Malaysia.  
Subject : Oncology Patients Receiving Chemotherapy in Public Hospitals  
Treatment / IV : Depression and Anxiety  
Parameter / DV : Prevalence and predictors

### **Research Area: Nursing and Rehabilitation**

Title : The Effectiveness of Educational Programs on Parenting Stress and Coping Mechanism among Parents of Children with Autism Spectrum Disorder  
Subject : Parents of Children with Autism Spectrum Disorder  
Treatment / IV : Effectiveness of Educational Programs  
Parameter / DV : Parenting Stress and Coping Mechanism

### **Research Area: Obstetrics and Gynecology**

Title : Immune Tolerance Attenuates Gut Dysbiosis, Dysregulated Uterine Gene Expression and High-Fat Diet Potentiated Preterm Birth in Mice  
Subject : Preterm Birth  
Treatment : Endotoxin  
Parameter : Immune Tolerance Microbiome

### **Research Area: Human Anatomy**

Title : Differential Effects of Anaesthesia on the Contractility of Lymphatic Vessels in Vivo  
Subject : Anaesthesia  
Treatment : Contractility  
Parameter : Lymphatic vessels

### **Research Area: Family Medicine**

Title : Prevalence and factors associated with erectile dysfunction among males with human immunodeficiency virus in a tertiary teaching hospital in Malaysia.  
Subject : Males with human immunodeficiency virus in a tertiary teaching hospital  
Treatment / IV : Prevalence and factors associated  
Parameter / DV : Erectile dysfunction

### **Research Area: Medical Science**

Title : The prevalence of road crash involvement and its associated factors among medical Doctors in Malaysia: A cross-sectional study  
Respondent : Medical doctors in Malaysia  
Independent variable : Associated factors  
Dependent variable : Prevalence of road crash involvement

### **Research Area: Molecular Haematology**

Title : Rapid detection of large  $\beta$ -globin gene cluster deletions causing an increased production in Hb F levels among Malaysian patients using a single tube PCR method  
Subject : Thalassemia  
Treatment : Molecular diagnosis of thalassemia  
Parameter : Haematological indices, Hb analysis, clinical presentation

### **Research Area: Malay Language**

Title : Contrastive study of German and Malay modal verbs formation process  
Respondent : Editors  
Independent variable : The components of the German modal verb formation process  
Dependent variable : Inexperienced learners

### **Research Area: English Language**

Title : English writing motivational orientation and apprehension among urban and rural Malaysian school students  
Respondent : The Malaysian school students' English  
Independent variable : Geographical background  
Dependent variable : The Malaysians' English language acquisition

### **Research Area: Foreign Language**

Title : Effects of three listening modes on listening comprehension of ESL undergraduates  
Respondent : Editors  
Independent variable: The use of three listening modes  
Dependent variable : ESL undergraduates' listening comprehension

### **Research Area: Biology**

Title : Assessment of selected local plants feed intake and reproductive performance in female goats.  
Subject : Female goats  
Treatment : Assessment of selected local plants feed intake  
Parameter : Reproductive performance

### **Research Area: Animal Science**

Title : Heptaplex polymerase chain reaction assay for the simultaneous detection of beef, buffalo, chicken, cat, dog, pork, and fish in raw and heat-treated food products  
Subject : Simultaneous Detection of Beef, Buffalo, Chicken, Cat, Dog, Pork, and Fish  
Treatment : Heptaplex Polymerase Chain Reaction Assay  
Parameter : Raw and Heat-Treated Food Products

### **Research Area: Physics**

Title : Structural, optical, and thermal properties of  $\text{Sm}_2\text{O}_3/\text{Bi}_2\text{O}_3$ -doped zinc silicate glass ceramics from rice husk ash.  
Subject : Rice Husk Ash  
Treatment : Structural, Optical, and Thermal Properties  
Parameter :  $\text{Sm}_2\text{O}_3/\text{Bi}_2\text{O}_3$ -Doped Zinc Silicate Glass Ceramics

### **Research Area: Chemistry**

Title : Synthesis and characterization of heterogeneous mixed oxide catalysts based on egg shell for biodiesel production from waste cooking oil.  
Subject : Waste-Cooking oil  
Treatment : Heterogeneous mixed oxide catalysts  
Parameter : Egg shell for biodiesel production

### **Research Area: Nano Technology**

Title : Surface functionalization of iron oxide nanoparticles with gallic acid as potential antioxidant and antimicrobial agents  
Subject : Surface functionalization of iron oxide nanoparticles  
Treatment : Gallic acid  
Parameter : Potential antioxidant and antimicrobial agents

### **Research Area: Mathematics**

Title : Statistical data pre-processing methods in distance functions to enhance k-means clustering algorithm.  
Subject : Distance functions  
Treatment : Statistical data pre-processing methods  
Parameter : K-means clustering algorithm

### **Research Area: Veterinary Laboratory Diagnostic**

Title : Cattle importation in relation to the occurrence of foot and mouth disease in Peninsular Malaysia  
Subject : Cattle  
Treatment : The importation of live cattle  
Parameter : Foot and mouth disease occurrences

### **Research Area: Veterinary Pathology & Microbiology**

Title : Prophylactic and therapeutic efficacies of dietary zerumbone supplementation on the pathogenesis of atherosclerosis in cholesterol-fed rabbits  
Subject : Rabbits fed  
Treatment : Formation and development of atherosclerosis  
Parameter : The prophylactic and therapeutic efficacies of dietary zerumbone (ZER) supplementation

### **Research Area: Veterinary Preclinical Science**

Title : Effects of dietary linseed-based N-3 fatty acids on growth performance, fatty acid profile, meat quality, and rumen mucosa morphology of crossbred Boer goats under intensive conditions  
Subject : Crossbred Boer goats  
Treatment : Growth performance, fatty acid profile, meat quality, and rumen mucosa morphology  
Parameter : Dietary linseed-based N-3 fatty acids

### **Research Area: Veterinary Farm and Exotic Animal Medicine & Surgery**

Title : Prevalence of trypanosomaevansi in horses in Peninsular Malaysia  
Subject : Horses  
Treatment : Horse health  
Parameter : The prevalence of equine trypanosomes

### **Research Area: Veterinary Clinical studies**

Title : Molecular characterization of Malaysian isolates of Newcastle disease viruses and the development of a duplex RT-PCR for simultaneous diagnosis of Newcastle disease and avian influenza  
Subject : Newcastle disease and avian influenza  
Treatment : The Development of a duplex RT-PCR for simultaneous diagnosis  
Parameter : Molecular characterization of Malaysian isolates of Newcastle disease viruses

### **Research Area: Veterinary Companion Animal Medicine & Surgery**

Title : Effects of dietary fatty acids on insulin resistance, tissue lipid profile and adipose tissue cellularity in sprague-dawley rat  
Subject : Rats  
Treatment : Insulin resistance, tissue lipid profile, and adipose tissue cellularity  
Parameter : dietary fatty acids

**Research Area: Optimization (Applied Mathematics)**

Title : Watermarking Schemes of Digital Images' Copyright for Robustness  
Subject : Digital images copyright/ intellectual property rights (IPR)  
Treatment : Watermarking schemes (Transform domain) and interval arithmetic  
Parameter : Robustness, imperceptibility, and attacks

**Research Area: Complex Network**

Title : Correlation Structure Network of Financial Market using Minimum Spanning Tree (MST)  
Subject : Financial Market  
Treatment : Correlation Structure Network, Pearson's correlation coefficient (PCC)  
Parameter : Minimum Spanning Tree (MST), Kruskal's algorithm, Centrality Measures, Principal Component Analysis (PCA)

**Research Area: Agriculture Water Management**

Title : Climate-based decision support system to predict water demand and crop-water management of glutinous rice, Langkawi  
Subject : Glutinous Rice  
Treatment : Climate-based & Decision Support System  
Parameter : Water demand, Crop-water requirement, Crop evapotranspiration, Effective rainfall, Yield, Soil moisture.

**Research Area: Accounting Education**

Title : The Effects of Using Gamification on Accounting Students' Performance, Motivation and Enjoyment at Libyan Universities  
Subject : Using Gamification  
Treatment : Using gamification in accounting education, per test, post-test.  
Parameter : Gamification, Accounting Education, Students' Performance, Students' Motivation, Students' Enjoyment, IT Skills, Teaching Style, Digital Infrastructure.

### **Research area: Climate change**

Title : Oil palm smallholder farmers adaptation strategies to climate change in Peninsular Malaysia  
Subject : Oil palm  
Treatment : Adaptation, climate change  
Parameter : Rainfall, temperature, relative humidity, solar radiation, precipitation, attitude, adaptation, behaviour, impact, barrier, support

### **Research Area: Agricultural Mechanization and Automation**

Title : Optimization of a Combine Harvester using Sensor to Minimize Grain Losses in Glutinous Rice Field  
Subject : Glutinous rice  
Treatment : Combine operation parameters, sensor  
Parameter : Grain losses, combine field capacity, field efficient, yield

### **Research Area: Poultry Nutrition**

Title : Effect of carrying levels of palm oil decanter cake on the growth performance, meat quality, and carcass traits of broilers  
Subject : broiler chickens  
Treatment : Decanter cake  
Parameter : Growth, Physiology, carcass characteristics, immunological profiles, gut morphology

### **Research Area: Sports Medicine**

Title : The effect of Moringaoleifera extract on physical fitness and muscle endurance in exercised mice.  
Subject : Exercise  
Treatment : Moringaoleifera  
Parameter : Physical performance, oxidative status, metabolomic, tissue glycogen, muscle inflammation, and muscle protein expression.

**Conclusion**

It is inevitable that keywords will be selected when writing scientific papers and review articles. The subject, treatments, and parameters of scientific research are used to identify major keywords. Respondents, independent variables, and dependent variables all contribute to the identification of major keywords in social science research. The keywords are then arranged according to their preference and importance, and their relative importance is determined by their fraction of the content. The research elements can be used to identify different keywords and their importance. Scientific papers will be written more effectively if this sequence is followed.

## Chapter Four

### How to Write Research Proposal and Project Report Using Keyword Sequence Importance (KSI) Technique

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#### **Abstract**

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A research proposal is meant to persuade people that you have a good study idea and that you have the necessary expertise including a work plan to execute it. In general, a research proposal must include all of the main aspects engaged in the research approach as well as enough knowledge for people to assess the suggested work. Depending on your study topic or technique, all research proposals should cover the 3 questions: what you want to do, why you want to do it, and how you intend to achieve it. This paper outlines techniques for creating an excellent project statement and an organisation structure for doing so. There are 4 primary goals for creating a good project report: demonstrate your knowledge of the topic, establish your modelling competence, maximise response, as well as minimise reader effort. Writing techniques and organisational structure are intended to achieve these goals. You must understand the information in this document and use it correctly when producing assigned project reports.

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#### **Introduction**

Several students including starting scientists do not completely comprehend what a research proposal entails nor recognise its

significance. To put it plainly, the quality of one's research is only as good as the quality of one's proposal. Even if it makes it past the Thesis Supervisory Committee, an ill-conceived proposal will kill the enterprise. A high-quality proposal, on the other hand, ensures the project's success and convinces your Thesis Committee of your ability as a researcher. A research proposal is meant to persuade people that you have a worthy research idea and the necessary expertise and work plan to execute it. Generally, a research proposal must include all of the main aspects engaged in the study method and enough data for readers to assess the proposed research. Depending on your study topic or technique, all research proposals should cover the three questions: what you want to do, why you want to do it, and how you intend to achieve it. The proposal must have enough material to persuade your readers that you have an interesting research topic, that you understand the related literature including significant concerns, as well as that your technique is appropriate. The value of your research proposal is determined not only by the quality of your suggested study, but also by the quality of your proposal writing. An excellent research project may be rejected merely because the application is inadequately worded. As a result, it is advantageous if your paper is cohesive, transparent, and captivating.

You are a representative of a project team tasked with reviewing an electric utility's fuel purchasing rules. Probably your goal is to examine the viability of incorporating digital bar-coding methods into an automobile supplier's manufacturing as well as distribution facilities. Perhaps you are a scholar who is addressing with these issues as part of a case project work. You have a genuine or fictitious customer who should take a decision depending on your advice. The customer may be your boss and therefore internal to your business, or you could perform for a consultancy company for an external customer. Alternatively, you may have a trainer responsible for evaluating your project work. Your team has examined the issue, conducted an analysis, and must convey its suggestions in the form of a project report.

In what follows, I will provide rules, suggestions, and techniques for producing this project assessment. These tactics are founded on the idea that you or your project group want to do all possible to maintain or improve your position in your business and advance your professional objectives. Establishing your expertise with the customer or your teacher is one of the greatest methods to do this. That is, you want to establish trust in your analysis, and conclusions, including suggestions, as well as in your own talents, both in problem-solving and in delivering your evidence. You need your prepared speech to be as successful as possible in accomplishing your goals.

Rather than developing research concepts, this article concentrates on how to create a research proposal as well as project summary.

## **How to write a research proposal?**

### **1. What is a research proposal?**

A research proposal is a paper that proposes a research topic, usually in the fields of science or academics, as well as serves as a demand for funding for such research. <sup>[1]</sup> Proposals are assessed based on the cost and possible effect of the prospective study, as well as the feasibility of carrying it out. <sup>[2]</sup> Research proposals usually discuss numerous key statements: <sup>[3]</sup>

- a. Which research problems will be approached, and how will they be handled?
- b. How much time as well as money will be spent on the studies?
- c. What past study has been conducted on the subject?
- d. How will the study findings be assessed?
- e. What benefits will the research provide to the funding organization as well as other groups?

### **2. Types of research proposal**

Research proposals can be executed, which means they are presented in answer to a specific demand, including a demand for

a proposal, or they might be unwanted, which means they are provided without previous notice. Other types of proposals involve "preproposals," which consist of submitting a letter of intension or a concise abstract for review prior to submitting a full proposal; continuation proposals, which re-iterate an original proposal as well as its financial resource in order to confirm ongoing finance; as well as recertification proposals, which seek to continue sponsorship of a project that would alternatively be aborted.<sup>[4]</sup>

Academic research proposals are often produced as components of the preliminary prerequisites for completing a thesis, research paper, or dissertation.<sup>[5]</sup> They usually maintain a similar style to a research paper, with an introduction, a review of the literature, a description of the study methods and aims, and a summation. This fundamental framework may differ between projects as well as fields, each with its unique set of needs.

### **3. Purpose of research proposal**

Academics are frequently required to prepare research proposals in order to get financing for their work. As a student, you may be required to prepare a research proposal in order to get your thesis or dissertation plan accepted. Every study proposal is intended to persuade somebody — including a financial organisation, academic organization, or supervisor — that your project is valuable. The following are the objectives of the research proposal:

**Relevance:** Persuade the reader that your endeavour is fascinating, unique, as well as significant.

**Context:** Demonstrate that you are conversant with the discipline, that you comprehend the present level of study on the subject, and that your views have a solid educational foundation.

**Approach:** Create a case for your approach, demonstrating that you have carefully considered the data, tools, as well as processes required to perform the study.

**Feasibility:** Assure that the project is feasible within the restrictions of the curriculum, organisation, or financing.

#### **4. How to write a research proposal**

The accurate style, as well as criteria for a research proposal, can differ marginally varies based on the kinds of studies being proposed and the particular requirements of the organisation to which you intend to submit your proposal, but there are a few fundamentals that are often required, and most proposals should include at least these elements:

- Cover page
- Introduction
- Review of the literature
- Design of research
- Bibliography

An excellent research proposal generally takes time to prepare and outlines what you will study, why it is essential, and how you will conduct the research. Here is a quick summary of the components required to create a typical research proposal, which you should aim to adhere to. In general, your proposal must comprise the components listed below:

- a. Create a title for your proposal
- b. In your abstract, summarise the proposal
- c. Add a table of contents
- d. In the introduction, offer background information
- e. Explain the planned study
- f. Explain any pertinent academic initiatives
- g. Determine the manpower
- h. Create a budget

#### **Come up with a title for your proposal**

The subject, treatment, and parameter must all be included in the complete title. A title cannot be considered complete if any of these 3 elements are missing. Your title may differ depending on the sort of study you're conducting, but it should be concise and

informative in general. Your viewers should understand what to anticipate from the proposal after reading the title and be intrigued sufficiently to read it. You'll also like it to be clear as well as precise sufficient so it appears when people look for your study topic.

### **Create a title page**

The proposals, such as your dissertation or thesis, will generally contain a title page that contains:

1. The recommended title of your project
2. Your name
3. The name of your supervisor
4. The institution as well as its department

Verify with the agency or financing organisation to determine if there are any technical needs. The title page style can be specified by the funding organization. If an organization does not, use the APA format. In the top left side, insert a "running head." The running head must be a shorter form of the title as well as must display on all pages of the text. In the top right side, provide the page no. All pages of the proposal must have a page number. The complete title of your research proposal should be centred about one-third of the way down the page. Put your name exactly below the title, double-spaced. List the organization with which you are connected, as well as the names as well as affiliations of any co-investigators with whom you are collaborating, beneath your name. You may also add their contact details in some designs.

### **Summarize the proposal in your abstract**

If your proposal is lengthy, you may need to add an abstract to assist the reader in navigating the paper. The abstract provides a synopsis of the issue mentioned in your proposal. Your suggested solution including objectives, as well as your estimated financing demands, must be stated. At the top of the page, centre the word "Abstract." Begin your abstract text immediately underneath the

phrase "Abstract." The paragraph should not be indented. The length of your abstract should be between 150 and 250 words long.

### **List keywords that will come up in your proposal**

Select 4-5 keywords that encapsulate the major aspects of your work, implying the topic as well as phrases that are intimately linked. Keywords must be phrases that various people could look for. Using the proper keywords will guarantee that your proposal appears in search engines for people who may benefit from it. For instance, if your proposal is on heart problems, you could include terms such as circulatory system, blood, heart attack, etc. Individual words or phrases of 2-4 words can be used as keywords.

### **Include a table of contents**

On the third page of a lengthier research proposal, you should add a table of contents that lists every main component of your study. A table of contents is not usually required for brief proposals that are only several pages long. It's usual to leave out a table of contents, but it relies on the study you're undertaking and the institution to whom you're presenting the proposal. A series of pictures, figures, or tables may be required for very extensive submissions. List all of the proposal's key sections including divisions.

| <b>Item</b>                      | <b>Research/project proposal writing</b> | <b>Thesis writing</b> |
|----------------------------------|--|-----------------------|
| Abstract/executive summary       | Executive summary                        | Abstract              |
| Introduction (background)        | Yes                                      | Yes                   |
| Problem statement and objective  | Yes                                      | Yes                   |
| Hypothesis and research question | Yes                                      | Optional              |
| Literature review                | Yes                                      | Yes                   |
| Methodology                      | Yes (Future tense)                       | Yes (past)            |
| Result                           | No                                       | Yes                   |
| Discussion                       | No                                       | Yes                   |
| Expected outcome/Conclusion      | Expected outcome                         | conclusion            |
| Budget                           | Yes                                      | No                    |
| Time frame                       | Yes                                      | No                    |

### **Move into your introduction**

The introduction should contain " background, problem statement and objectives" sections. The volume of background, problem statement and objectives in the introduction will be 60, 15 and 5% of the total introduction, respectively. In the background, there will be a description of the subject, treatment and parameters. The volume of the subject, treatment and parameters in the background will be 10, 20-30 and 60-70% of the total background, respectively. In the case of subject and treatment, the description of the citation with data will be in the present tense, but the description of the citation without data will be in the past tense. In the case of parameters, the description of citation both with data and without data will be in the past tense.



*Figure 4.1: Introduction typically should be funnel-shaped and moving from general to specific*

A complete problem statement must contain previous work, Gaps in literature with your work, Challenges and Novelty of your work. The absence of any one of these four cannot be called a complete problem statement. The volume of these four subjects will be 40, 30, 20 and 10% of the total problem statement, respectively. Only previous work should be written with citations and in the past tense; the rest should be written using your own words and in the present tense. Introduction typically should be funnel-shaped and move from general to specific, as stated clearly in Figure 4.1.

When beginning your introduction, repeat as well as centre the heading of your article. Include a brief summary of the issue and an explanation of the concept on which your planned study will be founded. The first section of your proposal is your project's initial pitch, so make sure it clearly discusses what you want to do and why. It ought to:

1. Address the subject
2. Provide contextual as well as previous information
3. Create an overview for your issue description as well as study topic (s)

Some important questions to guide your introduction include:

1. Who is interested in the issue (for example, researchers, professionals, politicians, or specific people in community)?
2. How much information do we currently have regarding the issue?
3. What is lacking in existing knowledge?
4. What new ideas will your study provide?
5. Why is this study worthwhile?

If your proposal is lengthy, you may want to add distinct chapters with more extensive data on the backdrop as well as context, problem statement, goals and objectives, including significance of the study.

### **Provide background in the introduction**

Identify the study challenge as well as demonstrate why the effort should be conducted. This section can be divided into several subsections if needed. Discuss or anticipate the link between variables in the research under a header that says "Research Question" or "Research Hypothesis." This effectively defines the research challenge. Define the fundamental ideas that will be used in the planned research under a header that reads "Definition of Terms." Provide proof to back up your skill or knowledge in the subject as well.

### **Write a Literature Review section to contextualize your research**

It is critical to demonstrate that you are conversant with the most relevant studies on your issue. A strong literature review persuades the reader that your proposal is based on current information or idea. It also demonstrates that you are not merely duplicating what others have done or said. In this part, you should try to show how your project will add to field discussions.

**Compare and contrast:** What are the most important ideas, techniques, disputes, as well as confrontations?

**Be critical:** What are the advantages and disadvantages of various strategies?

**Show how your research fits in:** How will you expand, critique, or synthesise the work of others?

In this part, you'll demonstrate to your readers that you're conscious of including previous studies in your field, and how your research will make a major and meaningful impact on it. You will acknowledge previous scholars who lay the basis, assess and synthesise their work, and distinguish your study. Don't make this part a list or a boring summary. Summarize current research in a narrative-like style that attracts readers while revealing the gap that your study will seek to fill.

### **Describe the proposed research**

This section is the heart of the proposal and should include all information about your proposed methodology or approach. This section can also be titled "Methodology." Provide a complete explanation of your proposed research. Address the explanation to experts in the field rather than laymen. Following the literature review, it's a good idea to restate your main objectives, bringing the focus back to your own project. The research design or methodology section should describe the overall approach and practical steps you will take to answer your research questions.

*Table 4.1: Methodology in research proposal*

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|                       |  |
|-----------------------|--|
| <b>Research type</b>  | Will your study be qualitative or quantitative?<br>Will you acquire your own information or rely on primary or secondary sources?<br>Is your study descriptive, correlational, or experimental in nature?                        |
| <b>Sources</b>        | What or who will you research?<br>How will you choose your participants or resources (for example, random sampling, case studies)?<br>When and where will the information be collected?  |
| <b>Methods</b>        | What methods as well as processes will you employ (for example, surveys, interviews, observations, including experiments)?<br>Why are these the most effective techniques for answering your research questions?                 |
| <b>Practicalities</b> | How long will it take you to collect the information?<br>What methods will you utilize to obtain entry to participants and sources?<br>Do you anticipate any significant barriers, as well as if so, how will you overcome them? |

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Make sure not to write a list of methods simply. Aim to make an argument for why this is the most appropriate, valid and reliable approach to answering your questions.

### **Implications and contribution to knowledge**

To end your proposal on a positive note, consider the research's possible consequences for theory or practise, as well as what you hope to add to current knowledge on the issue. Your findings, for instance, might have ramifications for:

1. Improving a single location's or field's procedures
2. Policy objectives are being informed
3. Improving a theory or model
4. Challenging popular or scientific assumptions
5. Establishing a foundation for future study

### **Describe relevant institutional resources**

If you want to conduct your study with an organizational background, include a section titled "Description of Relevant Institutional Resources" to outline what your institution has to offer. Identify facts such as the institution's previous research competency or contributions, the university's supported services, or the institution's research facilities.

### **List of references**

Incorporate a distinct "References" page that lists all of the sources you've utilised to recognise the issue as well as create a research concept. Your research proposal should contain correct citations for all sources utilised, as well as full publication details in the reference section. You may be expected to add a reference in certain situations. This is a checklist of all the resources you used to prepare the proposal, including those you did not reference in the writing, as well as additional pertinent materials you intend to study. The goal is to present the whole body of literature that will assist your study endeavour.

### **Identify the personnel**

This chapter must provide biographical data on the research's major authors. It should be noted that this chapter is not usually incorporated, particularly in smaller proposals. Describe every participant's expertise as well as accountabilities.

### **Include appendices, if necessary**

Appendix is included in the majority of research proposals. They incorporate any supplementary materials required for readers to comprehend the proposal. You'll frequently refer to your appendix through the proposal, providing readers with the opportunity to turn to them as well as read them.

## **Project budget**

Identify the expenses you expect the financing resource to cover, as well as the things that will be covered through other sources of financing. Justification data must be included with every expense. If you are asking for research financing, you will almost certainly be required to provide a thorough budget that details how much each component of the project will cost. Verify to see what kinds of expenditures the financing body will accept to cover, as well as incorporate only related things in your budget. Incorporate the following for each component:

**Cost:** How much cash do you require?

**Justification:** why is this expense required to accomplish the study?

**Source:** how did you come up with the estimate?

To determine your budget, think about:

**Travel costs:** do you have to go to certain places to gather information? How will you obtain there, how long will you stay, and what will you do there (interviews, archive research, etc.)?

**Materials:** do you require any applications or techniques? Is there a budget for training or installation?

**Assistance:** Is it necessary to recruit research assistants for this project? What will they do, and how much will they be paid? Will you outsource any additional jobs, like transcribing, in the future?

**Time:** do you really need to take time off from your normal responsibilities, like learning? How much money would you require to pay for the time invested in studies?

## **5. Research schedule**

In certain circumstances, you may be required to give a thorough project timetable, outlining particularly what you will

accomplish at every step as well as how lengthy it will require. Verify your program's or financing body's criteria to determine if this is necessary.

*Table 4.2: Example of research schedule*

| <b>Research phase</b>                                   | <b>Objectives</b>  | <b>Deadline</b> |
|---|--|-----------------|
| I) Background research including a review of literature | Meet with your supervisor for a preliminary conversation<br>Perform a more thorough study of pertinent literature<br>Make the study questions more specific<br>Create a conceptual structure   | Possible Date   |
| II) Design as well as planning of research              | Create survey questions<br>Determine the best online as well as offline methods for selecting the respondents<br>Complete sampling as well as data analyzing procedures  | Possible Date   |
| III) Data collection including preparation              | Participants should be recruited as well as questionnaires should be distributed<br>Conduct semi-structured conversations with a small group of respondents<br>Interviews should be transcribed as well as coded including survey data should be cleaned | Possible Date   |
| IV) Data analysis                                       | Analyse interview information statistically<br>Analyse conversation texts thematically   | Possible Date   |

| <b>Research phase</b> | <b>Objectives</b>   | <b>Deadline</b> |
|-----------------------|---|-----------------|
|                       | Create the sections on findings as well as discussion   |                 |
| V) Writing            | Prepare a comprehensive draught of your thesis<br>Consult with your supervisor to go through criticism as well as suggestions | Possible Date   |
| VI)Revision           | Redraft based on feedback<br>Obtain final draft acceptance from your supervisor<br>Proofread<br>Print, bind and submit        | Possible Date   |

## **6. Revisions and Proofreading**

- a. When submitting your study project, you should rewrite, revise, and then reread it like you would any other work of scientific writing. If you have the chance, get input from a manager or coworker
- b. To increase your chances of acceptance, you should consider hiring an experienced editing firm to remove linguistic problems, examine the framework of your project, as well as enhance your scientific writing

## **7. How long is a research proposal?**

- a. A study proposal's size differs greatly. A proposal for a bachelor's or master's thesis can be as short as several pages, but proposals for PhD dissertations including research grants are sometimes quite extensive as well as comprehensive. Even though it is written while you begin your study, the form of the proposal is generally similar to that of a thesis or dissertation (but without the results including discussion chapters.)

## **8. Common Mistakes to Avoid**

- a. Failure to be concise  
A study proposal should be targeted as well as not "all over the place" or veer into irrelevant digressions due to a lack of a better and clear idea of goal.
- b. Failure to cite landmark works in your literature review  
Proposals must be based on fundamental research that sets the groundwork for understanding the issue's evolution as well as extent.
- c. Failure to delimit the contextual boundaries of your research [e.g., time, place, people, etc.]  
Like any other research article, your suggested study must tell the reader how and in what manner the study will investigate the topic.
- d. Failure to develop a coherent and persuasive argument for the proposed research this is really important.  
The research proposal is often used in the workplace to explain why research must be financed.
- e. Sloppy or imprecise writing, or poor grammar  
However, a research proposal does not reflect a finished research project, it is expected to be well-written and to adhere to the manner as well as norms of excellent scientific writing.
- f. Too much detail on minor issues, but not enough detail on major issues

In order to strengthen the position that the study must be done, your proposal must concentrate on only a few essential research topics. Minimal concerns can be highlighted, particularly if they are valid, but they must not overwhelm the main storey.

## **How to Write Project Report**

### **9. What is a project report?**

A Project Report is a statement that offers information on the planned business's entire image. The project report describes the project proposal in order to assess the viability of the planned strategy. A project report is a printed record that details an effort.

It provides information that was used to evaluate as well as determine the feasibility of the project. It contains data on economical, technological, financial, organizational, as well as manufacturing issues.

#### **10. Decide the objective**

Take some time to consider the report's objective. Is it necessary for you to describe, explain, suggest, or try and convince? Having a defined objective from the beginning helps that you remain concentrated, making it simpler to captivate your reader.

#### **11. How to write a project report**

Verify the reporting template as well as category when you begin. Is it necessary for you to produce a formal statement or give presentation? Do you have a professional, casual, economical, yearly, technological, fact-finding, or problem-solving statement that you want to write? You must also check to see whether the company has any models. Considering these issues now might save you time afterwards!

#### **12. Content of project report**

While it is not required, there are strong advantages to using the standard report style. The following report parts must be included:

- a. Title
- b. Authors
- c. Abstract
- d. Table of contents
- e. Introduction
- f. Experimental techniques and methods
- g. Results and discussion
- h. Summary/conclusions
- i. References
- j. Appendices (if used)

**In more detail:**

### **First page**

This must include the title, author(s), as well as date.

Title

This must represent the project's region as well as scope.

### **Second page**

The Abstract

The abstract ought to be the sole thing on the 2<sup>nd</sup> page. The abstract's purpose is to offer a concise outline of the study. The reader must be capable to deduce from the abstract what the abstract involved, how it was carried out, and what was discovered. An abstract must not be a review of the report, but rather a sampling of its elements. Generally, the abstract ought to be no more than two hundred words long.

### **Third page**

This must include a table of contents that lists the page numbers for each part.

### **Fourth page and onwards**

Introduction

This is where you explain the fundamental principles (including, if necessary, a concise form of any concept) that will be discussed throughout the project.

Results and discussion

Reason for performing of the study, brief summary of the main significant findings, interpret results clearly and concisely with biological or social factors, relate the findings to those of similar studies and consider alternative explanations of the findings for

the difference must be present in full discussion. In the absence of any one of these five, it cannot be called a full discussion. The volume of these five subjects will be 5, 40, 20, 20 and 10% of the total discussion, respectively. Description of interpreting results clearly and concisely with biological or social factors relating the findings to those of similar studies and consider alternative explanations of the findings for the difference should be written with citations and in the past tense. Besides these, a description of the reason for performing the study and a brief summary of the main significant findings should be written using your own words and in the present tense. Discussion typically should be reverse funnel-shaped and moving from specific to general which has been stated clearly in the Figure 4.2.



*Figure 4.2: Discussion typically should be reverse funnel-shaped and moving from specific to general*

Explain your findings in a reasonable order, emphasising what is essential as well as how the information you gathered was processed to produce the outcomes you explain. You must talk about what you've learned from the information. You must be careful in your methodology.

### **Summary and conclusion**

This is the area where you must put everything all together. It varies from the abstract in that it must be more instructive, which is easy to do since you might commit more words to it. You must provide a condensed version of your conversation, stressing what

you discovered, what difficulties you encountered, including what you may do next to address them. You must also explain how the research may be effectively extended. Page numbers, figures, references, including tables must all be included.

## **References**

These are really essential. Your statement ought to be adequate to tell the reader what you did and what you discovered, including offering sufficient data for them to replicate the job if they so choose. You will have used data from a number of resources, such as the speed of light from a book. In such instances, you should add citations to relevant resources. It's possible that your study found no proof of cold fusion, however, this could perhaps be due to an erroneous value for the specific heat of water. Others can review your work as well as minimise the time it takes to make future breakthroughs if you provide a link to the resource. According to the source, there are 3 r kind of eferences: journal article, book, and website.

### **Book**

The title, authors, date released, version (if not the 1<sup>st</sup>), city of publishing, as well as publisher must all be cited. W. E. Burcham's "Elements of Nuclear Physics," Longman (London), 1979.

### **A journal articles**

"The speed of light by interferometry" A. Dixon, Journal of Light, vol. 3, pp. 123-234, 2003.

### **A web pages**

<http://www.gobbeldygook.co.uk>. A note of warning about material found on the internet. Peer-reviewed journal papers as well as the majority of books are available. This indicates that

they've been double-checked by other field workers for correctness and other factors. This isn't the case with webpages. When obtaining data from similar sites, use caution as well as, if feasible, double-check the material through consulting books or other resources. You must also carefully read the material on the internet to ensure that it makes sense to you. You are a physicist, and you must be proud of yourself for not succumbing to incorrect data including making simple blunders.

### **Include appendices, if necessary**

Several forms of project reports include appendix. They contain any supplementary papers required for the report's readers to comprehend. During the report, you'll make frequent references to your appendix, providing readers the opportunity to turn to them as well as read them.

### **Readability**

Spending some time creating the report easy to read as well as understand. The Navigation window in Word is a wonderful method to assist your reader to navigate your text. To break up large pieces of text, utilize style, and graphics, including checklists.

### **Edit**

Because the initial draft of a report is rarely flawless, you'll need to go back as well as edit and rewrite it. Set away the paper for a few days before examining it, or ask a co-worker to do so.

### **13. Assessment criteria**

These are used by the markers to evaluate your report. When you start writing your report, have a look at these.

### **14. Doing the report**

I suggest the following plan for writing a report

- a. Determine what kind of narrative you want to convey. This is sometimes as simple as choosing the information charts as well as graphs you want to include.
- b. Make a strategy for what you really want to express as well as how it will fit in with the diagrams/graphs you'll be using.
- c. Expand your strategy to incorporate an overview with all the section headings required.
- d. Examine the layout to ensure that the order is logical as well as that nothing important has been overlooked.
- e. Verify your overview with another person, such as a classmate, tutor, or presenter.
- f. Complete the 1<sup>st</sup> full draft of the report.
- g. Examine the initial draft for consistency, and apparent mistakes, including absences (for example, figure descriptions lacking?). Citations to be completed?) If you can find a companion to read it carefully, that's even excellent.
- h. Revise and re-check the draft till you're pleased.
- i. Send on the report.

**15. While writing and planning the report, pay attention to the following points:**

- a. Create a point of mentioning the inquiry's history as well as goals.
- b. Incorporate the inquiry's fundamental principles as well as theories.
- c. Discuss the processes that were utilised. Highlight significant causes of mistakes as well as illustrate how they were addressed.
- d. Only information explicitly related to the computation of ultimate findings must be given; raw data must be avoided. Charts are a very efficient means of displaying findings; only use a table when it makes it more logical to do so.
- e. The final findings must be expressed and succinctly, with an explanation of mistakes but without a breakdown of mathematical operations.

- f. If you utilized or wrote computer code, describe the tests and data validation you did on it.
- g. The interpretation of the findings should be addressed, as well as enhancements and potential expansion of the study.
- h. Provide citations for any books, journals, or other data resources (e.g., web sites) that were essential in writing the report or carrying out the task.

### **Conclusion**

Please keep in mind that the ideas above are merely guidelines. They do not ensure the achievement of a research proposal or project report. They may, nevertheless, assist you in developing a well as well as detailed study proposal and project report. It may be essential not only to the representatives of the reviewer board who must make a decision on your implementation, but also to yourself, through providing a straightforward framework of your own work, a rough map of where you are going, as well as a timeframe in which to efficaciously manage your research proposal as well as project report.

## Chapter Five

### Science Research Thesis Writing Using Keyword Sequence Importance (KSI) Technique

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#### Abstract

In the thesis, there is a section: ‘Abstract’ where we should write according to the following Table 5.1. The volume of the thesis abstract varies with objectives. For example, one objective should contain 200-300 words, while two objectives contain 400-600 words and the count continues, similar calculation depending on the number of objectives.

*Table 5.1: Key points in writing Abstract*

| Item                                | % Importance | Tense   |
|-------------------------------------|--------------|---------|
| Introductory Importance             | 10           | Present |
| Objectives                          | 5            | Present |
| Brief Methodology                   | 25           | Past    |
| Key findings of major parameters/DV | 50           | Past    |
| Recommendation                      | 10           | Present |

#### General Introduction

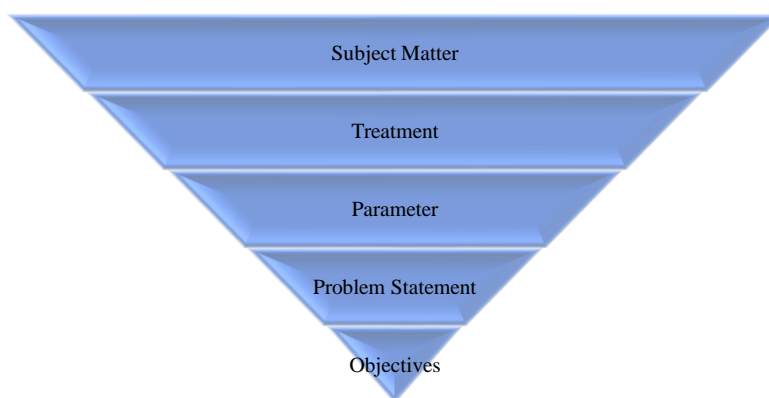
The process of writing a private placement memorandum requires the necessary knowledge, skills, and experience. It is also a time-intensive process and surely a challenging process. It is the crucial part specifically needed to be constructed effectively to ensure the students produce high-impact papers (Bell *et al.*, 2014). Keywords Sequence Importance (KSI) technique is introduced and proven to be an effective method to enable postgraduate students to graduate on time and publish

papers in a good ranking journal. The keyword is a word or concept of great significance (Uddin, 2017). In the KSI technique, the keywords of scientific research, including the subject (S), treatment (T), and parameter (P), are involved in each part of thesis writing. In this context, the subject is a general matter which is being studied in the research, treatment is the overall impact or influence in research, and the parameter is specific major parameters effect or mechanism. These three elements can be organised in six KSI models, namely a) STP, b) SPT, c) PST, d) PTS, e) TSP, and f) TPS model. The objective of this chapter is to provide a guideline and framework in writing the thesis by using the KSI technique in science research which enables postgraduate students to improve the quality of thesis writing in a shorter time. This chapter focuses on writing the thesis using the KSI technique specific for science research which encloses introduction, literature review, methodology, result and discussion, and conclusion (Chandraaekhar, 2002).

## **Introduction**

What makes people curious to know a story timeline? Is it people who will shoot in the story's body or just by reading at the ending? Logically, an introduction is important in a thesis or dissertation. It acts as a starter to explain the chronology of the research we are doing. A strong beginning is essential to establish a clear focus, purpose, and direction of a research. Hence, the scope, context, and significance of the research being conducted should be included in this chapter. By outlining the background and current information about the topic, the purpose of the study needs to be stated. Thus, in the problem statement, the potential outcomes from the selected study must be highlighted. Basically, a good introduction provides the reader with a brief overview of your topic and an explanation of your thesis. A good introduction is fresh, engaging, and interesting. Successful introductions don't rely on clichés or irrelevant information to demonstrate their point. Be brief, be concise, be engaging (Maynar, 2014).

The Introduction is typically expressed in a funnel shape, as illustrated in Figure 5.1. It starts with a general background of the experimental subject, treatment, and parameter using the KSI technique, followed by the problem statement and the research objectives, which specifically determine what your research is all about.



*Figure 5.1: Components of Introduction in Funnel Shape (general to specific)*

The important key points in writing the Introduction are summarized in Table 5.2.

*Table 5.2: Key points in writing Introduction*

| <b>Components</b> | <b>Key points</b>  |
|-------------------|--|
| Subject Matter    | <ul style="list-style-type: none"> <li>• A general description.</li> <li>• Advantages.</li> <li>• Application.</li> <li>• Function.</li> </ul>   |
| Treatment         | <ul style="list-style-type: none"> <li>• Overall impact or importance of the research.</li> </ul>  |
| Parameter         | <ul style="list-style-type: none"> <li>• Specific major parameters that affect the mechanism.</li> </ul>   |
| Problem Statement | <ul style="list-style-type: none"> <li>• Previous work done by researchers</li> <li>• Gap of knowledge in literature.</li> <li>• Challenges and overcome</li> <li>• Significant</li> <li>• Novelty of the work.</li> </ul> |
| Objectives        | <ul style="list-style-type: none"> <li>• Specifically using the KSI technique.</li> </ul>  |

The standard introduction for both master and PhD theses is suggested to be written in 3+1 and 4+1 pages, respectively.

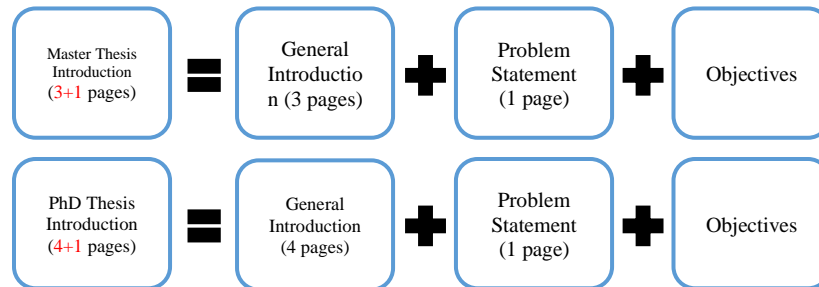


Figure 5.2: Pages description of Thesis Introduction of Master and PhD Research

Plus, the idea of creating a title will become easy for each student by emphasizing three important keywords that summarize what your research is all about. By applying the KSI model, we suggested four possible models which namely a) PST, b) PTS c) TSP, and d) TPS, to be used in arranging a suitable research title. Furthermore, in constructing the objectives of the research, two models can be applied, which are a) PST or b) PTS.

Table 5.3: Examples of suggested Research Titles and Their Relative KSI Models

| Title   | Model |
|---|-------|
| Effect on <u>yield and soil nutrients</u> (P) of <u>maize</u> (S) production due to application of <u>biochar</u> (T).            | PST   |
| Effect on <u>yield and soil nutrients</u> (P) on the application of <u>biochar</u> (T) over-production of <u>maize</u> (S)        | PTS   |
| Synergistic Effects of <u>Biochar</u> and <u>NPK Fertilizer</u> (T) on <u>Soybean</u> (S) <u>Yield</u> (P) in an Alkaline Soil    | TSP   |
| Synergistic Effects of <u>Biochar</u> and <u>NPK Fertilizer</u> (T) on <u>Yield</u> (P) of <u>Soybean</u> (S) in an Alkaline Soil | TPS   |

In addition, the subject, treatment, and parameters of the selected study should be expressed in a standard ratio according to their level of importance in the study. Yet, the KSI technique suggests a ratio of 1:2:7 to introduce the subject, treatment, and parameter in the introductory chapter. Hence, the number of pages and the number of citations required can be estimated using the following equation.

$$\text{Suggested citation for each keyword} = \frac{\text{Total page number} \times \text{total citation per page}}{100}$$

$$\text{Suggested page number for each keyword} = \frac{\text{Total page number} \times \text{Percentage of importance}}{100}$$

To make a better understanding of the level of importance, we proposed an example, “Effect of Salinity on Growth, Antioxidant and Mineral Component of Purslane”. Note that the models that have been proposed above are used. The parameter is divided into three: major, slightly major, and minor, which affect your research that needs to be investigated. Table 5.4 summarizes the keywords and level of importance along with the required pages and citations, which surely enhance your time frame in writing.

*Table 5.4: Keywords and Their Relative Ratio, Percentage of Importance, Required Pages, and Citation*

| <b>Keyword</b>    | <b>Ratio</b> | <b>Percentage of Importance</b> | <b>Required Pages</b> | <b>Required Citations</b> |
|-------------------|--------------|---------------------------------|-----------------------|---------------------------|
| <b>Subject:</b>   | 1            | 10                              | 0.5                   | 5                         |
| - Purslane        |              |                                 |                       |                           |
| <b>Treatment:</b> | 3            | 30                              | 1.50                  | 15                        |
| - Salinity        |              |                                 |                       |                           |
| <b>Parameter:</b> |              |                                 |                       |                           |
| - Growth          | 1            | 10                              | 0.5                   | 5                         |
| - Antioxidant     | 3            | 30                              | 1.5                   | 15                        |
| - Mineral         | 2            | 20                              | 1                     | 10                        |
| <b>Total</b>      | <b>10</b>    | <b>100</b>                      | <b>5</b>              | <b>50</b>                 |

Required Citation = Number of pages x 10

\*\*Assuming 10 citations are included in each page

## **Problem Statement**

A problem statement is a short, succinct explanation of a problem research faces and a proposed solution to the problem. Problem statements can be effective ways to define an issue and communicate a solution within a short span of time. Before you write your problem statement, think about the problem and your proposed solution, and be prepared to back it up with facts. On the other hand, a problem statement is crucial a) to introduce the importance of the topic being studied, b) to offer a concise statement that addresses the research questions, hypotheses, or assumptions, c) to provide a framework for reporting the results and indicates the necessity to conduct the study. An excellent problem statement can be expressed by addressing the question stated in the PGCN model, which involved previous work, gaps with literature, the challenge of your work, and the novelty as the components. In the KSI technique, this PGCSN model has been built to write an excellent problem statement in science research. By using the PGCN model, the problem statement is written step by step, starting the previous work or research (P), Gaps in literature with the research (G), Challenges or possibilities to overcome(C), significant study and Novelty of work (N). The tenses for previous work (P) are written by citation in the past tense; the rest of GCSN is written by own words in the present tense. The standard ratio in problem statement according to KSI techniques consist of 3 previous work, 2 gaps in literature, 2 Challenges and overcome, 2 Significance, and 1 Novelty of work (Uddin, 2017).

*Table 5.5: Components of PGCSN model with Suitable Tenses, Suggested ratio and Percentage of Importance using KSI Technique*

| <b>Item</b>                                | <b>Citation</b> | <b>Tense</b> | <b>Percentage of Importance</b> | <b>Ratio</b> |
|--|-----------------|--------------|---------------------------------|--------------|
| Previous work (P)                          | Citation        | Past         | 30                              | 3            |
| Gaps in literature with your work (G)      | Own Words       | Present      | 20                              | 2            |
| Challenges (C) and Possibility to Overcome | Own Words       | Present      | 20                              | 2            |
| Significance                               | Own words       | Present      | 20                              | 2            |
| The Novelty of your work (N)               | Own Words       | Present      | 10                              | 1            |

### **Literature review**

A literature review gives an insight into published information in a research area within a certain time period. This literature review (LR) is one of the important parts that need to emphasize the discussion on the information of keywords related to the area of the study. It is also the way to overview the related topic supported by organization writing or arrangement subsequence from the importance keyword until the last information. Usually, the sources that were used were collected from journals and books. Yet, information from websites or magazines is accepted depending on the topic to be conducted and the situation at the time.

### **How to find the literature for literature review**

Writing the proper literature review for a thesis or research paper depends on searching for correct literature related to the area you are working on. At the very beginning, it is very important to identify subject treatments and parameters related to your research. Searching the literature depends on the research articles

that include your subject's treatments and parameters to avoid the overloading of unrelated literature. Initially, the 1<sup>st</sup> step you can take is to find and download the very recently published research paper in a higher-ranking journal according to Journal Citation Report (JCR) ranking related to your subject, treatments, and parameters. As the next step, you can go through the reference section of this research article, and you can find new research articles related to your research area, and you can download them as well. It is very important to pay attention to these 3 criteria, similarity (based on subject, treatment, and parameters of your research), latest articles (it is better you can download last 5 years latest), and quality (either Q1 or Q2 according to JCR ranking). You can download many research articles related to your research by applying this approach.

### **Application of Keyword Sequence Important technique in writing a literature review**

Writing a literature review (LR) on a science-based research thesis provides a guideline for the student to prepare the high quality of LR. According to the KSI technique, the guideline on LR writing for Master's and PhD are similar. The sequence of keywords is arranged based on the KSI model selected in the introduction. However, all the six KSI models (e.g., STP, SPT, *etc.*) are suitable to be used in LR writing.

Some of the keywords need to be precise through **sub-headline**. Under each sub-headline, specific information regarding the topic could be explained thoroughly. The total amount of sub-headline depends on the writer's interest in exploring the keyword.

By using the KSI technique, each keyword and its respective sub-headline can be layout in a table to estimate the number of pages and number of citations needed based on its percentage of importance. It is recommended to provide a minimum number of 18 pages and 24 pages of LR for the master thesis and PhD thesis,

respectively. For instance, to generate a quality LR, research entitled “Effect of Salinity on the Growth, Antioxidant and Mineral of Purslane” is the layout as shown in Tables 5.6 and 5.7.

Minimum number of Pages for LR=Number of Pages for Introduction x 6

*Table 5.6: Identification of sequence keywords by using the KSI technique for preparing the literature review (LR) on science research thesis writing*

| <b>Keyword</b> | <b>Percentage of Importance</b> | <b>Required Pages</b> | <b>Required Citation</b> |
|----------------|---------------------------------|-----------------------|--------------------------|
| Purslane       | 10                              | 1.8                   | 18                       |
| Salinity       | 30                              | 5.4                   | 54                       |
| Growth         | 10                              | 1.8                   | 18                       |
| Antioxidant    | 30                              | 5.4                   | 54                       |
| Mineral        | 20                              | 3.6                   | 36                       |
| <b>Total</b>   | <b>100</b>                      | <b>18</b>             | <b>180</b>               |

Required Citation = Number of pages x 10

\*Assuming 10 citations are included in each page; 1 page = 20 lines

*Table 5.7: Characterize of subhead line from sequence keyword by using the KSI technique for preparing literature review (LR) on science research thesis writing*

| <b>Keyword-1</b> | <b>Sub Headline</b>   | <b>Percentage of Importance</b> | <b>Required Citation</b> |
|------------------|-----------------------|---------------------------------|--------------------------|
| Purslane         | 1.1. Taxonomic        | 10                              | 1.8                      |
|                  | 1.2. Origin           | 10                              | 1.8                      |
|                  | 1.3. Growth Habit     | 20                              | 3.6                      |
|                  | 1.6. Flower/Fruit     | 10                              | 1.8                      |
|                  | 1.7. Nutrient content | 50                              | 9                        |
|                  | <b>Total</b>          | <b>100</b>                      | <b>18</b>                |

Total Citation for each sub headline =

total citation number of the keyword x % importance 100

## Material and Method

In the first-place researcher should identify the study site or location where the research is to be carried out. The method of the research should follow sequentially and fully referenced. The research also is expected to write concise method of data analysis chronologically to arrive at the results.

## Results and Discussion

Result and discussion are the most vital and important chapter in theses and dissertations. The results reveal the findings for the present study, and discussion interprets the result of the research. There are three different models for writing results, discussion, and conclusion.

*Table 5.8: Three different models of results, discussion, and conclusion scientific thesis writing*

| <b>Model 1</b> | <b>Model 2</b>         | <b>Model 3</b>            |
|----------------|------------------------|---------------------------|
| Results        | Results and Discussion | Results                   |
| Discussion     | Conclusion             | Discussion and Conclusion |
| Conclusion     |                        |                           |

(Adapted from, Murrison, E, & Webb, C. (1991))

The most common model accepted in most thesis and dissertations is model 1, in which results, discussion, and conclusion are written separately in different chapters. Some of the journal articles also accept model 2 writing style. Result writing presents the findings for the present study from data analysis, whereas this chapter does not include a discussion of the literature review from previous studies and the implication of the findings. The information listed in this chapter outlines the descriptive or exploratory analyses that were conducted. The outlined data from descriptive or exploratory analyses are then constructed into tables or figures to illustrate and summarize the numeric information (Kent, 2008).

## Results

Past tense is used to reveal the findings and refer to the results in result writing. The first sentence of the result writing strongly encourages to be taken from the Sentences Bank, which means that the first sentence needs to indicate the significance or not significance of the presented results. By using the first sentence from Sentences Bank, the data can be revealed clearly, and plagiarism can be reduced. Also, the dummy table needs to be set up for every parameter. For instance, the previous study entitled “Effect of Irrigation Regimes and Nitrogen Levels on the Growth and Yield of Wheat” where growth and yield as the parameters of the study. Thus, the example of dummy tables needs to be set up to refer to the parameters used in this previous study.

The dummy tables need to be set up for every parameter because dummy tables can increase clarity for data records, and it can accelerate the data interpretation because data can be easily interpreted from the dummy tables. After completing the dummy tables, the first and second parameters are prepared properly and checked or edited by the expert. Then, follow the similar writing style as the first and second parameters for the remaining parameters.

The organization of the data in result writing is chronological order according to methods. Figures and tables in result writing are displaced right after the explanation of each paragraph. Besides, the explanation for figures or tables need not be lengthy. A clear difference between treatments is provided using relative data (percentage data). The equation that used to compute the relative data is as below:

$$\% \text{ Increase/ Decrease} = \frac{\text{Treatment value} - \text{Control value}}{\text{Control Value}} \times 100\%$$

Relative data can be used to determine the significance of data. When the original data collected is not significant, relative data need to be constructed to determine the significance of the data.

Also, relative data can compare the significance between treatment parameters and control. When the calculated percentage is greater than 100%, there will be an increasing percentage, whereas, the lower percentage than 100%, the results will in a decreasing percentage.

## Discussion

The main purpose of the discussion is to explain the findings or results from the present study to the reader. There are five important elements that are included in the discussion, which are the reason for performing the study, a summary of main significant findings, relate the findings to similar studies, interpret results clearly and concisely with biological or social mechanisms, and consider an alternative explanation of findings (Table 5.11).

*Table 5.9: Five important elements of discussion writing, the percentage of importance for each element, citation, and tense used in discussion writing*

| <b>Element</b>   | <b>%<br/>Importance</b> | <b>Citation</b> | <b>Tense</b> |
|--|-------------------------|-----------------|--------------|
| Reason for performing the study  | 10                      | No              | Present      |
| Brief summary of main significant findings                                   | 40                      | No              | Past         |
| Relate the similar findings to similar studies                               | 20                      | Yes             | Present      |
| Interpret results clearly and concisely with biological or social mechanisms | 20                      | Yes             | Past         |
| Consider the alternative explanation of findings (optional)                  | 10/0                    | Yes             | Past         |

The reason for performing the study is to reveal the purpose of the study regarding the review of the existing level of knowledge and find out the gap of the research study. The research gap is the reason for performing the study. Hence, the reason for

performing the study needs to be clear and convincing to the reader. After that, a brief summary of the main significant findings summarizes the overall results. The brief summary of the main significant findings only includes important parameters.

Then, relate the similar findings to other similar studies. By relating the similar findings of others to present findings, the validity of the results can be increased. Also, interpret results clearly and concisely with biological or social mechanisms. Not only discuss the results, the physiological or biological mechanisms involved with citations or references also must be described. Consider an alternative explanation of findings is included in discussion writing. This can improve and strengthen the explanation of current findings.

The discussion writing is designed as bell-shaped, and the arrangement of information is from specific to general (Figure 5.3). If there are significant results with the parameters, the discussion needs to be done as below figure. However, if there are no significant results, no discussion is needed. If there are no significant results, a statement needs to be added in discussion to show that there are no significant results.

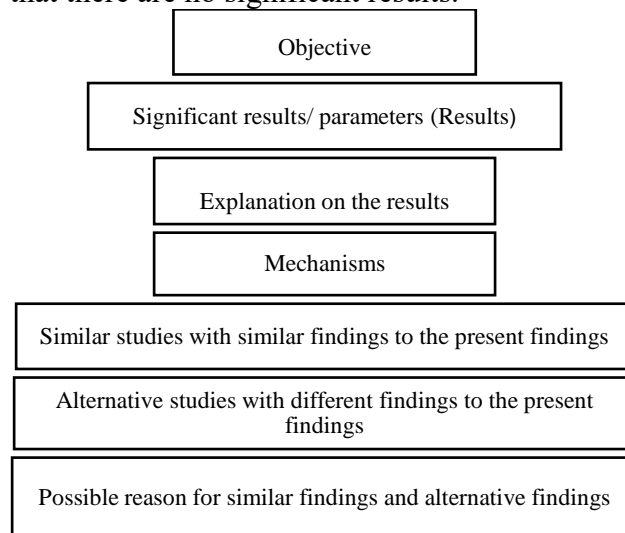


Figure 5.3: Bell-shaped design for discussion writing (from specific to general)

There are several important things to avoid in the discussion, which are overinterpretation of the results, unnecessary information, contractions, inflating the importance of the findings, indirect matter, bully pulpit, and making the conclusion that is not supported by data. The results are easy to inflate by overinterpretation; this will cause the data to be less convincing. The second thing to avoid is unnecessary information because there is only little room for discussion; this discussion needs to be only focused on the data from the present study. Contractions or short forms should not be used in the discussion because it may lead to misunderstandings of readers.

Besides, inflating the importance of the findings will cause repulsion within reviewers and readers (Hess, 2004). Bully pulpit as criticizing other studies should not be included in the discussion. The contrast of present findings with published studies needs to be done professionally without attacking other researchers and never preaching to the readers (Hess, 2004). Lastly, making a conclusion without supported data needs to avoid in the discussion because the conclusion is not making under a reliable or scientific technique. Making a conclusion without supported data can be defined as an assumption only.

## **Conclusion**

In the conclusion section, one or two of the most significant findings can be highlighted to show what the researcher has been discovered according to the objective. It should not be written for too long. Interpret the findings at a higher level of abstraction and do not simply summarize the points already made in the body. Any citations and words such as finally or in conclusion should be avoided. In the Conclusion section also show whether, or to what extent, the research has succeeded in addressing the need stated in the Introduction. Make the Conclusion interesting and memorable. At the end of the Conclusion section, consider including perspectives which an idea of what could or should still be done in relation to the issue addressed in the paper. As a plus,

here are some tips on writing the conclusion to your paper; follow these general rules:

- a. State your conclusions in clear, simple language. Re-state the purpose of your study, then states how your findings differ or support those of other studies and why (i.e., what were the unique or new contributions your study made to the overall research about your topic?).
- b. Do not simply reiterate your results or the discussion of your results. Provide a synthesis of arguments presented in the paper to show how these converge to address the research problem and the overall objectives of your study
- c. Indicate opportunities for future research if you haven't already done so in the discussion section of your paper. Highlighting the need for further research provides the reader with evidence that you have an in-depth awareness of the research problem.

There is a last chapter in the thesis: ‘Summary and Conclusion’ where we should write according to the following Table.

*Table 5.10: The important elements of conclusion writing, the percentage of importance for each element, and tense used in conclusion and recommendation for future research*

| <b>Item</b>   | <b>%</b>          | <b>Tense</b> |
|---|-------------------|--------------|
|   | <b>Importance</b> |              |
| Background information  | 10                | Past         |
| Objectives (the purpose of the thesis)  | 5                 | Present      |
| Methodology (the methods used to research the information)  | 25                | Past         |
| Findings (the main findings)  | 40                | Past         |
| Conclusion  | 10                | Past         |
| Limitation of the study (Optional, Mention what has not been done methodological or resource limitations of your study)                                 | 5                 | Present      |
| Future research (Based on the findings and limitations of the study indicate what research to be done in future for further clarification/confirmation) | 5                 | Present      |

### Science Research KSI Model for Publication and Thesis

| Component                | Key word                                 | Importance %                             | Model         | Tense           |
|--------------------------|--|--|---------------|-----------------|
| TITLE                    | Subject, treatment, parameter            | -  | STP any model | Present Present |
| <u>ABSTRACT</u>          | Importance                               | 15                                       | IOMFR         | Present         |
|                          | Objective                                | 5  |               | present         |
|                          | Methodology                              | 20                                       |               | past            |
|                          | Findings                                 | 50                                       |               | past            |
|                          | Recommendation                           | 10                                       |               | present         |
| <u>INTRODUCTION</u>      | Background                               | Subject S model (10%)                    | BPO           |                 |
|                          | Subject, treatment, parameters           | Treatment -T model (20-30%) parameters 6 |               |                 |
|                          | Problem statement                        |  |               |                 |
| <u>PROBLEM STATEMENT</u> | Objective                                |  |               |                 |
|                          | Previous study                           | 30                                       | PGCSN         | Citation (Past) |
|                          | Gaps in literature (Knowledge, Evidence, | 20                                       |               | Own words (pres |

|                          |   |                     |                         |                        |
|--------------------------|---|---------------------|-------------------------|------------------------|
|                          | empirical, method)  |                     |                         | ent)                   |
|                          | Challenge and overcome  | 20                  |                         | Own words (Present)    |
|                          | Significant of study (food safety, security, environment, economically, global) | 20                  |                         | Own words (present)    |
|                          | Novelty of study  | 10                  |                         | Own words (present)    |
| <u>OBJECTIVE</u>         | Subject, treatment, parameter   | -                   | STP any 6 model         | Past                   |
| <u>LITERATURE REVIEW</u> | Subject, treatment, parameter   | Subject (10%)       | S model                 | Present, Present, past |
|                          |   | Treatment (20-30%)  | T model                 |                        |
|                          |   | Parameters (60-70%) | Parameter- 6 STP models |                        |
| <u>METHODOLOGY</u>       | Location  | -                   | LM...M .....S           | past                   |
|                          | chronological order   | material            |                         | past                   |
|                          | chronological order   | same                |                         | past                   |

|                   |   |             |            |                 |
|-------------------|---|-------------|------------|-----------------|
|                   | Any Method/data collection with ref same.....           | methodology |            | past            |
|                   | ..... Statistics  | Same        |            | past            |
| <u>RESULT</u>     | Introductory sentence                                   | STP         | ITRLH<br>R | past            |
|                   | Trend (option)  | TP          |            | past            |
|                   | Range   | TP          |            | past            |
|                   | Lowest followed by                                      | TP          |            | past            |
|                   | Highest followed by                                     | TP          |            | past            |
|                   | Relative value (% increase/decrease compare to control) | TP          |            | past            |
| <u>DISCUSSION</u> | Reason of study   | 5           | RFMSO      | Past, present   |
|                   | Findings Mechanism for each parameter                   | 40/50<br>25 |            | past<br>present |
|                   | Similar research with key findings                      | 20          |            | past            |
|                   | Opposite result (option)                                | 10/0        |            | past            |
| <u>CONCLUSION</u> | Findings  | 80          | FRL        | past            |
|                   | Recommendation  | 10          |            | present         |
|                   | Limitation  | 10          |            | Own word        |

|   |                               |                              |             |                              |
|---|-------------------------------|------------------------------|-------------|------------------------------|
| <u>SUMMARY AND CONCLUSION FOR THESIS (ALL EXPERIMENTS/OBJECTIVES)</u> | Background                    | 10                           | BOMF<br>CLF | s,<br>present                |
|   |                               |                              |             | past                         |
|   | Objectives                    | 5                            |             | past                         |
|   | Methodology                   | 25                           |             | past                         |
|   | Findings<br>(major)           | 50                           |             | past                         |
|   | Conclusion/<br>Recommendation | 10                           |             | Present                      |
|   | Limitation/O<br>ption         | 5                            |             | Own<br>word<br>s,<br>present |
| Future<br>research<br>suggestion                                      | 5                             | Own<br>word<br>s,<br>present |             |                              |

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## Chapter Six

### Social Science Research Thesis Writing Using Keyword Sequence Importance (KSI) Technique

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#### Abstract

An abstract is a crucial element of academic writing, which is a concise summary of a research paper or entire thesis/ dissertation. The word abstract comes from the Latin abstractum, which implies a condensed frame of a longer piece of writing. It is an original work, not an excerpted section. An abstract must be fully self-contained and make sense by itself, without encouraging reference to exterior sources or quotations. It highlights key content zones, inquiries about reason, the pertinence or importance of investigating work, and the most results. It may be a well-developed single paragraph of around 200-300 words in length, which is indented and single-spaced. The work of the abstract is to lay out briefly all parts of the paper. Even though it is set at the start of a paper, instantly taking after the title page, the abstract ought to be the final thing that a creator composes, once s/he is beyond any doubt of the conclusions they will reach. Abstracts permit perusers who may be fascinated by the paper to rapidly choose whether it is pertinent to their purposes and whether they ought to examine the total paper.

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#### Introduction

This chapter describes the way to write a thesis or dissertation in the social science discipline. The chapter starts with abstract

writing, an introduction, and background writing. Subsequently, the way to write the literature review, hypothesis development, theoretical attachment, and proposing conceptual framework surfaced for the business students and business researchers. The latter discusses the research method and data analysis and findings and discussion of the results. The chapter concludes with the writing of the conclusion, implication, and future direction.

Abstracts are usually required for:

- submission of articles to journals
- application for research grants
- completion and submission of theses
- submission of proposals for conference papers

The format of the abstract depends on the discipline of working. However, in the KSI technique the abstract over the following has five sections that concise as the IOMFC model which is the abbreviation of the following sections:

1. Introduction:
2. Objectives:
3. Methodology:
4. Findings:
5. Conclusion:

The layout of an abstract in the KSI technique:

Layout for an abstract in KSI technique determines the five-part of the abstract based on the number of lines and percentage importance. Table (1) shows the parts of the abstract based on a percentage of importance and number of lines. In an abstract, the introductory importance accounted for 10%, objectives (10%), methodology (20%), key findings (50%), and conclusion (10%) of the totally abstract. For example: if the total number of your abstract lines is 10, one line should be the introduction, one line objective two lines methodology, five lines findings, and one line conclusion.

Table 6.1: The layout of Abstract in KSI Technique:

| <b>ABSTRACT</b> |                         |                     |                  |
|-----------------|-------------------------|---------------------|------------------|
| <b>NO</b>       | <b>Items</b>            | <b>% Importance</b> | <b>Sentences</b> |
| 1               | Introductory importance | 10                  | 1                |
| 2               | Objectives              | 10                  | 1                |
| 3               | Methodology             | 20                  | 2                |
| 4               | Key findings value      | 50                  | 5                |
| 5               | Recommendation          | 10                  | 1                |
| TOTAL           |                         | 100                 | 10               |

Abstracts are of two types- the descriptive abstract and the informative abstract. These types depend on the study discipline (pure science, humanities, business, education, psychology, social science, etc.) and the reporting purpose and reposting authority.

In social science, psychology, and humanities, descriptive abstract is mainly used to report the summary of research work. This descriptive abstract is written within 50-300 words by maintaining some certain but common key elements, as follows:

- a. Background
- b. Purpose
- c. Particular interest/focus of the paper
- d. Overview of contents (not always included)

Another type of abstract is informative abstract (IA) is generally written for science, engineering, or psychology reports. Similar to the descriptive abstract, the informative abstract is short within 200 words. IA has certain key elements in common; each of these elements includes one or two sentences. The key element of IA are as follows:

- a. Background
- b. Aim or purpose of research
- c. Method used
- d. Findings/results

e. Conclusion

In short, we can remember BAMRC which includes all the major moves in an abstract.

The table below summarizes the main features of, as well as the differences between, the two types of abstracts:

*Table 6.2: Descriptive and informative abstracts*

| <b>Descriptive abstract</b>   | <b>Informative abstract</b>   |
|---|---|
| <ul style="list-style-type: none"><li>• entails the main points of the research to the audience.</li><li>• Includes the background, objectives, and aim of the research work but not the methods, findings, and conclusions.</li><li>• Is most likely used for humanities and social science papers or psychology essays.</li></ul> | <ul style="list-style-type: none"><li>• Intimates the readers with all crucial points of the research work.</li><li>• Summarize the background, objective, aim, methods, findings, findings, and conclusions of the full-length research work.</li><li>• Is concise with 10 percent of the main research paper in one paragraph.</li><li>• IA is mainly written in sciences, engineering, or psychology research.</li></ul> |

**Why do we write abstracts?**

An abstract is an imperative component of academic assignments, most regularly, reports, and investigative papers. The abstract is the final thing that an author composes but the first one the audience pursues when they need to have a quick picture of the full paper. We recommend the author take off the composing of the abstract as the final segment. It is recommended to produce the abstract when the paper has been wrapped up since by then the author can have a clear picture of all findings and conclusions.

## **Chapter 1: Introduction**

An introduction is usually 5-6 pages for a master thesis and 10-12 pages for a Ph.D. thesis in social science which includes about 1-2 pages of the problem statement. Readers gain their first impressions of research from this section, so an effective introduction is vital. Sometimes, it may be 15-25 pages for a Ph.D. thesis. It depends on your context. However, Introduction should tell your reader exactly what your study is about and how it is structured. Generally, introductions begin with some brief background or contextual information that provides a focus for your thesis.

The introduction is expected to illustrate how the indented questions are interpreted or limited in academic writing. You may also require to define key terms or theoretical approaches. An introduction should not be too detailed with references from other sources. Instead, it should relate this section directly to the research question or research title. This section should be enriched with some actual words of the research questions of the research title or context.

The introduction should tell your reader:

- How you understand the topic (e.g. context, background, key terms)
- What is your controlling argument is
- What issues you will cover and in which order
- Highlight ideas as major or minor
- What conclusion you will reach (expected results)

In the KSI technique, the introduction part of the thesis in social science includes three main parts:

1. General introduction (background of study)
2. Problem statement
3. Objectives

### **General Introduction:**

A general introduction is the first part of the introduction chapter in which you should explain about target respondent, independent variables, and dependent variables. Commonly it is known as the background of the study. The background of the study can give you the context (historical or current) of an issue, a situation, a character, etc. that is part of a story or research. Quoting sources might be necessary depending on the use of others' work. Importantly, you should present your researcher's issues in this chapter clearly, why your researcher is important. In this part, researchers should explain the relationship between variables briefly. It is called a mini part of literature. Therefore, every piece of literature is the background of the study but every piece of literature is not the background of the study.

*Table 6.3: Sample calculation for introduction (background and this calculation is for 10 pages)*

|       | KEYWORD SEQUENCE | % IMPORTANCE | REQUIRED CITATION |
|-------|------------------|--------------|-------------------|
| R     | Rice farmer      | 20           | 20                |
| IV 1  | Motivation       | 10           | 10                |
| IV 2  | Communication    | 10           | 10                |
| IV 3  | Expectation      | 10           | 10                |
| DV    | Engagement       | 50           | 50                |
| TOTAL |                  | 100          | 100               |

20 Lines and 10 citations/page. Double space, Times New Roman  
1 citation equivalent to two lines

### **Problem Statement:**

The problem statement is the ground or base of a study. The appropriate form of the problem and stating the issue will direct the whole writing of the particular research. Necessarily, the problem statement includes

1. Existing gaps from views of both practical and theoretical perspectives
2. Presenting probable solutions to the problem
3. Presenting the linkage of the gap to be solved with theories.

In this problem statement, each section must have citations to clarify the issue. The practical issue can be cited in journal articles, newspapers, websites, social media information, published reports, government archives, etc. Following the KSI model, each source must be declared at this stage. The number of citations is expected to correspond with the sentences of each section. In the practical problem, the statement will be within 2 to 3 pages. In special cases, the page number may increase.

A problem statement is the heart of the research. The statement of the problem in research is a brief statement of an issue to be described that researchers want to be developed. It plays a pivotal role in maintaining interconnection with other sections of the research (Jacobs, 2013). It determines the research gap between the existing state and desired state of performance. Importantly, it quantifies the relative or absolute measures but does not include possible causes and solutions.

The statement of problem, mostly starts with a general statement which explains concisely why the proposed area of the study is important. However, KSI suggests applying the previous study, gap in literature, challenges for overcoming, significance and novelty (PGCSN) model to write the problem statement scientifically. The problem statement originated from a previous study because previous studies are the base of any research. Conversely, the problem statement should identify the literature gaps by reviewing the extensive previous studies. Therefore, the identification of the problem occurs literature review and its gap. A single study cannot focus on all the gaps existing. With an objective basis, the researcher(s) pay attention to very specific gaps out of many gaps. Consequently, they should state the challenges for overcoming the specific research problem(s).

Addressing the specific gap(s) e.g., the problem needs to contribute to the body knowledge. How this contribution to body knowledge through either theory or in practice is declared clearly. Finally, besides contribution what new knowledge has been developed or added is to be declared or shown in the problem statement so that readers can easily understand. Thus, the researchers should describe the novelty of the study. Table no.--- represents the PGCSN model. According to the model, the previous works contain the highest ratio 3, meaning 30% important. Gaps, challenge and significance contain 20% importance equally and novelty maintains the remaining 10% importance.

*Table 6.4:*

| <b>ITEM</b>                           | <b>Citation/own word</b> | <b>Tense</b> | <b>% Importance</b> | <b>Ratio</b> |
|---------------------------------------|--------------------------|--------------|---------------------|--------------|
| Previous work (P)                     | Citation                 | Past         | 30                  | 3            |
| Gaps in literature with your work (G) | Own words                | Present      | 20                  | 2            |
| Challenges (C) and Overcome           | Own words                | Present      | 20                  | 2            |
| Significant                           | Own words                | Present      | 20                  | 2            |
| Novelty of your work (N)              | Own words                | Present      | 10                  | 1            |

### **Types of research gaps**

**Knowledge gap:** Novice researchers and amateur researchers commonly experience a knowledge gap that what to do and how to do it. In literature, new ideas, new concepts and/or new constructs emerge. All this news is not properly addressed or noticed in current research. If researchers pick these new concepts or constructs in their studies, they are dealing with a knowledge gap. For example, artificial intelligence and its application in consumer service within a self-service restaurant or applied artificial intelligence in conducting online class management are examples of knowledge gaps in the using applied AI in the existing literature. Or the impact of vaccines

and vaccination programs in post-pandemic is part of the knowledge gap because a new analysis tool, new research settings,



Figure Types of research gaps :6.1

**Methodology Gap:** A research gap which is linked with the research method is defined that past research that does not focus on a new or different method, technique, approach, or setting to address the research issues. For example, new sampling techniques, a new cluster of population, different age groups, and new methods (qualitative to quantitative or vice versa) are used in a particular situation or context or discipline. Another example may be that cross-sectional approach to longitudinal or vice versa. “gap is the area in which the previous researchers are silent. you can develop the theory on the bases of logical assumptions which need to address. on the same topic, you are applying a new methodology to accept or reject your hypothesis on the bases of your research result called the methodological gap”.

**Empirical Gap:** Empirical research is the study which is tested or checked with practical data using the statistical tool and found numerical results. If the findings of several studies are not consistent or no conclusive results are derived, this numerical finding gap is called the empirical gap. For example, one study found that knowledge has a significant effect on performance in a particular context. Another study found no or insignificant effect of knowledge on performance. This inconclusive finding or inconsistent result between the two studies is regarded as an empirical gap.

**Theoretical Gap:** Theoretical assessment is a part and parcel of contributory research. A sturdy underpinned theory or a few theories explained a certain context. If this (these) theory (theories) might not be used earlier in a new emerging context, this is a theoretical gap. The knowledge Practice Attitude (KPA) model or theory is predominantly used in medical and agricultural science. This theory may be used in human resource management (HRM) or organizational behavior (OB) or marketing context. Using in different contexts means filling a theoretical gap. Even, introducing a new concept, construct or variable in an existing framework indicates a theoretical gap. “The theoretical gap is the type of gap that deals with the gaps in theory with the prior research. For example, if one phenomenon is being explained through various theoretical models and inconclusive or inconsistent results are obtained. This inconsistency is a theoretical gap”.

**Population or Sample Gap:** If a study is conducted with a new group population where a similar study never was done this can be a population gap. For example, a car company wants to introduce a new model of car. In the decision of color preference, younger or children of a family are interviewed, this research is addressing the population gap. Color choice of a car is prioritized by children's preference; normally, children are not interviewed though they are the most influential in buying decisions.

Similarly, sometimes sample size variation (less or more) is also a methodology gap.

**Policy Gap:** The policy gap can be understood as a matter of less-than-perfect prediction, as opposed to (eminently predictable) difficulties with interpretation, implementation and performance. In many cases, research findings or suggestions cannot be materialized due to various reasons or new policy need to be introduced. This incompleteness or lack of policy is a policy gap which can be addressed in the following research. For example, government policy, institutional policy, regional policy, sectoral policy, etc. related to social science and natural science research.

**Evidence Gap or Documental Gap:** In doing social science research, many cases emerge that no evidence of any event or no document is available in the existing literature, secondary data-house, or in concerned institutions. This unavailability of evidence or document is regarded as an evidence gap. For example, there is no information stored about annual rain or temperature in a particular region or village.

### **Research Questions and Objectives**

A research question is the reflection of the statement of the problem related to the study. Research objectives are the answers to the research question. These sections may or may not use citations.

### **Significance (novelty or contribution) and scope (context and methods) of the study**

The study will declare what contribution will be added to the knowledge or how the body of knowledge will be enriched from the findings of the current study. The logical length of the significance is from one and a half of the standard page to two pages. References to the past literature are expected to be

adequate. For a standard page of significance 5 to 10 citations can be brought. In the case of the scope of the study, the author declares the method and material of the study (who, how, why, when) including respondents, population, sample, tools, methods, data analysis, etc. A standard half-page of scope with 4 to 6 citations is adequate.

## **Chapter 2: Literature Review**

A literature review is a comprehensive summary of previous research on a topic. The key to a good literature review is its ability to tell a story. It must introduce the main topic, and then take the reader on a journey, coherently describing the concept. The literature review surveys scholarly articles, books, and other sources relevant to a particular area of research. The review should enumerate, describe, summarize, objectively evaluate and clarify this previous research. It should give a theoretical base for the research and help you (the author) determine the nature of your research.

The literature review acknowledges the work of previous researchers, and in so doing, assures the reader that your work has been well conceived. It is assumed that by mentioning a previous work in the field of study, the author has read, evaluated, and assimilated that work into the work at hand. A literature review may consist of simply a summary of key sources, but in the social sciences, a literature review usually has an organizational pattern and combines both summary and synthesis, often within specific conceptual categories.

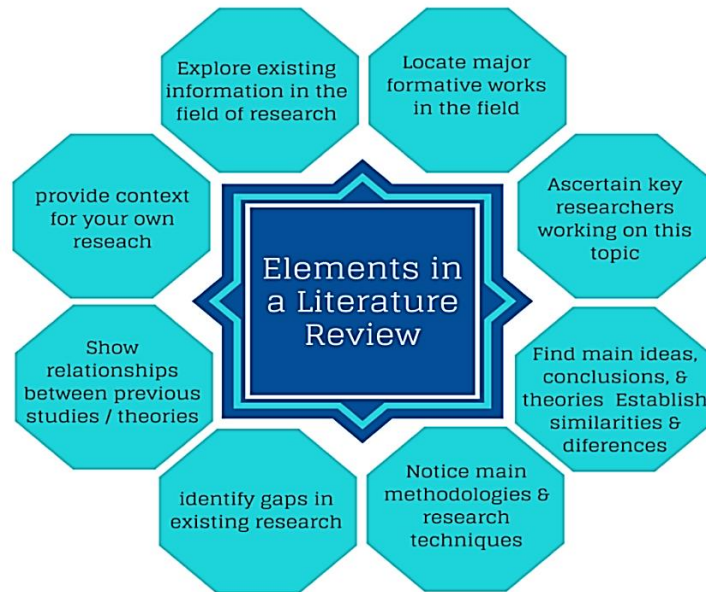
A literature review creates a "landscape" for the reader, giving her or him a full understanding of the developments in the field. This landscape informs the reader that the author has indeed assimilated all (or the vast majority of) previous, significant works in the field into her or his research.

**The literature review should include the following:**

1. Objective of the literature review
2. Overview of the subject under consideration.
3. Clear categorization of sources selected into those in support of your particular position, those opposed, and those offering completely different arguments.
4. Discussion of both the distinctiveness of each source and its similarities with the others.

**Tips for writing Literature Review**

1. Keep the language simple.
2. Use referencing software
3. Get the outline of the review right
4. Give a new interpretation of old material or combine new with old interpretations,
5. Trace the intellectual progression of the field, including major debates,
6. Depending on the situation, evaluate the sources and advise the reader on the most pertinent or relevant research, or
7. Usually, in the conclusion of a literature review, identify where gaps exist in how a problem has been researched to date.



*Figure 6.1: Elements in a Literature Review*

A literature review means gathering past research work that has been done related to the same or similar topics. This is important to know the previous research and to know the gap, especially in the empirical data, methodology and theory. For Master's students, the required pages for thesis literature review writing are between 30 to 36 pages and for the PhD students are between 40-48 pages. In marketing and management and MIS thesis, PhD candidates may write 50 to 80 pages for reviewing past literature.

### **Literature matrix table**

Based on the introduction part where the keyword, sequence and importance have been determined, then prepare the layout to see the required pages and required citation as Table 4 below.

*Table 6.5: Sample calculation for thesis literature review for 40 pages that means from the background increase the volume four times*

|              | <b>Keyword Sequence</b> | <b>% Importance</b> | <b>Required Citation</b> |
|--------------|-------------------------|---------------------|--------------------------|
| R            | Rice farmer             | 20                  | 80                       |
| IV 1         | Motivation              | 10                  | 40                       |
| IV 2         | Communication           | 10                  | 40                       |
| IV 3         | Expectation             | 10                  | 40                       |
| DV           | Engagement              | 50                  | 200                      |
| <b>TOTAL</b> |                         | <b>100</b>          | <b>400</b>               |

20 Lines and 10 citations/page. Double space, Times New Roman  
1 citation equivalent to two lines

*Table 6.6: Literature matrix table for respondent*

|                                 | <b>Subhead</b>        | <b>% Importance</b> | <b>Required citation</b> |
|---------------------------------|-----------------------|---------------------|--------------------------|
| Keywords<br>1<br>Rice<br>farmer | 1.1 Farmers           | 20                  | 16                       |
|                                 | 1.2<br>Classification | 20                  | 16                       |
|                                 | 1.3 Habit             | 30                  | 48                       |
|                                 | 1.4 Education         | 10                  | 8                        |
|                                 | 1.5 Age               | 20                  | 16                       |
|                                 | <b>Total</b>          | <b>100</b>          | <b>80</b>                |

For example, for the keyword 1 rice farmer, five subheads under it are farmers (20%), classification (20%), habit (30%), education (10%) and age (20%). This table is important to serve as a guideline in determining the number of pages and citations required in the thesis writing.

Prepare the same table for each keyword and follow the table accordingly on the number of required pages and required citations. By doing this, a good literature review can be prepared. To prepare the literature review part, extract the information gathered from the literature matrix and arrange it accordingly. In doing so, please be cautious to avoid plagiarism. Plagiarism is

the act of taking another person's writing without giving acknowledgement to the author. This act of plagiarism is considered to be an academic crime.

When a researcher has to introduce another researcher's work, they may do so by citing, paraphrasing, or summarising the study. Inverted commas must be used whenever a sentence is quoted. When paraphrasing and summarising, the sentences must be written in their terms to maintain the sense. Furthermore, the source must be properly credited. Plagiarism in written material may be avoided by using online plagiarism check software. There is no clear agreement or set of guidelines on how much plagiarism is acceptable in academic work. According to consensus, universities or publications normally allow a text resemblance of less than 15%, whereas similarity of more than 25% is regarded as a high proportion of plagiarism.

### **Chapter 3: Methodology**

The systematic, theoretical analysis of the method used in research is known as methodology. It entails a theoretical analysis of a corpus of techniques and concepts related to a study field. It usually includes paradigm, theoretical model, stages, and quantitative and qualitative methodologies.

A methodology is not the same as a method since it does not seek solutions. On the other hand, a method provides the theoretical foundation for determining which technique, set of procedures, or best practices may be applied to a certain scenario, such as calculating a specific outcome. It has also been defined as follows:

1. "the analysis of the principles of methods, rules, and postulates employed by a discipline";
2. "the systematic study of methods that can be, or have been applied within a discipline";
3. "the study or description of methods".

The methodology is a broad research approach that explains how the research will be conducted and, among other things, specifies the methods that will be employed. These methodologies outline the means or modes of data collecting or, in certain cases, how a given outcome is to be calculated. While great emphasis is paid to the nature and types of processes to be followed in a particular operation or to achieve a target, the methodology does not specify specific procedures. When used in methodological research, such techniques provide a useful general framework that may be broken down into sub-processes, integrated, or rearranged.

You must explain how you obtained and analysed your results for the following reasons:

There are two main groups of research methods in the social sciences:

1. The empirical-analytical group approaches social science research the same way as natural science researchers do. This study style is concerned with objective knowledge, yes-or-no research questions, and operational definitions of variables to be assessed. Deductive reasoning is used by the empirical-analytical group, which utilises current theory to develop hypotheses that must be tested. This method emphasises explanation.
2. The interpretive group of methods is concerned with gaining a holistic knowledge of phenomena. Interpretive approaches are concerned with analytically uncovering human subjects' meaning-making practices [the why, how, or by what means individuals do what they do] and demonstrating how such activities are organised to produce observable results. Interpretive approaches let you see how you're connected to the studied phenomena. On the other hand, the interpretive group needs a thorough investigation of variables since it is more concerned with subjective knowledge.

The remainder of your methodology section should describe the following:

1. Decisions you selected while choosing the data you analysed or, in the case of qualitative research, the participants and study environment you looked at
2. The tools and methods you utilised to find and collect data, as well as how you selected important factors,
3. The methods you used to process the data and the processes you employed to analyse it
4. The specific research methods or approaches you used to examine the core hypothesis and research topics. In addition, a well-written methodology section should be included.
5. Introduce the overarching methodological approach to your research problem's investigation. Is your research qualitative, quantitative, or a combination of the two (mixed method)? Will you adopt a unique strategy, such as action research, or will you take a more neutral stance?
6. Describe how the approach fits into the larger research plan. Your data collection strategies should be linked to your research issue. To put it another way, be sure your techniques will truly solve the issue. The suggested approach is not suited for reaching the stated purpose of your work, which is one of the most prevalent flaws detected in research studies.
7. Describe the techniques you'll use to collect data, such as surveys, interviews, questionnaires, observation, and archive research. If you're working with existing data, such as data collection or archive papers, explain how and who developed or acquired it. Make careful to explain why earlier data is still relevant to the present research question.
8. Describe how you propose to examine your findings. Are you going to employ statistical analysis? Will you use certain theoretical views to aid in analysing a text or explaining observable behaviours? Describe how you intend to accurately examine the data's correlations, patterns, trends, distributions, and potential conflicts.

9. Provide context and justification for approaches that your readers are unfamiliar with. The social sciences research challenges and procedures may demand more explanation/rationale than commonly acknowledged principles regulating the scientific and physical sciences. Make your explanations clear and precise.
10. Justify the selection of subjects and the sampling technique. For example, if you want to conduct interviews, how would you choose the sample population? Which texts have you picked, and why, if you're examining them? Why are you utilising this set of data if you're using statistics? If additional data sources are available, explain why your chosen data is the best fit for the study challenge.
11. Describe any possible drawbacks. Are there any practical constraints to your data collecting that you should be aware of? What methods will you use to account for any confounding factors and errors? If you know your approach will lead to difficulties, be upfront about it and explain why the benefits of using it exceed the chance of problems arising.

A snapshot of Methodology for primary data analysis positivism philosophy:

The following sections and subsections may be included in the chapter on Methodology. Each section must be adorned with certain references (please follow the guidelines of the KSI model).

### **Problems to Avoid:**

#### **1. Irrelevant Detail**

The methodology section is to be written thoroughly maintaining the point. Here only relevant information is provided which is directly comprehensible to the audience such as methods, data collection techniques, data analysis tools, and data analysis details in relation to the research question of a particular study. It should be kept in mind that the method section is normally the smallest part of the thesis or article writing except the conclusion.

## **2. Unnecessary Explanation of Basic Procedures**

In the method section, it is expected that the author will make the audience understand the basic assumption of how a research problem is investigated. It is not suggested to write 'how to guide about a particular method or to write detailed procedures of a particular method. The focus is to be on how a method is applied in particular research work. If the researcher uses an unconventional research method where the audience may not understand the procedures, that case s/he can explain the detail of how this particular approach was selected, used and how it enhances the overall process of discovery.

## **3. Problem Blindness**

A researcher may encounter problems with data collection, or there may be a gap in existing data or archival data (materials). It is not suggested to ignore these problems or not to pretend that these problem does happen in particular research work. It is recommended that these ever-occurring problems must be addressed and showed the way how these problems are overcome with justification. These problems are part of research work, in research methods. It should demonstrate to the audience a cogent rationale in decision-making and how the researcher mitigates the impact of these problems.

## **4. Literature Review**

The literature of research work entails an overview of sources of the research topic, the methodology section should cite any sources which are used to select and apply a particular method [i.e., The survey method chosen should be cited with the works to help construct the survey].

## **5. It's More than Sources of Information!**

A description of a study method should be distinguished from a description of the study's information sources. A list of sources is useful when an explanation about the source selection and use is placed in the method. The description of the project's methodology complements a list of sources in that it sets forth

the organization and interpretation of information emanating from those sources.

#### **Chapter 4: Result**

In this chapter, just write the result of the study in the past tense. Make sure only information relevant to the research problem and questions is included. Framing result side by side with research questions or hypotheses is the easiest way to report the results. Include in detail how data are analyzed and the result of the validity and reliability of questions. Observe how each result relates to the question of whether the hypotheses are supported. Emphasize critical trends, differences and relationships among data. Remember not to speculate on the meaning of data or its consequences as this must be reserved for the discussion chapter.

Results not related to research questions and any details to offer must be channelled to the appendix page.

Visual elements such as graphs, charts and tables are good to have if they enhance the storyboard. Visual elements help to summarize complex data or exemplify a trend in the result. Remember to label all tables and figures clearly to help readers understand what is being told. Use headings as a guide to findings/results according to research questions, themes, or other appropriate organizational schemes.

In reporting the result, the following steps are recommended:

1. Introduction: The introduction provides a brief summary of and rationale for how data were analyzed. It describes the organization of the chapter according to research questions, conceptual framework, or thematic categories.
2. Findings are presented in clear narrative form by connecting and synthesizing using substantive explanatory text and visual elements such as tables and graphs.

3. Inconsistent or unexpected data are discussed by alternative explanations.
4. Summary: This section explains in summary form what the chapter has identified, and also prepares the reader for the chapters to follow, by offering some coherence to the content of the subsequent chapters.

Before starting to write the 'Results' part of your thesis, you should prepare a common word bank that consists of the first sentence of all your variables. These are tips that can be followed:

1. Use the past tense when you refer to your results
2. First sentence: From sentences Bank
3. Dummy table set up for all IVs
4. The first and second statements for IV can write properly and edit by expert
5. The rest of the statement will follow according to 1st and 2nd statement on the IVs
6. Organize the data in the Results section in chronological order according to the methods
7. Avoid lengthy explanations of tables/figures
8. Relate hypotheses with results writing and discussion (refer to table 3 and 3a below)

## **Chapter 5: Discussion**

The flow for writing the 'discussion' part is like a reverse funnel shape, opposite to the 'introduction' writing flow, for 'discussion' you should start to write specific issues that are related to your research objective leading to more general issues. KSI technique makes it easier to structure your writing content according to its importance using the excel template given. Please see Table 6.10 and Table 6.11 for a detailed KSI writing technique.

### **What is a conclusion paragraph?**

1. A conclusion is what you will leave with your reader

2. It “wraps up” your essay
3. It demonstrates to the reader that you accomplished what you set out to do
4. It shows how you have proved your thesis
5. It provides the reader with a sense of closure on the topic

*Table 6.7: % importance for each content / item in writing Discussion part*

| Item         | Content   | Tense   | % Importance | Citation |
|--------------|---|---------|--------------|----------|
| 1            | Reason for performing study (Own words)   | Present | 10           | NA       |
| 2            | A critical analysis of your finding(s) (Own major words)                          | Past    | 35           | NA       |
| 3            | Explain why the findings are important (Own words)                                | Present | 10           | NA       |
| 4            | Relate the findings to those of similar studies (citations)                       | Past    | 15           | Citation |
| 5            | Consider alternative explanations of the findings (citations)                     | Past    | 5            | Citation |
| 6            | The limitations of the study (Own words)  | Present | 5            | NA       |
| 7            | Suggestions for future research (Own words)                                       | Present | 5            | NA       |
| 8            | Overall conclusion according to objectives, recommendation and impact (Own words) | Present | 10           | NA       |
| <b>TOTAL</b> |   |         | <b>100</b>   |          |

NA= no citation

**Things to avoid for discussion:**

1. Over interpretation of the results
2. Unnecessary information

3. Contractions/ short forms
4. Exaggerating the importance of the findings
5. Indirect matter
6. Do not criticize studies by others

## **Chapter 6: Conclusion and recommendation**

This is the final chapter of a thesis. This chapter includes the implication of the study in at least two ways: a. theoretical implication and b. practical or managerial implication. This chapter will conclude with limitations and directions for future studies.

The conclusion is to be shorter and more general compared to the detailed discussion. Making broad statement(s) and summing up the most significant insights of the research in a real context. A scholarly conclusion reviews the following key points of the dissertation/thesis and explains to the audience the findings to be relevant, applicable, or related to the real world as a whole. The following sections may be part of the conclusion:

- a. A brief discussion of the findings
- b. Answering the research question(s)
- c. Summarizing and reflecting on the research
- d. Making recommendations
- e. Emphasizing the contributions (very specifically)
- f. Limitations of the study
- g. Future Directions

Each section of the conclusion must be referred to scholarly references. The length of the conclusion and the number of citations depend on the content and context. However, each argument must be cited accordingly KSI model.

### Social Science Research Model for Publication and Thesis

| Component   | Keyword  | Importance %   | Model                | Tense           |
|---|--|--|----------------------|-----------------|
| <b>TITLE</b>  | Respondent, Independent variable, the dependent variable | -  | <b>RIVDV 6 model</b> | Present         |
| <b>ABSTRACT</b>   | Importance   | 15   | <b>IOMFC</b>         | Present         |
|   | Objective  | 5  |                      | present         |
|   | Methodology  | 20   |                      | past            |
|   | Findings   | 50   |                      | past            |
|   | Conclusion   | 10   |                      | present         |
| <b>INTRODUCTION</b><br>A. Background<br>B. Problem statement<br>C. Research question<br>D. Research hypothesis<br>E. Research objectives<br>F. Scope of study<br>G. Significant | Background   | Respondent (10%), Independent variable (40%), dependent variable (50%) | <b>BPO</b>           |                 |
|   | Problem statement  |  |                      |                 |
|   | Objective  |  |                      |                 |
|   | Previous study   |  |                      |                 |
|   | Gaps in  |  |                      |                 |
|   |  |  |                      |                 |
|   |  |  |                      |                 |
| <b>PROBLEM STATEMENT</b>  | Previous study   | 30   | <b>PGCSN</b>         | Citation (Past) |
|   | Gaps in  | 20   |                      |                 |

|                          |   |                                 |                          |                        |
|--------------------------|---|---------------------------------|--------------------------|------------------------|
|                          | literature (Knowledge, Evidence, theoretical, policy, population, empirical, method)                          |                                 |                          | words (present)        |
|                          | Challenge and overcome  | 20                              |                          | Own words (Present)    |
|                          | Significant (food safety, security, environment, economically, socially, global)                              | 20                              |                          | Own words (present)    |
|                          | Novelty   | 10                              |                          | Own words (present)    |
| <b>OBJECTIVE</b>         | Respondent, IV, DV  | -                               | <b>RIVDV 6 model</b>     | Past                   |
| <b>LITERATURE REVIEW</b> | R, IV, DV   | R (10%)<br>IV (40%)<br>DV (50%) | <b>R, IV, DV 6 model</b> | Present, present, past |
| <b>METHODOLOGY</b>       | Location  |                                 | <b>L...M..... MS</b>     | past                   |
|                          | Pilot survey, Reliability and validity test, Estimate appropriate sample size, Appropriate sampling technique | materials                       |                          | past                   |

|                    |   |             |                 |                    |
|--------------------|---|-------------|-----------------|--------------------|
| <b>RESULT</b>      | Research framework  | materials   | <b>IRLH</b>     | present            |
|                    | chronological order   | methodology |                 | past               |
|                    | Statistics (descriptive analysis, Pearson correlation analysis, multiple linear regression) |             |                 | past               |
|                    | Introductory sentence   | -           |                 | past               |
| <b>DISCUSSION</b>  | Range   | -           | <b>RFMSO</b>    | past               |
|                    | Lowest followed by  | -           |                 | past               |
|                    | Highest followed by   | -           |                 | past               |
|                    | Reason of study   | 5           |                 | Past, present      |
| <b>CONCLUSION</b>  | Findings  | 40          | <b>FRL</b>      | past               |
|                    | Factors   | 25          |                 | present            |
|                    | Similar research  | 20          |                 | past               |
|                    | Opposite result   | 10          |                 | past               |
|                    | Finding   | 80          |                 | past               |
|                    | Recommendation  | 10          |                 | present            |
| <b>SUMMARY AND</b> | Limitation  | 10          | <b>BOMFC LF</b> | Own words, present |
|                    | Background  | 20          |                 | past               |

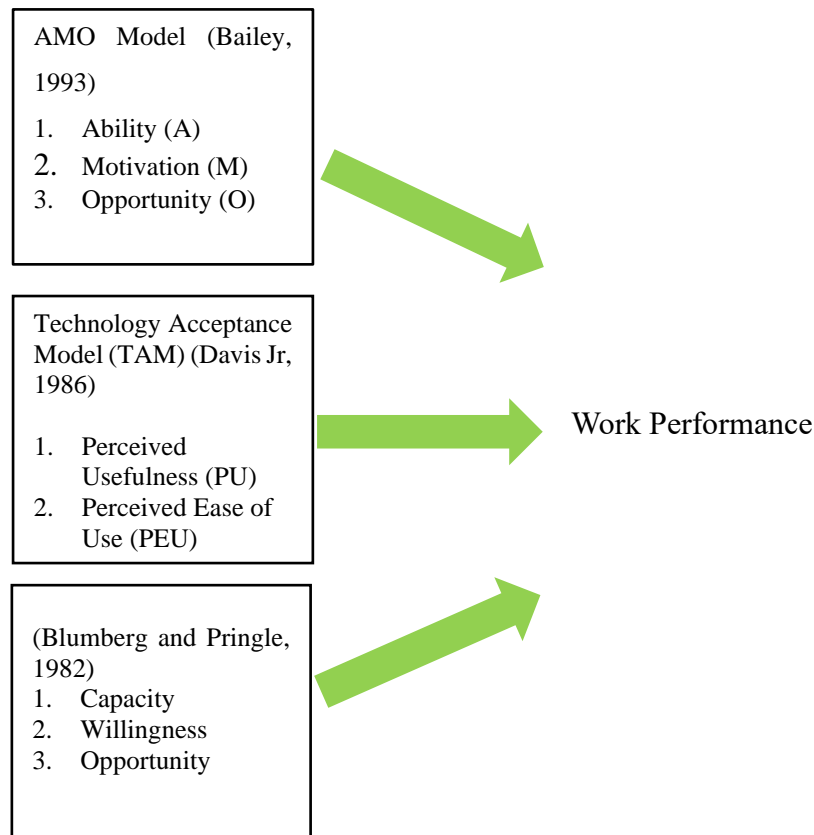
|   |                            |    |  |                       |
|---|----------------------------|----|--|-----------------------|
| <b>CONCLUSION<br/>THESIS<br/>ALL<br/>OBJECTIVES</b> | Objectives                 | 5  |  | past                  |
|   | Methodology                | 25 |  | past                  |
|   | Findings<br>(major)        | 50 |  | past                  |
|   | Recommendation             | 10 |  | Present               |
|   | limitation                 | 5  |  | Own words,<br>present |
|   | Future research suggestion | 5  |  | Own words,<br>present |

### **PRIMARY DATA FOR QUANTATIVE RESEARCH**

- Run the pilot survey before the main survey
- Reliability and validity test: questionnaire validity check by the extension experts and committee members;
- Reliability check using Cronbach alpha ( $\alpha$ ) measure
- Estimate the appropriate sample size: Krejcie & Morgan (1970) Table
- Appropriate sampling technique: multistage random sampling
- Measurement of Variables: five (5) - point Likert scale
- Data analysis: descriptive analysis, Pearson correlation analysis, multiple linear regression analysis

## Published Theory / Framework

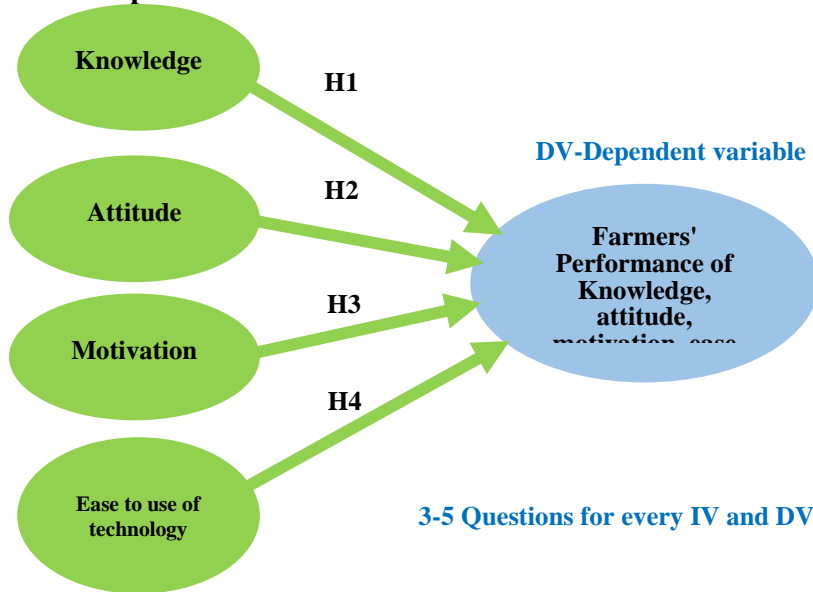
### Theory of Work Performance



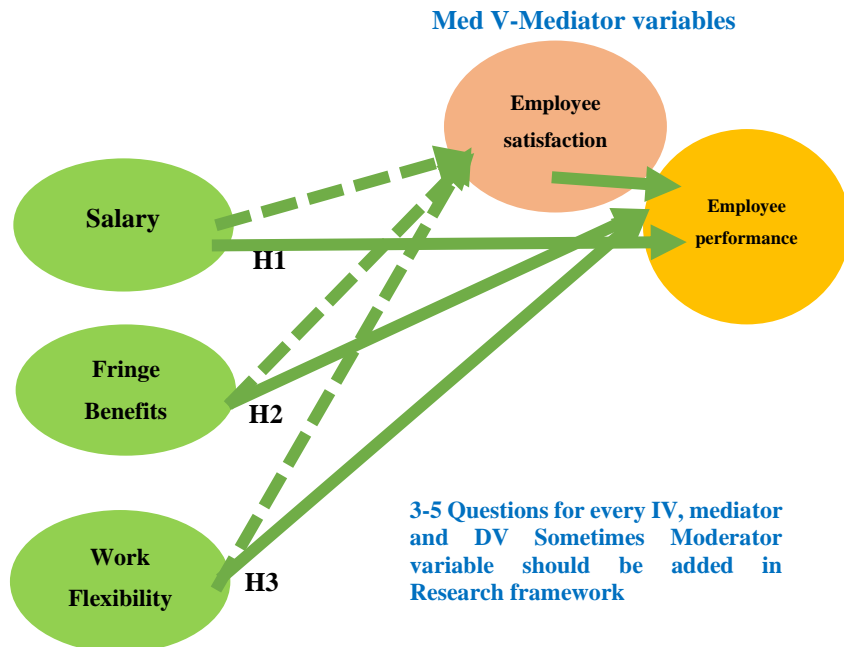
Preparation of the conceptual framework for primary data research

In preparation for primary data research according to objectives we need to find out the potential theories. From the theories we can select our independent variables with proper justification. Also according to the objective of the research you can include mediator and moderator to develop the new conceptual framework. After developing the conceptual framework, you can develop the questionnaire under the IV, mediator or moderator, and DV.

**IV-Independent variables**



**Conceptual Research Framework**



**Conclusion**

The most common starting point for research is a question. Identify the topics and theories that interest you and what you would like to learn more about. During your program, you learned about a wide range of topics and theories. Are there any questions you feel the body of knowledge in your field does not answer adequately? Find information relevant to the topic and its theoretical framework once you have a question in mind. Make sure you read everything you can--academic research, trade literature, popular media, and the Internet. Understand exactly what a dissertation is, find a unique, valuable research topic, write a convincing research proposal, craft a strong introduction chapter, undertake an in-depth literature review, carry out your own research, present your findings.



## Chapter Seven

### Writing Research Articles and Review Articles Using Keyword Sequence Importance (KSI) Technique

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#### Abstract

Knowledge is a common heritage of mankind and it is ought to be shared among them either through verbal means or in writing. The scientific community whose primary responsibility is to research different aspects of human endeavours owes a duty to communicate their research findings to their counterparts across the globe. Similarly, communication of findings within the academic community is inevitable as it forms part of the requirement for the attainment of their promotion. This type of communication is usually presented in the form of research articles, review articles, or short communications depending on the purpose. Often carrying out the research is not a problem for academics especially, the young ones, but presenting it in the form of an article to a peer-reviewed journal for publication becomes very difficult. This without a doubt comes as a result of a lack of know-how on how to systematically and logically present their findings. To this effect, a new style of writing research articles, review articles, and short communications known as the Keyword Sequence and Importance (KSI) techniques was developed to ease the writing process. It is easy

to follow because of its systematic and logical style to develop various components of the research article. In this chapter, a detailed breakdown of the way to write an introduction, problem statement, methodology, results and discussion using the KSI techniques has been presented. It is hoped that the reader finds this chapter useful and informative towards writing the various types of research articles.

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**Keywords:** KSI technique, Research Article, Review Article, Scholarly Communications

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### **General Introduction**

This chapter **entitled “Writing research articles, review articles and short communications using KSI”** is aimed at highlighting the various ways in which scholars share information about their research findings with the academic community and the general public irrespective of the field of study (e.g., sciences, social sciences or arts, and humanities). Before we go to the different methods of communication, there is a need to know what communication is and how and when a piece of information is get crossed. ***“Communication is simply the act of transferring information from one place, person or group to another (Fatimayin, 2018)”***. ***Similarly, scholarly communication is the mean of sharing knowledge where research works and other facts are presented to the academic community while they are preserved for future usage.***

Among the common means of academic communication are publishing in scholarly (e.g., scientific) journals, books, E-only journals, reviews articles, preprints, working papers, encyclopaedias, dictionaries, and annotated contents, data, blogs, focused discussion forums, expert and scholarly hubs, and conference papers. Correspondingly, in the fields of arts and humanities, other forms of communication and knowledge sharing specifically consist of multimedia setups like sound recording and video coverage. For this chapter, we are going to

limit our discussion to the written form of communication (i.e., research articles, review articles, and short communications). These three forms are the major ways in which scholars communicate in writing to the scholarly community. Efforts have also been made to treat these methods in detail using the KSI Technique. It is hoped that at the end of this chapter, researchers will find an easier and more systematic way of communicating their research findings either as research articles, review articles, or short communications.

### **Why KSI in Written Scholarly Communications**

Several groups, comprising library syndicates, funders of research, academicians, and academic institutions were advocating for advancement to the methods of disseminating scholarly communication, predominantly with respect to the Internet, innovating new and affordable approaches for the dissemination of new knowledge, and at the same time upholding a 'peer review' procedure to guarantee that the quality of research work is sustained. To improve the quality of research in this respect and to achieve a justifiable publication tool in high impact journals, **Dr. Kamal Uddin of Universiti Putra Malaysia has founded the KSI technique** "to transform scholarly practice through advanced training, researching, preservation, and publication **systematically and easily**". Recent advancements in technology, comprising open-access academic publications and institutional repositories at higher institutions are regarded as deriving forces to change and improve the scholarly communication system. The main factor responsible for the apparent crisis appears to be the academic reward structure that highlights the number of publications. There is a resulting mandate by the academicians for peer-reviewed publication channels. An additional significant cause of the aforementioned is to commercialize the academic publication and make it an international standard. The increasing supremacy of publishing corporations in the fields of science, technical, and medical sciences and to a certain extent in the social sciences is raising

alarm about professional information. Academicians, usually indifferent to rights matters, transferring of the copyright to for-profit publishers, often for reports of research funded exclusively or partly at the expense of the public. Viable publishers have instituted a highly valuable role for themselves along the chain of academic communication.

### **Academic Communication, Scholarly Reward, and Reputation**

Academic communication appears to be a critical aspect of academic study and researchers who are major academicians at higher institutions are regularly evaluated through their academic performance and records of their scholarly publications. Promotions of academicians are mainly considered based on the number of publications and how significant the journals they were published in area. A list of researchers' publications can assist them in building a positive reputation within their area of expertise. The increase in the number of open-access journals has aided this method providing a better system for scholars to make their research findings published irrespective of the perceived significance, as it is obtained in most of the traditional journals. Subsequently, the published result is then made accessible to other researchers at no cost, subsequently, the researchers can further build on this research work without any limitation. This methodology gives way to the acceptance and publication of a larger proportion of submitted articles across a broader subject area. Using the KSI techniques scholars will find an easier way of writing a research article, review article, and short communication. To end this introduction with a saying in the academic profession **“you either publish or you perish”**. This saying has an in-depth meaning that most of us have seen practically happening in our tertiary institutions where lecturers stagnate in a particular rank simply because they lack the basic skills to advance their careers through the publication of their research. We hope with the help of the KSI technique you will find this chapter worth reading and implementing to help you reach the peak of your career in academics.

## **Writing a Research Article: A Gateway for Beginners**

A research article provides an avenue for communication between scientists about the findings of their research. It is a primary source that presents or reports the methodology and results or findings of an original study carried out by the authors (Musa and Khamis 2015). The nature of the study may be experimental, interview, survey, or administered questionnaires, nevertheless in all situations, primary/raw data have been collected, organized, and analyzed by the authors, and subsequently, conclusions drawn from the analyzed results. There is a standard format to present the research article in an orderly and logical manner for the authors to follow:

### **Format of a Research Paper**

1. Title
2. Authors
3. Abstract
4. Introduction
5. Materials and methods
6. Result (tables, charts, graphs figures and illustrations)
7. Discussion
8. Acknowledgement
9. Funding
10. References

### **Title**

The title should be precise, specific, simple, short, clear, and unambiguous adequate to describe the contents of the article, however not be so complex (technical). This will make it attractive and interesting to the reader so that it is not only the experts that will understand. Using the KSI technique you can easily point out all the keywords related to the topic while other English words can be deleted so that you can decide on the appropriate words to use in forming a new title. For instance, *“Induced Mutagenesis Breeding through Acute and Chronic*

*Gamma Irradiation for Yield Improvement in Two Bambara groundnut [VignaSubterranea (L.) Verdc.] Varieties”* is a complete title for particular research the keywords can be identified by deleting the English words as follows: “~~Induced Mutagenesis Breeding through~~ Acute and Chronic Gamma Irradiation (Treatment) ~~for~~ Yield Improvement (Parameter) ~~in~~ Two Bambara groundnut [VignaSubterranea (L.) Verdc.] Varieties (Subject)”, here the undeleted portions constitute the keywords from this topic.

### **Authorships**

Generally, the person who did the research and wrote the article appears to be the first (lead) author of that research article, other people who made significant contributions to the research are listed as co-authors for publication. Permission from your mentor/advisor should be sought before you include their names in a publication. Professional titles and academic degrees are not included here.

### **Abstract**

An abstract is a single paragraph of normally 150-300 words which contains the summary of the entire research paper or thesis. Following the KSI technique, an abstract must contain five (5) essential parts, first introductory importance, secondly objectives of the study, thirdly the methods used in achieving the set objectives, followed by the important results/findings and lastly major conclusion/recommendations and the implication of the findings which should be clearly stated in a summarised form. An example is given below:

1. Introductory importance: Bambara groundnut is an annual herbaceous and highly nutritious but underutilized grain legume with huge potential to ensure food and nutritional security in low-income earning countries. Nevertheless, its potential for enhancement using conventional methods of

breeding is limited due to the nature of its flowers (<2% success rate). Therefore, the most practicable method of its improving is through creating genetic variability using the induced mutagenesis method.

2. Objectives of the study: The particular research work was carried out to assess the radiosensitivity between two Bambara groundnut genotypes treated with acute and chronic gamma rays to evaluate the lethal (LD) and growth reduction doses (GR).
3. The method used in achieving the set objectives: Healthy Bambara groundnut seeds from both genotypes were subjected to different acute gamma irradiation doses using Cesium-137 at 0, 25, 50, 75, 100, 125, 150, 175, 200, 250, and 300 Gy. Similarly, for chronic gamma irradiation, two-week-old seedlings from the two Bambara groundnut genotypes were subjected to the different accumulated doses of 0, 8.52, 17.04, 35.56, 34.09, 42.61, 59.65, 93.74, 144.87, 255.64, and 570.94 Gy, at Gamma Green House (GGH) for two months.
4. The important results/findings: The result of the analysis of variance showed a highly significant variation ( $P < 0.01$ ) for all the characters examined except for the internode length which was not significant. A graph of linear regression was plotted to evaluate the mean LD and GR of the genotypes used. The lethal doses (LD<sub>25</sub>, 50, 75) established for acute gamma irradiation on Ex-Sokoto genotype were 75, 160, and 250 Gy whereas 68, 148, and 227 Gy were determined for Karo genotype. For chronic gamma irradiation, the growth reduction dose established for Ex-Sokoto were 47, 250, and 444 Gy, and 70, 264, and 452 Gy for Karo genotypes.
5. Major conclusion and the implication of the findings: Largely, the studied growth traits and survival percentage of Bambara groundnut rise with a decrease in the amount of gamma-irradiation doses applied. The identified LD and GR doses in this study can be employed in large-scale mutation breeding programs for developing an extensive range of Bambara groundnut mutants.

Sometimes the length of the abstract depends on the complexity of the research and results; therefore, you should check the author's instructions to know the maximum required length. The abstract should be slightly simpler than the main article so that the audience is not discouraged from reading the article. Sometimes researchers can only get access to abstracts, therefore you need to provide adequate information to make it relevant to someone who may cite your work. After you have finished writing the abstract, read it again to ensure that all relevant information contained in the article is captured in the abstract. Tables, figures, charts, and illustrations are not part of the abstract.

### **Introduction**

A good introduction should be a concise statement of the problem that will cover the review of existing literature on the topic of study, and explain the justification of the author's study. This is significant because it indicates that the authors are up to date with the current studies and will strategize to contribute significantly to the current research, the meaning is not a repetition of existing knowledge. This information should be summarised in a few sentences. Explain the relevance of the problem you are addressing, and state the existing gap, significance, scope, limitations, and objectives of the research work (Zamri et al., 2012). Hypotheses or research questions should be able to clearly state the purpose of the research problem, briefly explain the reason and possible approach towards addressing it, and predict the possible outcomes of your study (Kanoksilapatham, 2012). State the novelty or relevance of your work if compared with previous ones. The length of the introduction is mostly 1 to 2 or 3 to 4 pages for masters and PhD, respectively. A brief example of how to write an introduction using the KSI technique for a PhD (Science) is given below.

In this example, the subject, treatment (s), and parameters (STP) model of the KSI technique is considered. The distinctive importance percentage of text words/volume of the subject,

treatment, and parameter for science-based research is 1:3:5 or 1:3:6. Similarly, social science research, is made up of subject matter, independent variable (s), and dependent variables, its distinctive ratio of importance for the subject, independent variable (s), and dependent variables is 1:2:3 or 2:3:5.

### General Introduction

Typically, the general introduction should be a “funnel-shaped” model, moving from general to specific and can add up to 5 points for the problem statement section. The general introduction can simply be written appropriately using the KSI model technique using the formula below:

*Required citation number for each keyword = Citation number per page × required page number*

**Introduction total citations = 30 for 3 pages (background)**  
**Title: salinity effect on yield, antioxidant and nutrient composition of rice**

| Keywords sequence | % Importance | citation                                 | Citation no |
|-------------------|--------------|--|-------------|
| Rice              | 10           | rice focus (M, 2021)                     | 3           |
| Salinity          | 30           | salinity focus (U, 2021)                 | 9           |
| yield             | 20           | Salinity effect on growth (K, 2021)      | 6           |
| Antioxidant       | 30           | Salinity effect on antioxidant (K, 2021) | 9           |
| Nutrient          | 10           | Salinity effect on nutrient              | 3           |
| <b>Total</b>      | <b>100</b>   | <b>30</b>                                | <b>30</b>   |

For instance, to prepare a general introduction that is consisting of five pages including problem statement on the topic “Induced Mutagenesis Breeding through Acute and Chronic Gamma Irradiation for Yield Improvement in Two Bambara Groundnut [*Vignasubterranea* (L.) Verdc.] Varieties” a student can follow these steps. Being that the target pages and keywords are five, hence, each keyword is approximately getting

Article

Assessing the Increase in Soil Moisture Storage Capacity and Nutrient Enhancement of Different Organic Amendments in Paddy Soil

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**Abstract:** Increasing soil moisture storage capacity is a strategy that can be implemented to minimize the use of water in paddy rice cultivation. Organic materials from different sources have the potential to increase soil moisture storage and nutrient enrichment. An incubation study was conducted to evaluate the incorporation of five selected organic amendments—as follows: rice husk biochar (RHB), oil palm empty fruit bunch biochar (EFBB), compost (COMP), rice husk ash (RHA), and oil palm bunch ash (PBA), with a control (no amendment) on soil moisture storage and some chemical properties of soil. The soil was incubated with five amendments for 60 days and sampled at 15-day intervals. After completion of the incubation, a greater extent of gravimetric water content was observed from RHB (0.46 g g<sup>-1</sup>) and EFBB (0.45 g g<sup>-1</sup>) followed by compost (0.40 g g<sup>-1</sup>). The addition of organic amendments significantly influenced soil chemical properties. Maximum soil pH was altered by PBA, followed by EFBB, compared to its initial value (5.01). The inclusion of EFBB finally contributed to the highest amount of total carbon (7.82%) and nitrogen (0.44%). The addition of PBA showed the highest available P and exchangeable K followed by RHB when compared with the amendments. The results indicated that RHB, EFBB, and compost retain more soil moisture compared to ash sources and added soil nutrients, indicating their potential to improve the chemical and hydrological properties of paddy soil.

**Keywords:** rice; biochar; nutrient content; gravimetric water; scanning electron microscopy

1. Introduction

Rice is one of the most widely grown cereals in the world and serves as a staple for half of the world's population, particularly in developing countries. In 2017, approximately 748 million tons of rice were produced over the world, requiring more than 160 million ha of land [1]. Rice is the largest consumer of water and it consumes about 34%–43% of irrigation water over the world [2]; producing one kilogram of rice requires 3000 to 5000 L of water [3].

Subject

*Agriculture* **2021**, *11*, s. <https://doi.org/10.3390/agriculture11010044>

[www.mdpi.com/journal/agriculture](http://www.mdpi.com/journal/agriculture)

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Treatments

Every year, about 4 million tons of crop residue is produced over the world and burnt in the open air to produce ash [7], which is a source of organic amendment through its contribution to environmental pollution. In the effort to overcome environmental issues, biochar production has great potential—it is a material produced by thermal disintegration of biomass at low temperature (below 700 °C) under limited oxygen conditions which is enriched in carbon and porous by nature [8]. Rice processing industries produce a large quantity of rice husk; after processing, this rice husk biochar has the potential to be used as an organic amendment to enhance the physicochemical properties of soil [10] or rice husk ash can be used for the same. In Malaysia, residue generated from oil palm has great scope for rice husk biochar (as the main products), empty fruit bunch biochar (EFBB) (which is readily available) [11] or ash produced from oil palm bunch, which is an efficient liming material and also adds nutrients when applied to soil [12].

Parameters

Application of organic waste either for plant nutrient supply or disposal purposes exerts favorable hydrological properties of soil for crop production and also improves soil structure, porosity, and reduces erosion [13]. Every 1% increase in organic matter increases the soil capacity up to 16,500 gallons of available water per acre [14]. By the application of biochar, the soil is enriched with organic matter as well as organic carbon content and also adds nutrients such as nitrogen, potassium, phosphorus, and magnesium [18,16]. Biochar also contains different kinds of alkaline material which help in raising soil pH of acidic soil and it also alters soil physical properties and enhances soil aggregation and moisture retention [17,18] and helps to improve soil health [19]. Biochar enhances soil moisture storage in two ways: firstly, by changing pore size distribution and aggregation and, secondly, through conserving moisture in pores [20]. Ash produced from direct burning of biomass used as a soil amendment is a common practice; it contains less nitrogen but is dense with other plant nutrients and it also can be used as a liming agent [21]. The application of soiled ash increases water availability and also partially supplies nutrients to plants reported by Bonfiss-Silva et al. [22]. Compost is one of the most widely used soil amendments enriched with different plant nutrients, and the inclusion of compost in the soil increases the cation exchange capacity and reduces nutrient leaching into sub-soil [23]. The incorporation of compost decreases bulk density, enhances porosity and improves soil water retention properties, such as hydraulic conductivity, plant available water, and water content, as reported by Kraus et al. [24].



Water for agricultural purposes becoming scarce due to climate change and rapid industrialization and urbanization presents a challenge to farmers regarding the production of more rice per unit of land with limited water [4]. Continuous flooding irrigation systems require large quantities of water for rice, and a larger amount of water is lost through evaporation, percolation, and seepage [5]. Many modifications in rice cultivation, such as aerobic rice, direct seeding, alternate wetting and drying, etc., have been made to save water and are used because of the changing climatic conditions of the earth [6]. Soil organic matter management by adding suitable organic amendments could help retain soil moisture under water limiting conditions. Previous studies mainly focused on the role of organic amendment in the improvement of soil biochemical properties, carbon sequestration, and greenhouse gas emissions etc., but put comparatively less emphasis on its effect on soil moisture retention. The approach of using organic amendments for rice production has great scope in terms of enhancing soil moisture retention capacity because organic wastes not only retain soil moisture but also supply essential nutrients to plants. Therefore, enhancement of water retention capacity of paddy soils with improved nutrient availability by inclusion of organic amendment is the main challenge of this study. The addition of a suitable amount of organic amendments in paddy soil may retain more soil water by reducing moisture loss; additionally, it also improves nutrient availability to plants, which facilitates sustainable rice production under water-scarce environments around the world. The concept of using different organic amendments to increase soil moisture conserving capacity and the consecutive enrichment of soil by essential plant nutrients is a new aspect of this research.

In this context, an incubation study was conducted to investigate the structural and chemical properties of organic amendments (i.e., compost, rice husk biochar and ash, oil palm empty fruit bunch biochar, and oil palm bunch ash) and to compare the capacity of organic amendments to retain soil moisture and nutrient release.

Problem statement for MSc/PhD (SCIENCE)

| <b>Keywords</b>   | <b>Tense</b> | <b>% Importance</b> | <b>Citation/own word</b> | <b>Required line</b> |
|-------------------|--------------|---------------------|--------------------------|----------------------|
| Previous work (P) | Past         | 30                  | Citation                 | 6(3 citation)        |
| Gaps (G)          | Present      | 20                  | Own words                | 4                    |
| Challenges (C)    | Present      | 20                  | Own words                | 4                    |
| Significance (S)  | Present      | 20                  | Own words                | 4                    |
| Novelty (N)       | Present      | 10                  | Own words                | 2                    |
| <b>TOTAL</b>      |              | <b>100</b>          |                          | <b>20</b>            |

**Note:** Gaps, challenges, significance and novelty (**GCSN**) should be written according to your own statement/sentences, no citation is required, maximum of 1 page of 20 lines double space. 1 citation = 2 lines

### **Research Hypothesis**

The study hypothesised that different dose rates of acute and chronic gamma irradiations can induce genetic variability in two Bambara groundnut varieties and can produce viable mutants that will contribute to the performance and yield improvement of the major agronomic traits in this study.

### **Objective**

To induce genetic variability in two Bambara groundnut genotypes using various doses of acute and chronic gamma irradiations and evaluate their performance on major agronomic traits and identify potential mutants for yield improvement.

### **Materials and Methods**

In the methodology segment, you should clearly describe the framework and initiation of the research, state the research plan, clearly state the sample size (pupils, patients, schools, farmers, etc.), explain the approach of sampling, identify the main parameters and variables, and subsequently explain the details

description of data collection procedure and statistical analysis. When using the standard procedure, cite the appropriate literature. This section is quite significant as it should be able to offer the readers a detailed description of what the study procedures are and it gives way for other researchers elsewhere to follow and repeat the same procedure. Consequently, this aspect should be precise, tangible, technical, and fairly in-depth. In dealing with qualitative studies, it should be equally of great importance to tell the readers, the type of research tradition employed and to connect the selection of methodological plans with the research objectives.

## **Results**

The results segment is fairly up-front and realistic. The entire results should be connected to the research question and must be stated in detail, including percentages and means. Repel the temptation of providing investigative capacity and the fruitfulness of the set of data available by supplying numerous tables of mini results. Reporting data collection and organization; describe the participants in the form of clinical, demographic, and circumstances. The main findings should be presented based on the main research question and other findings should be equally presented. Most journals require separation between the result section and discussion, while a few journals prefer to join the results and discussion sections together. Results can be presented in figures, tables, and charts. However, in journal articles, results are preferably presented in figures to avoid the stealing of primary raw data.

## RESULT WRITING STEPS IN DETAILS

### ITRLHR model

|   |     |
|---|-----|
| <b>Introductory sentence:</b><br>Sodium (P) content of all turf grass (S) species was significantly influenced by salinity (T) level    | PST |
| <b>Trend increase/decrease:</b><br>Sodium content was decreased due to different salinity   | PT  |
| <b>range of data:</b><br>Sodium content range (mg/kg) for treatments was 20-70  | PT  |
| <b>Lowest findings:</b><br>T1 produced the lowest Na content ( 20 mg/kg) followed by T5 (25 mg/kg)                                      | TP  |
| <b>Highest findings:</b><br>highest Na content was found in T8 (70 mg/kg) followed by T9 (60 mg/kg)                                     | PT  |
| <b>Relative data:% increase/decrease compare to control</b><br>The highest Na content increment was 50% from T8 compared to the control | PT  |

### STRUCTURED SYSTEM RESULT WRITING IFR MODEL

|  |
|--|
| <b>Introductory sentence:</b><br>Sodium (P) content of all turf grass (S) species was significantly influenced by salinity (T) level (Table 1) |
| <b>Significant findings:</b><br>highest was found in T8 (70 mg/kg) followed by T9 (60 mg/kg)   |
| <b>Relative data:% increase/decrease compare to control</b><br>The highest Na content increment was 50% from T8 compared to the control        |

Researchers can interpret results by using any of the different models of KSI: subject treatment and parameter (STP), subject parameter and treatment (SPT), parameter subject treatment (PST), parameter treatment and subject (PTS), treatment subject and parameter (TSP), treatment parameter and subject (TPS) to avoid the monotony of result presentation and reading and these can be used interchangeably throughout the presentation of the results. One of the examples of KSI models of result presentation is presented below:

Important key points to note and apply in the result section of an article are as follows:

- a. Use past tense to interpret parameters/dependent variables. However, subject/respondent and treatment/independent variables should be interpreted using the present tense.
- b. Figures/Tables should be independent and self-explanatory; they should capture the subject, treatment, and parameter. Both treatment and parameters should carry appropriate units. Likewise, axis, columns, and rows should be well labelled.
- c. Figures in the result section are preceded by textual interpretation.
- d. Avoid lengthy interpretation of results.

### **Discussion**

The discussion is an important part of the article which explains relationships between research results concerning treatment (s) and parameter (s). It harmonizes the present findings with similar or contradictory results from other researchers. Besides the interpretation of findings, the discussion section covers both recommendations and conclusions. Simple chronological steps for writing a good discussion in a research article are provided below:

- a. Briefly explain the reason for performing the study, and summarise the main significant findings without repeating the statistical statements presented in the result section.
- b. Interpret the findings clearly but concisely using established biological/social mechanisms with good citation (s).
- c. Relate your findings with similar or contradictory results of other studies with citation (s). Consider alternative explanations of why the findings of your study differ from the results of other studies.
- d. Use attractive phrases to begin your discussion e.g. (a) this finding validates the usefulness of poultry waste as a source of non-protein nitrogen (NPN) to ruminants. (b) The most remarkable result to emerge from the data is that feed intake

increases alongside higher levels of cottonseed cake replacement with dried broiler waste.

- e. Avoid overemphasizing your findings and do not criticize other researchers' work.
- f. State the limitations of your study and suggest possible further studies, where necessary.

Basic key points in to write discussion of result

| <b>RFMS (O) model</b>  | <b>% Importance</b> | <b>Tense</b> |
|--|---------------------|--------------|
| Reason for performing of the study (own words)<br>Review the existing level of knowledge and then find out the knowledge gap.....  | 5                   | Present      |
| Brief summary of the main significant findings (results)<br>Only the important parameters/DVs                                      | 50                  | Past         |
| Interpret results clearly and concisely with mechanism/social factors (citations)  | 25                  | Present      |
| Relate the findings to those of similar studies (citations)<br>Report similar findings of others and relate to your own findings   | 20                  | Past         |
| Consider alternative explanations of the findings (citations) for the difference (Option) and explain the possible reasons behind. | 10/0                | Past         |

### Basic key points of Science research discussion of results

| RFMS model   | Example  | Tense   |
|--|--|---------|
| Reason for performing of the study (own words)                     | This study indicates on yield performance due to potential rate of biochar application in maize field  | Present |
| Brief summary of the main significant findings                     | Biochar treated plot produced highest yield compare to control treatment.  | Past    |
| Interpret results clearly and concisely with mechanism (citations) | Biochar can hold more water than the soil and can hold nutrients. Biochar has been shown to increase crop yield. Application of biochar improved soil fertility by increasing plant nutrients, pH, carbon and cation exchange capacity, with concomitant suppression of Al <sup>3+</sup> - and Mn <sup>2+</sup> -activities in the soil solution (M et al 2019). Due to the more N content in biochar treated soil, photosynthesis rate is high than in unamended treatment (M et al 2019) | Present |
| Relate the findings to those of similar studies (citations)        | our findings were consistent with Panhwar et al. (2021), who reported a 35.82% increase of maize yield using biochar 10 t/ha.  | Past    |

### Basic key points of Social Science research discussion of result

| RFMS model   | Example   | Tense   |
|--|---|---------|
| Reason for performing of the study (own words)                         | This study indicates that motivation of farmers mainly regulates their performance towards fertilizer application.  | Present |
| Brief summary of the main significant findings                         | Motivation solely had the <i>highest contribution of 48.6% in predicting farmers' performance</i> towards fertilizer application.   | Past    |
| Interpret results clearly and concisely with multi factors (citations) | Motivation contributed to farmers' performance towards fertilizer application due to <i>Economical factor like –higher yield of rice, large farm size, Social factor- education, social status, Organizational factor- extension contact, training, credit facility</i> (Nia et al., 2013). | Present |
| Relate the findings to those of similar studies (citations)            | our findings were consistent with Zulfikar et al. (2021), who reported a 35.82% increase of rice farmers performance towards fertilizer application.  | Past    |

### Acknowledgement

Some journals allow researchers to express appreciation to sponsors of their research and institution or research stations that provides the facilities for the research. Researchers can also thank people who contributed immensely to the study.

### Funding should be in a separate heading

Example: This work was carried out within the framework of the Mark Arthur foundation and was partly sponsored by the Tertiary Education Trust Fund (TETfund) of the Federal Ministry of Education, Nigeria. The authors wish to thank Dr. Kamal Uddin, who gave us much valuable advice in the early stages of this work.

## References

All citations in the article are listed in the reference section. Some important keynotes related to references are listed below:

- a. Source information from recent quality journal articles e.g. high-index journals.
- b. Avoid citing old references that are older than 10 years.
- c. Ensure all citations are listed in the reference section, and all listed references are cited in the body content of the article.
- d. Use the citation and bibliography menu of MS Word to enter references manually.
- e. Use reference software like Mendeley, EndNotes, and Zotero to automatically insert citations and references.
- f. Adhere to the citation and referencing style adopted by a journal if you wish to publish your article. Examples of reference styles are American Psychology Association (APA), Modern Language Association (MLA), Chicago, Turabian, and Harvard.

## What is a Review Article?

A review article is a constructive breakdown of previously published works in explicit topics/fields by summarizing, classifying, analysing, and comparing them. It is scientific writing that depends on already published works or data (figures, facts, statistics or information). Review articles targeted experts in specific research areas, students, researchers, and decision-makers.

The fundamental rationale of writing a review manuscript is to evaluate literature, synthesize literature, categorize patterns and procedures in the literature, organize literature, figure out research gaps and make recommendations on new research aspects (Gulpınar and Guclu, 2013).

## **Types of Review Articles**

Generally, review articles can be divided into two main groups: Descriptive and Systematic reviews.

- 1. Descriptive reviews:** These can easily be written in a clear and readable format that considers the main subject within a wider spectrum. Designated studies are harmonized and summarized based on the experience of the authors, established concepts, and models. The outcomes presented are based on the qualitative rather than non-quantitative form. This type of review ranged between 7,000 to 39,000 words including references.
- 2. Systematic review:** This is a comprehensive and in-depth literature survey is written according to the selected topic. Being that, it is the outcome of a comprehensive survey of literature coupled with a fairly minor participation of the author's bias, methodical reviews are regarded as excellent standard articles. Outcomes from several individual findings are statistically analyzed following stringent procedures. Meta-analyses are usually employed to pool the results of specific research. Systematic reviews usually appeared to be shorter, approximately close to 10,000 words long. Systematic reviews are further divided into qualitative and quantitative reviews. Detailed literature surveys is required in both, however, in quantitative review, it requires data collection and evaluation from previous findings using the appropriate statistical tool.

### **Format of a Review Article:**

**For Narrative review:** The format is as follows:

**Title** – in most cases it does not specify that it is a review article.

**Abstract** – this must include explanations of the topics covered.

**Table of Contents** – this illustrates to the reader the conceptual arrangement of the text (overview)

**The introduction**– consist of a description of the background (paragraph 1–3), inspiration for review (paragraph 4, sentence 1) and states the emphasis (paragraph 4, sentences 2 – 3)

**Body** – organized in headings and subheadings

**Conclusion** – states the consequences of the recent results and identifies likely new research areas.

**References**- this comprises the (“Literature Review”) organized in number by the order they were cited in the main text.

**For Systematic review:** The format comprises the following:

**Title** – informs the readers that it is a review

**Informative Abstract** – tells the readers that it is a meta-analysis (innovative analysis in a novel framework of previously documented data)

**Introduction**- consists of a description of the background of the study.

**Body** – This constitutes Material & Methods, Results (including the use of tables and figures to display novel findings), Discussion

**Conclusion** – This constitutes an outline or description of the novel findings of the meta-analysis

**References** – are presented alphabetically according to the method of citation.

**Steps Involved in Preparing a Review Article:**

1. Prepare a concise topic and explain limited research questions and hypotheses.
2. Explore sources of literature; polish topic and research questions while searching.
3. Read, assess, categorize, and make notes.
4. Redirect the emphasis with research questions; explain the take-home points.

5. Constitute a primary title and improve the entire structure.
6. Outline an organizing opinion for the manuscript, for example, sequential, key points, progressive, trial system.
7. Constitute a framework; search for captions/headings and sections within the body of the manuscript.
8. Organize the composition of the subsection in all the sections.
9. Construct tables, model charts, and figures, and make a draft.
10. Outline the methodology unit (if necessary).
11. Draft the body of the article and the sections.
12. Make a draft of the concluding remarks towards the end of the manuscript.
13. Draft the introductory section.
14. Make a draft of the revised abstract.
15. Do the revision of the drafted sections of the entire manuscript; comprising of abstract, title, tables, figures, legends/keys.
16. Do revision of the citations and references used.
17. Make corrections on the grammatical structure, spelling, and punctuation.
18. **Modify the manuscript outline/layout.**
19. Table(s) should be added to give overview or summary of recent findings in a specific field of research.
20. Sketch/Drawing/Figure should be added to improve the quality of the research paper of the mechanisms or factors to give an overview of the review at a glance.

## CITATION LAYOUT OF MATERIALS FOR REVIEW PAPER

**Title: Influence of biochar on GHG emission from agricultural soils, A Review**

| Key points                                       | % importance | No of citations |
|--|--------------|-----------------|
| Preparation and function of biochar              | 5            | 5               |
| Function of biochar                              | 5            | 5               |
| Chemical Characteristics of biochar              | 5            | 5               |
| Physical Characteristics of biochar              | 5            | 5               |
| Effects of biochar on soil physical properties   | 10           | 10              |
| Effects of biochar on soil chemical properties   | 15           | 15              |
| Effects of biochar on soil biological properties | 5            | 5               |

| ABSTRACT<br>IOMFR model                |              | ABSTRACT<br>IFR                                    |              |
|--|--------------|--|--------------|
| RESEARCH ARTICLE                       | % importance | REVIEW ARTICLE                                     | % importance |
| Introductory importance (Present)      | 10           | Introductory importance (present)                  | 20           |
| Objective (Present)                    | 10           | No   | 0            |
| Brief methodology (Past)               | 20           | No   | 0            |
| Key finding of major parameters (past) | 50           | Summarize findings of some major parameters (past) | 70           |
| Recommendation (present)               | 10           | Hypothetical Future Recommendation (present)       | 10           |

Article

## Impact of Organic Amendment with Alternate Wetting and Drying Irrigation on Rice Yield, Water Use Efficiency and Physicochemical Properties of Soil

Ahmad Nurnery Ashfaqul Haque <sup>1,2</sup>, Md Kamal Uddin <sup>1,\*</sup>, Muhammad Firdaus Sulaiman <sup>1</sup>, Adibah Mohd Amin <sup>1</sup>, Mahmud Hossain <sup>3</sup>, Azharuddin Abd Aziz <sup>4</sup> and Mehnaz Mosharraf <sup>1</sup>

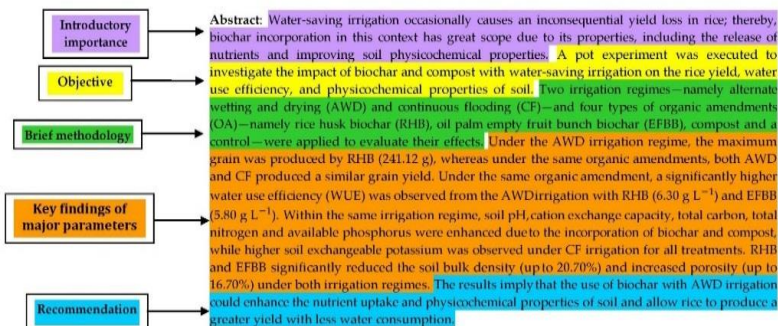
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**Keywords:** rice; intermittent irrigation; biochar; water use efficiency; soil physicochemical properties

Published: 30 July 2021

Review

## Biochar with Alternate Wetting and Drying Irrigation: A Potential Technique for Paddy Soil Management

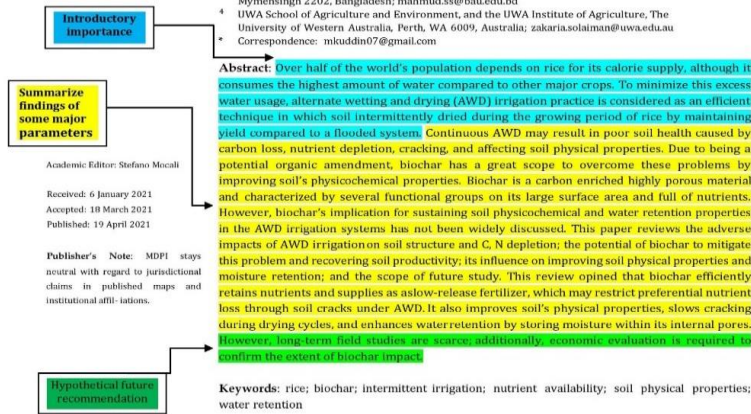
Ahmad Numery Ashfaquul Haque <sup>1,2</sup>, Md. Kamal Uddin <sup>1,\*</sup>, Muhammad Firdaus Sulaiman <sup>1</sup>, Adibah Mohd Amin <sup>1</sup>, Mahmud Hossain <sup>3</sup>, Zakaria M. Solaiman <sup>4</sup> and Mehnaz Mosharraf <sup>1</sup>

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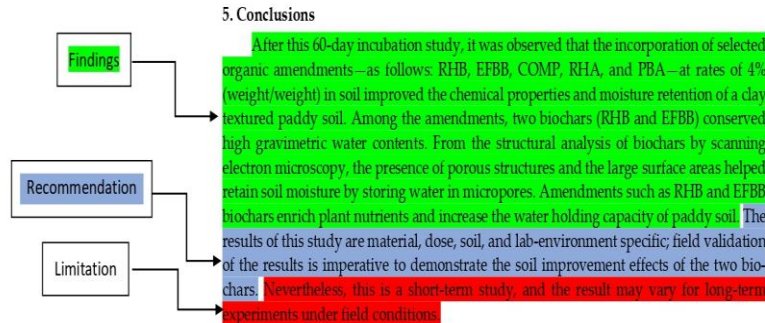
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## CONCLUSION

| RESEARCH ARTICLE                           | % importance | REVIEW ARTICLE                         | % importance |
|--|--------------|--|--------------|
| Key findings according to objective (past) | 60           | Summarize super key findings (past)    | 80           |
| Recommendation (present)                   | 20           | No                                     | 0            |
| Limitation (present)                       | 10           | No                                     | 0            |
| Future research (Present)                  | 10           | Hypothetical future research (present) | 20           |



## CAUSES OF REJECTION

Importance of the Topic

Insignificant research question

Irrelevant or unimportant topic

Study Design

Poor experimental design

Vague/inadequate method description

Inappropriate statistical methods, or statistics not applied properly

Overall Presentation of Study and Findings

Poor organization

Too long and verbose

Poor grammar, syntax, or spelling

Poorly written abstract

Interpretation of the Findings

Inadequate discussion

Erroneous or unsupported conclusions

Conclusions disproportionate to results

## The Top Reasons Why Manuscripts Are Not Published

Picking the wrong journal

Submitting a manuscript in a format that does not match what the Journal publishes

Not following the manuscript preparation instructions

Poor writing

Getting carried away in the discussion

Inadequate description of the methods

Poor study design

simple rules that can help in formulating an effective response to reviewers.

Rule 1: Provide an overview, then quote the full set of reviews

Rule 2: Be polite and respectful of all reviewers

Rule 3: Accept the blame

Rule 4: Make the response self-contained

Rule 5: Respond to every point raised by the reviewer

Rule 6: Use typography to help the reviewer navigate your response

Rule 7: Whenever possible, begin your response to each comment with a direct answer to the point being raised

Rule 8: When possible, do what the reviewer asks

Rule 9: Be clear about what changed relative to the previous version

Sources: David and Pierson, 2004

## **Conclusion**

It is essential for academics to communicate their findings within their community in order to gain promotion. Articles, review articles, and short communications are common forms of this type of communication. It is often not difficult for academics, particularly young ones, to conduct research, but it becomes much more challenging to present that research as a peer-reviewed publication in a peer-reviewed journal. It is obvious that this is due to the lack of knowledge about how to present their findings logically and systematically. This led to the development of a new style of writing known as Keyword Sequence and Importance (KSI) techniques for writing research articles, reviews, and short communications. With its systematic and logical approach, the various components of the article are easy to follow.

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## Chapter Eight

### Reducing Plagiarism in Scholarly Writing: KSI Plagiarism Reducing Techniques

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#### Abstract

Plagiarism occurs when you incorporate someone else's work or ideas into your work without acknowledging their sources; it may be committed with or without consent. In an in-text citation and a reference list, credit your sources by paraphrasing, quoting, and adding your own ideas. KSI techniques provide a noble way of reducing plagiarism by structural changes of a sentence, changing parts of speech, using own words, using synonyms of words/rewording (mouse click), and changing active voice/passive voice. In order to maintain your integrity as a writer, you need to avoid plagiarism at all costs. The consequences could include losing the respect of mentors and peers, as well as putting your future career advancement at risk. Some techniques mentioned in this chapter may also match with other authors. All the previous authors are acknowledged with due credits. The application of the techniques in reducing plagiarism is expected to help academicians and students in producing original and quality research manuscripts.

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## Introduction

Plagiarism is the act of taking another person's writing. Basically, plagiarism means drawing ideas from a source without giving the author recognition. This is considered a type of theft and an academic crime. Many new researchers are not aware of this academic crime. As a result, they face unwanted troubles due to a lack of knowledge about plagiarism. Moreover, some new researchers find it challenging to reduce the similarities in their writing. Therefore, this chapter has elaborately presented innovative techniques for reducing plagiarism or similarity in scholarly writing. The authors have conducted an ample amount of research to find out the innovative plagiarism reduction techniques presented in this chapter.

Usually, most institutions or journals accept plagiarism up to 30 percent. However, it is better to limit the similarity percentage to below 15 percent. Anyone following the below-mentioned KSI techniques will be able to limit similarity by 15 percent or less.

| Component          | % tentative plagiarism | Plagiarism reduce using KSI technique   | % current plagiarism |
|--------------------|------------------------|---|----------------------|
| Introduction       | 10                     | common word of objective  | 5                    |
| Literature review  | 30                     | Write in own words while reading literature instead of just copy/paste while reading, common word bank/synonyms, literature review words bank, STP all models, heart technique, plus minus technique, marge technique, parameter modified technique, changing word class, changing word order | 10                   |
| Methodology        | 15                     | common word bank, paraphrasing, own writing   | 5                    |
| Result             | 10                     | first sentence bank, odd (1,3,5) and even (2,4,6) number style parameter writing, common word bank/synonyms, own writing  | 0                    |
| Discussion         | 20                     | common word bank, Special English, paraphrasing, heart technique, plus minus technique, merge technique, before after of original citation technique  | 5                    |
| Summary conclusion | 5                      | paraphrasing, heart technique, plus minus technique, marge technique  | 0                    |
| Abstract           | 0                      | None required   | 0                    |
| Total              | 100                    |   | 25                   |

Figure 8.1: Techniques for reducing plagiarism

## **Innovative KSI Techniques for Plagiarism Reduction**

### **1. Structural changes of sentence**

Restructuring/rearranging/merging sentences can help to reduce the percentage of plagiarism and also break the information into separate sentences. Start your first sentence at a different point from that of the original source.

For example:

Original text: Farmers produce jute, rice, wheat, potato, banana and cabbage.

Restructured text: Farmers produce rice, jute, wheat, banana, potato and cabbage.

### **2. Change parts of speech**

Parts of speech e.g. nouns, pronouns, adverbs, adjectives, and verbs -- can be rearranged for more effective or interesting delivery of ideas.

### **3. Use own words:**

By using own words, you can reduce plagiarism. For example:

Original text: Farmers produce jute, rice, wheat, potato, banana and cabbage.

Own word text: Our farmers are found to produce different crops like jute, potato, rice, wheat, cabbage and banana.

### **4. Use synonyms of words/rewording (mouse click)**

Synonyms are words or phrases that mean the same thing. By using synonyms or original words, you can reduce plagiarism. Our example uses several synonyms:

“exposed a critical turning point” → “made it apparent”

“outpaces” → “rapidly eclipsed”

“power” → “immense influence”

If you're struggling to think of synonyms, a thesaurus can be a useful tool. However, don't overdo it! It's perfectly acceptable and often necessary to use some of the same words as the original

text. In this example, it would be unnecessarily confusing to use synonyms for words like “technology”.

Original text: By working hard, one can change his fortune for a better future.

Text with synonyms: By functioning hard, one will be able to convert his luck into an improved tomorrow.

### **5. Changing Active voice/passive voice**

Changing voice is another way of reducing plagiarism. For example, if the sentence was initially in the active voice, change it to passive. The active voice is when a sentence is led by the subject (the thing doing the action). When the object (the thing receiving the action) leads the sentence, that sentence is written in the passive voice.

“**technology outpaces** what users, regulators or even its creators expected” → “the expectations of creators, regulators and users **have been rapidly eclipsed by technology.**”

In this example, technology is the subject; the expectations of creators, regulators and users are the object. The original quote was written in the active voice, while the paraphrase uses the passive voice.

### **6. More examples of active/passive voice**

Original text (Active voice): Farmers produce jute, rice, wheat, potato, banana and cabbage.

Text in passive voice: Jute, rice, wheat, potato, banana and cabbage are produced by the farmers.

### **7. Avoid direct copy/paste**

You should avoid a direct copy-and-paste job. Read the literature related to your manuscript topic, mix all-important points from

your readers in your brain, and start to write your own creative sentences scientifically. This is done by many researchers which increases similarity in their writing.

### **8. Read the original material several times**

Please read and understand the original document several times before start explaining it. Then you can write from your brain. This is how you can reduce plagiarism.

### **9. Paraphrasing/Rephrasing:**

By paraphrasing or rephrasing, you can reduce the similarity index. For example, the example here shows how paraphrasing helps you to produce a new text while keeping the meaning the same:

#### **Example:**

#### **Original text:**

In *The Sopranos*, the mob is besieged as much by inner infidelity as it is by the federal government. Early in the series, the greatest threat to Tony's Family is his own biological family. One of his closest associates turns witness for the FBI, his mother colludes with his uncle to contract a hit on Tony, and his kids click through Web sites that track the federal crackdown in Tony's gangland.

#### **Paraphrased text:**

In the first season of *The Sopranos*, Tony Soprano's mobster activities are more threatened by members of his biological family than by agents of the federal government. This familial betrayal is multi-pronged. Tony's closest friend and associate is an FBI informant, his mother and uncle are conspiring to have him killed, and his children are surfing the Web for information about his activities.

**Example:**

**Start your first sentence at a different point from that of the original source**

In the example, you can see that we started by introducing the context (the hearing) followed by the last part of the original sentence: the expectations of creators, regulators and users. In fact, the key pieces of information are mentioned in a completely different order.

**Original text:**

“The number of foreign and domestic tourists in the Netherlands rose above 42 million in 2017, an increase of 9% and the sharpest growth rate since 2006, the national statistics office CBS reported on Wednesday” (DutchNews.nl, 2018).

**Paraphrased text:**

According to the national statistics office, the Netherlands experienced dramatic growth in tourist numbers in 2017. More than 42 million tourists travelled to or within the Netherlands that year, representing a 9% increase – the steepest in 12 years (DutchNews.nl, 2018).

**Example:**

**Original text:**

“But the hearing was about more than Facebook; it exposed a critical turning point as the power, sophistication and potential exploitation of technology outpaces what users, regulators or even its creators expected or seem prepared to handle” (Roose & Kang, 2018).

**Paraphrased text:**

The hearing made it apparent that the expectations of creators, regulators and users have been rapidly eclipsed by technology in

general, not only Facebook. Such technologies now extend beyond what these parties are able to manage due to their immense influence, the potential for exploitation, and sophistication (Roose & Kang, 2018).

However, you should be careful about the meaning and key information of the paraphrased text. Sometimes, freely available online tools distort the meaning of the paraphrased text. Therefore, it is wise to do the paraphrasing manually. You have to read the original text. Then you have to write the same information in your own sentences. However, only paraphrasing others' ideas or writings will not guarantee plagiarism-free content. You must cite the original source of the idea or text in the paraphrased text. You can follow APA, MLA, Chicago, or Harvard style guide recommended by the particular journal or institution. Some innovative paraphrasing techniques are mentioned below:

### **Techniques for paraphrasing:**

- a. Changing vocabulary by using synonyms:  
NB. Do not attempt to paraphrase every word, since some have no true synonym
- b. Changing word class:  
Explanation (n.) > explain (v.) / mechanical (adj.) > mechanise(v.) / profitable (adj.) > profitability (n.)
- c. Changing word order:  
By changing word order you can reduce plagiarism. For example:  
Original Text: . . . the best explanation for the British location of the industrial revolution is found by studying demand factors

Word order changed text: A focus on demand may help explain the UK origin of the industrial revolution.

Original Text: Life in a city is easier if one has a well-paid job in this world.

Word order changed text: One can lead a comfortable life in a city with a good income at present.

**Merging Technique:**

You can use this merging technique while writing the literature review. If you find more than one author/article saying the same thing, then you can merge three/four sources together in the same sentence. For example:

Original text: Turfgrasses are among the most important industries in many countries and their attractiveness is suitable for mental health and recreation amenities (Juraimi, 2001; Raven et al., 2001).

Merged text: Turfgrasses are suitable for mental health and recreation amenities (Juraimi, 2001; Raven et al., 2001).

**Plus-Minus Technique:**

If you find it very difficult to paraphrase the original text, then you can add one or two words within the original text. You can also reduce one or two words from the original text. You can also divide the original text into more sentences. By doing this, you can reduce plagiarism. However, you should be careful in deciding which word to add or delete. Remember, by adding or deleting a word; you must not alter the original text's meaning. For example:

**Plus Technique:** Add some relevant extra words

Turfgrasses are suitable for mental health and recreation amenities (Juraimi, 2001; Raven et al., 2001).

Turfgrasses are important industries in many countries and their attractiveness is suitable for mental health and recreation amenities (Juraimi, 2001; Raven et al., 2001).

**Minus Technique:** Delete unnecessary word/complex sentence changes in a simple sentence

Turfgrasses are important industries in many countries and are suitable for mental health and recreation amenities (Juraimi, 2001; Raven et al., 2001).

**Heart word technique:**

Usually, Turnitin software identifies plagiarism if more than five or six words are used in the same way used in the original text. Therefore, you should enter an additional word and break the five/six-word sequence of the original text. For example: You have to add a new word from the heart in every three words. Original text:

Purslane is a very good source of alpha-linolenic acid. Alpha-linolenic is an omega-3 fatty acid that plays an important role in human growth and development and prevents diseases.

Heart word added text: Purslane is a potential source of alpha-linolenic acid. It plays an important role in human health development and in preventing different diseases

**Subject minus word technique under parameter citation:**

When writing result first sentence has to cover S, T, and P, while the subsequent sentences should cover only T and P. if you avoid the subject word, it will help in reducing plagiarism in the thesis and publication. Example, Sodium (P) content of turf grass (S) species was significantly influenced by salinity (T) level. Another example, T1 produced the lowest Na (P) content (20mg/kg) and T8 produced the highest (70 mg/kg). That means here no need to mention about the subject word (turf grass)

**Break the information into separate sentences**

Although paraphrasing will usually result in a word count roughly the same as an original quote, you may be able to play with the number of sentences to make the text different.

In this example, one long sentence was broken into two. The opposite could also be the case, i.e. if the original quote is comprised of two sentences, you may be able to combine the information into one (Source: [www.scribbr.com](http://www.scribbr.com)).

#### Using paraphrasing tools

Another way to reduce plagiarism is by using online paraphrasing tools. There are so many paraphrasing tools online like QuilBot, Spinbot article rewriter, wordai etc. For this, take each line from the paragraph and put it into the paraphrase tools to rephrase. Go to paraphrase tools where there are two panels. Now, copy the paraphrased text and paste it to the left/upper panel, and hit the paraphrase/spin button. The same sentence can be paraphrased several times but don't forget to check the meaning of the sentence. Copy the selected paraphrased sentence and replace the original text.

Even if the matching text has a 15% resemblance, if it is one continuous block of borrowed content, it will be deemed a plagiarised text of substantial concern. Text similarity in the 'Methodology' section of a publication, on the other hand, should not cause severe ethical problems owing to the use of common terminology and technique-related elements.



Figure 8.1: Types of Plagiarism:  
[Source: Eassom (2013)]

Eassom (2013) explained several types of plagiarism as described below:

Secondary sources (Inaccurate citation):

Secondary Source Plagiarism occurs when a researcher utilises a secondary source, such as a meta-study, but only references the secondary source's original sources. Secondary source plagiarism fails to credit the work of secondary source writers and gives the impression that the study was not well-reviewed.

Invalid sources (Misleading citation, Fabrication, Falsification):

When researchers cite an erroneous or non-existent source, this is referred to as attribution. Though this might result from shoddy research rather than a deliberate effort to mislead, it could also be an attempt to pad the reference list and conceal insufficient research.

Duplication (Self-plagiarism, Reuse):

When a researcher reuses work from prior studies and articles without credit, this is known as duplication. Duplication ethics is hotly discussed, and it frequently relies on the information copied.

Paraphrasing (Plagiarism, Intellectual theft):

Paraphrasing is the process of modifying the language in someone else's work to make it look that an idea or even a piece of study is original when it originated from an uncited outside source. Simple rephrasing to rewriting information while keeping the original idea or notion are all examples of paraphrasing.

Repetitive research (Self-plagiarism, Reuse):

Repetitive Research Plagiarism occurs when data or text from previous research with a similar technique is used without appropriate credit in a new study. It often occurs when studies on

a similar issue are repeated with identical results, but the previous study is not properly credited.

#### Replication (Author Submission Violation):

The submission of a work to several publishers, resulting in publishing the same material more than once, is known as replication. It might be considered unethical, especially when a researcher claims that work is new when it has already been published.

#### Misleading attribution (inaccurate authorship):

A list of writers who contributed to an erroneous or incomplete paper is misleading attribution. It occurs when authors are refused credit for little or large contributions to a research or when authors are mentioned in a publication despite having made no contributions.

#### Unethical collaboration (Inaccurate Authorship):

When individuals working together break a code of conduct, it is called collaboration. It is unethical to use collaboratively produced written material, conclusions, and ideas without identifying the collaborative character of the research and the persons engaged. Plagiarism is when you use someone else's work without giving them credit.

#### Verbatim plagiarism (Copy-and-Paste. Intellectual Theft):

Verbatim plagiarism is defined as the act of duplicating someone else's words or works without appropriate attribution, indentation, or quotation marks. There are two ways to do this. Plagiarists may mention the source from which they plagiarised, but they must not suggest a verbatim quotation. In the second, no credit is given, thereby claiming that someone else's comments are their own.

Complete plagiarism (Intellectual Theft, Stealing):

### **Additional Tips for Paraphrasing in Reducing Plagiarism**

*(Adopted from: [www.scribbr.com](http://www.scribbr.com))*

1. Read the passage several times to fully understand the meaning
2. Note down key concepts
3. Write your version of the text without looking at the original
4. Compare your paraphrased text with the original passage and make minor adjustments to phrases that remain too similar
5. Cite the source where you found the idea
6. Start your first sentence at a different point from that of the original source
7. Use synonyms (words that mean the same thing)
8. Change the sentence structure (e.g., from active to passive voice)
9. Break the information into separate sentences

### **10. Identify what does and does not need to be cited**

*(Adopted from [manara.com](http://manara.com))*

1. Any words or ideas that are not your own but taken from another paper need to be cited.
2. Cite Your Own Material—If you are using content from your previous paper, you must cite yourself. Using material you have published before without citation is called self-plagiarism.
3. The scientific evidence you gathered after performing your tests should not be cited.
4. Facts or common knowledge need not be cited. If unsure, include a reference.

### **11. Summarizing to Reduce Plagiarism**

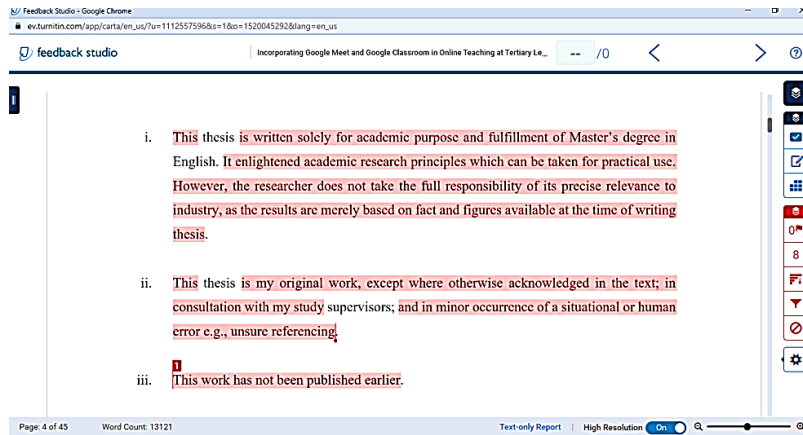
*(Adopted from [Edubirdie.com](http://Edubirdie.com))*

1. Use only your own words to increase the uniqueness;
2. When paraphrasing a sentence, rewrite the whole thing instead of just changing a couple of words or rearranging their order;

3. If there is no way you can prevent plagiarism and not copying the exact words from the original piece, format them properly and always use quotation marks;
4. Avoid using too many quotes – only use those that are vital for understanding a specific matter or without which your summary would be incomplete!
5. Cite sources in accordance with the required style;
6. Keep a list of sources where you have gathered the necessary data for your work;
7. Use a good online checker to see if your paper is unique before you submit it.
  - ✓ Title, objectives, Literature review, result, Table/Figure legend, and citation should be written according to a different model (T-S-P, T-P-S, P-T-S, P-S-T, S-T-P, S-P-T) and will help to reduce plagiarism
  - ✓ Title, objectives, Literature review, result, Table/Figure legend citation, should be written according to a different model (R-IV-DV, R-DV-IV, DV-IV-R, DV-R-IV, IV-R-DV, IV-DV-R) and will help to reduce plagiarism.

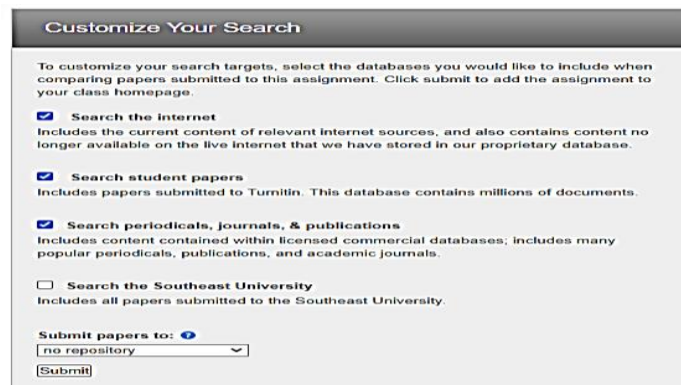
### **Use Turnitin to Check Plagiarism:**

By checking your document in Turnitin you can see the percentage of plagiarism. As Turnitin shows the plagiarized part in different colors, so you can paraphrase the specific parts to reduce plagiarism. You can ask your institution to provide you with an instructor account in Turnitin, or you can take help from your supervisor about this. Checking a document in Turnitin takes less than 20 minutes. Look at the below-mentioned text which shows the plagiarized part taken directly from another source. As a researcher, you can now paraphrase this part and reduce similarity in your writing.



*Image Source: Turnitin*

Remember to choose “No Repository” option when you check your document in Turnitin. Turnitin has three options and you MUST choose “No Repository” option. Selecting the other two repository option is not preferred before the submission of a thesis to the institution. An example of choosing the “No Repository” option from Turnitin is given here.



*Image Source: Turnitin*

### Cite a Sources for Quotation to Avoid Plagiarism

To fix plagiarism in general sayings and quotes, the most common phrases and definitions are needed to be quoted and

cited without any modification. *(Adopted from www.ilovephd.com)*

#### Don't Recycle Internet Content

In the internet era, high similarities in the Turnitin plagiarism report are from internet sources, so do not copy any word or sentence from the original internet sources. In case of citing online sources, include the accessed date and appropriate URL in the reference. *(Adopted from www.ilovephd.com)*

#### Cite Pictures from another Source

Although the plagiarism reports cannot identify similarities in formulas (equations) and images, it is a good practice to cite the sources of the images. In the age of the internet, it is easy to find out the copyright of images. In the case of Creative Common (CC) images, give proper credit to the author of the source. *(Adopted from www.ilovephd.com)*

#### Source Citation for Statistical Data

Statistical data is more sensitive information that needs to be cited with appropriate studies, surveys, or research results. Citing statistical data will improve the reliability and authenticity of the edited research content. *(Adopted from www.ilovephd.com)*

#### Don't ask someone to Write Your Paper

Never hire someone to write your research manuscript. This is considered malpractice in the research arena. The hired person can someday claim the work as his own. Be careful about this issue.

#### Citing Your Own Material

If you use materials from your own research, you have to cite the source. You have to treat it equally like the other person's materials or writing. If you do not cite your own material, it will be considered self-plagiarism. Self-plagiarism is not acceptable.

### Referencing

Using the list of references is mandatory in avoiding plagiarism. You should follow the referencing guidelines provided by the specific journal or institution. This information is very specific and includes the author(s), date/year of publication, title, and source.

Finally, it can be said that the plagiarism-reducing KSI techniques mentioned in this chapter are great strategies for researchers in saving time, reducing plagiarism and producing quality research manuscripts. Awareness and more practice will make the researcher a renowned one in his/her field.

### Conclusion

The act of plagiarism may be committed with or without the consent of the person whose work or ideas have been incorporated into your work. Whenever possible, paraphrase, quote, and add your own thoughts to your in-text citations and reference lists. In KSI techniques, structure and parts of speech are altered, own words are used, synonyms of words and rewordings (click on a word) are used, and active voice and passive voice are switched. It is essential that you avoid plagiarism as a writer at all costs in order to maintain your integrity. It could impede your career advancement as well as lose the respect of mentors and peers. Students and academicians will be able to produce original and quality research manuscripts through the implementation of the techniques for reducing plagiarism.

## References

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<https://www.ilovephd.com/5-tips-to-avoid-plagiarism/>

<https://www.manaraa.com/upload/6221c006-baf5-41d0-8b8d-e3579f253b51.pdf>

<https://www.scribbr.com/working-with-sources/how-to-paraphrase/>

<https://unikllib.wordpress.com/2016/03/21/10-types-of-plagiarism-in-research/>

[www.coursehero.com](http://www.coursehero.com)

[www.scribbr.com](http://www.scribbr.com)

## Chapter Nine

### English for Thesis and Publication Writing

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#### Abstract

Using appropriate English in the thesis and publication is a crucial issue among researchers. Most times, the researchers find it difficult to develop or describe their research ideas due to a lack of knowledge of English. This causes an unexpected delay in completing their target research work within the given timeline. This chapter presents the necessary and useful English usages to be used in preparing scholarly research works. The most important English usages are mentioned one by one in this chapter.

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#### Introduction

In the current scenario, English has become one of the most important academic and professional tools. English is arguably the most important language to learn for the increasingly mobile international community, and English is the official language of business and science (Schütz, 2005). English as a global scientific language facilitates the international movement of young researchers (Graddol, 2006). In most cases, studies are rejected due to a lack of good writing skills in English and a lack of proper use of words/vocabulary or sentence structure. English is widely spoken and is primarily used for academic or academic

research/work writing. English is the language of choice for many international academic journals. English used in everyday life and for general purposes is very different from English used in academic writing. Academic English is intentionally used to read and understand learning materials and to write about the subject. Used to describe and explain something about an object, situation, process, or something that works. Writing for scholarly or scientific research needs to be clear, concise, accurate, and accurate for the reader's understanding. In general, academic writing uses simple formal tones and styles, avoiding slang, idioms, slang, or journalism terms and prioritizing accurate vocabulary ([www.ref-n-write.com](http://www.ref-n-write.com)).

Academic English is a unique set of rules that needs to be explicit, formal, factual, objective and analytical. Scientific writing is complex, formal, objective, explicit, safe and responsible. It is organized and planned accurately and accurately. Researchers need to master English in order to express their thoughts, opinions, hypotheses, and discoveries about their research and to disseminate their findings and results to people in the relevant field of study. The use of scientific language is accurate and accurate, and the hallmarks of scientific writing are complexity, form, accuracy, objectivity, clarity, accuracy, assurance, responsibility, organization, and planning (Chatterjee, 2021; [www.ref-n-write.com](http://www.ref-n-write.com)).

### **English for Writing Objectives**

Written language is, in general, objective rather than personal. It, therefore, has fewer words that refer to the writer or the reader. This means that the main emphasis should be on the information that you want to give and the arguments you want to make, rather than you ([www.ref-n-write.com](http://www.ref-n-write.com)). For that reason, academic writing tends to use nouns (and adjectives), rather than verbs (and adverbs) (Chatterjee, 2021). To follow the KSI technique and use some common words to write objectives.

*Table 10.1: Common word to write objectives*

|              |            |              |             |
|--------------|------------|--------------|-------------|
| Objective to | Anticipate | Define       | Formulate   |
|              | Arrange    | Decrease     | Intensify   |
|              | Assemble   | Demonstrate  | Illustrate  |
|              | Assess     | Describe     | Investigate |
|              | Build      | Design       | Measure     |
|              | Categorize | Discover     | Motivate    |
|              | Classify   | Discriminate | Organize    |
|              | Compare    | Display      | Quantify    |
|              | Conduct    | Establish    | Solve       |
|              | Construct  | Estimate     | Stimulate   |
|              | Contrast   | Explain      | Summarize   |
|              | Coordinate | Evaluate     | Study       |
|              | Determine  | Elaborate    | Translate   |
|              | Delineate  | Express      | Understand  |

### **Common English for Writing Introduction**

*(Adopted from [agricultforest.ac.me](http://agricultforest.ac.me))*

- A. Broad overview .....
- B. Problem formulation
  - 1. Many hypotheses have been postulated .....
  - 2. Mounting evidence support that.....
  - 3. It is widely reported that...
  - 4. Elevated.....is one phenomenon after biochar addition.....
  - 5. Increased..... has been attributed to
  - 6. The results are contradictory. Both increase and decrease as well as no effects
  - 7. However, results are inconsistent, with studies showing an increase, no change or a decrease
  - 8. To explain the conflicting results, many studies .....
  - 9. Clearly, responses of ...are divergent and depend on a set of a complex interactions between.....
  - 10. Does not emerge to generalize the
  - 11. Under the circumstances, where

12. There is abundant evidence.....
13. There are also many studies documenting .....
14. It confounds two problems.....
15. an attempt to generalize whether rates will increase, decrease, or not change
16. It depends on a variety of factors .... being regarded as the single most predictive measurement of .....
17. .... leaving oxidized, but otherwise intact aromatic moieties
18. What has been done
19. but mechanisms remain mostly unresolved
20. In addition, likely because once ..... evolve over time, results are sometimes conflicting and ... is still a matter of debates
21. There are inconsistent results regarding the influence of ... on ..... According to some studies, ... decreases ..., but others find that it has no influence ...

### **Specific Problem**

Little is known, however, about the effect of manures and their BC on C sequestration and greenhouse gas emissions from soil. There remain important limitations in understanding, including why, with such a widespread capability .... to ..., when .....

1. Hypothesis
2. Here we construct a conceptual framework that reconciles these differences and so on

### **English for Literature Review**

This section is very important because many citations related to your research work are mentioned here, so there is a high chance of plagiarism. To reduce plagiarism follow the KSI model (1, 2, 3, 4, 5 and 6) and use the common word from the common word Bank and phrase sentence from the sentence bank.

The literature review should show that the author has sufficient knowledge of the field of study. Bibliographic searches usually

occupy one or two sections in the introductory section. A well-written literature review should be a critical evaluation of the previous study in the context of the current field of study, rather than a simple summary of the previous study. The author should not hesitate to point out the shortcomings of his previous work. However, criticizing the work of others without grounds can weaken your dissertation. This is a great place to post survey questions and justify the need for such studies. It is also worth pointing out that your study is unique towards the end of the review and there is no direct literature addressing this issue. Add a few sentences about the significance of your research and how this will add value to the body of knowledge.

*Table 10.2: Common Words Bank*

|              |              |             |                    |
|--------------|--------------|-------------|--------------------|
| Parameters-1 | showed       | stated      | found              |
| Parameter-2  | Presented    | Conducted   | Observed           |
| Parameter-3  | Resulted     | Established | Obtained           |
| Parameter-4  | Described    | Organized   | Illustrated        |
| Parameter-5  | Differed     | Plotted     | Displayed          |
| Parameter-6  | Revealed     | Led         | Produced           |
| Parameter-7  | Stated       | Laid out    | Appeared           |
| Parameter-8  | Mentioned    | Explained   | Gave/given         |
| Parameter-9  | Discussed    | Studied     | Got                |
| Parameter-10 | Investigated | Carried out | Evidenced/evident  |
| Parameter-11 | Examined     | Performed   | Influenced         |
| Parameter-12 | Evaluated    | Planned     | Yielded, generated |
| Parameter-13 | Opined       | Structured  | Recorded           |
| Parameter-14 | Determined   | Designed    | Registered         |
| Parameter-15 | Delineated   | Regulated   | Generated          |

## **English for Writing Literature Review**

### **1. Phrases for previous literature:**

*(Adapted from Ref-N-Write.Com)*

The literature review shows that \_\_\_

Previous research showed \_\_\_

Seminal contributions have been made by \_\_\_

A series of recent studies have indicated that \_\_\_

Several theories have been proposed to \_\_\_, some focusing on

\_\_\_, others on \_\_\_  
There have been numerous studies to investigate \_\_\_  
This has been used in several studies to assess \_\_\_  
Previous studies have shown \_\_\_  
Several studies suggest that \_\_\_  
This has also been explored in prior studies by \_\_\_  
Prior research suggests that \_\_\_  
Previous studies have emphasized \_\_\_  
The majority of prior research has applied \_\_\_  
Most early studies as well as current work focus on \_\_\_  
For instance, the following studies were conducted on \_\_\_  
Studies of \_\_\_ are well documented, it is also well acknowledged  
that \_\_\_  
A number of authors have recognized \_\_\_  
Some authors have also suggested that \_\_\_  
Some authors have driven the further development of \_\_\_  
This has been discussed by a great number of authors in  
literature.  
For example, research has provided evidence for \_\_\_  
The authors bring some information about the background of  
the problem, \_\_\_  
As has been previously reported in the literature, \_\_\_  
A large number of existing studies in the broader literature have  
examined \_\_\_  
The literature review shows that \_\_\_  
There exists a considerable body of literature on \_\_\_  
In short, the literature pertaining to \_\_\_ strongly suggests that \_\_\_  
Over time, extensive literature has developed on \_\_\_  
This section presents a review of recent literature on \_\_\_  
This paper begins with a short review of the literature regarding  
the \_\_\_  
Several methods are reported in the literature to address this  
issue.  
There is a wide choice of \_\_\_ available in the literature.  
This section reviews the literature related to \_\_\_  
It was reported in the literature that \_\_\_  
A recent study by \_\_\_ concluded that \_\_\_

In the light of reported \_\_\_ it is conceivable that \_\_\_  
The method introduced by \_\_\_ has the advantage that \_\_\_  
One method employed by \_\_\_ is \_\_\_  
A more comprehensive description can be found in \_\_\_  
For example, recent research suggests that \_\_\_  
This was successfully established as described by \_\_\_  
The author employed a \_\_\_ methodology which prescribes the  
use of \_\_\_

## **2. Limitations of previous research:**

*(Adopted from Ref-N-Write.Com)*

A number of questions regarding \_\_\_ remain to be addressed.  
A closer look at the literature on \_\_\_, however, reveals a number  
of gaps and shortcomings.  
This question has previously never been addressed because \_\_\_  
Most studies have relied on \_\_\_  
Previous studies by \_\_\_ cannot be considered conclusive because  
\_\_\_  
Previous studies have almost exclusively focused on \_\_\_  
This has been previously assessed only to a very limited extent  
because \_\_\_  
In the present studies, \_\_\_ were constrained to \_\_\_  
Previous studies were limited to \_\_\_  
These are previously unstudied because \_\_\_  
As far as we know, no previous research has investigated \_\_\_  
Moreover, although research has illuminated \_\_\_ no study to date  
has examined \_\_\_  
Despite decades of research, this continues to be debated among  
\_\_\_  
This section points out some of the problems encountered in the  
extant research.  
Although there are many studies, the research in \_\_\_ remains  
limited.  
However, the existing research has many problems in  
representing \_\_\_  
The literature on \_\_\_ is less consistent

Historically, there has been a great deal of confusion in the literature regarding \_\_  
This approach remains briefly addressed in the literature.  
These are rarely analyzed in the literature as \_\_  
There are key questions and notions that are still not discussed in the literature \_\_  
This is not clearly presented in the literature because \_\_  
This paper addresses the need for \_\_, so far lacking in the scientific literature.  
To fill this literature gap, this paper identifies \_\_  
Only a few works in the literature demonstrate \_\_  
Although studies have been conducted by many authors, this problem is still insufficiently explored.  
To our knowledge, no prior studies have examined \_\_  
However, the existing research has many problems in \_\_  
Therefore, an important issue in the literature is \_\_  
However, we argue that previous literature suffers from certain weaknesses: \_\_  
Previous research can only be considered the first step towards a more profound understanding of \_\_  
The previous studies reveal that \_\_ are usually the most problematic to \_\_

### **3. Research questions:**

*(Adopted from Ref-N-Write.Com)*

More specific research questions will be introduced and investigated in \_\_  
A further question is whether \_\_  
Finally, another promising line of research would be \_\_  
The study addresses several further questions on \_\_  
Some of the interesting questions in this context are \_\_  
In order to address the questions outlined above, we report here \_\_  
These questions are of central interest as much recent research in \_\_  
Furthermore, \_\_ is arguably an important question to be addressed.

The question now is how \_\_\_ can be used to explain \_\_\_  
The study addresses the research question \_\_\_  
In order to properly address this question, we \_\_\_  
An important question associated with \_\_\_ is \_\_\_  
A critical open question is whether \_\_\_  
A still unsolved question is whether \_\_\_  
This remains an open question as \_\_\_  
This question has previously never been addressed because \_\_\_  
This study offers a test of \_\_\_ research question  
The study addresses the research question \_\_\_  
Even in general \_\_\_ research strategies are needed to explain \_\_\_  
The researcher should be interested here in \_\_\_  
Many questions remain unanswered \_\_\_  
There are some potentially open questions about the validity of \_\_\_  
The question that then naturally arises is \_\_\_  
The question then becomes how best to define \_\_\_  
This was an important question to study as \_\_\_

#### **4. Research to be explored:**

*(Adopted from Ref-N-Write.Com)*

A more systematic and theoretical analysis is required for \_\_\_  
As the authors note earlier, more work is necessary to \_\_\_  
Additional studies to understand more completely the key tenets  
of \_\_\_ are required.  
The unexpected findings signal the need for additional studies  
to understand more about \_\_\_  
This paper addresses \_\_\_, so far lacking in the scientific  
literature.  
A new approach is therefore needed for \_\_\_  
One of the tough challenges for all researchers in this domain is \_\_\_

#### **English for Material and Method Writing**

The section describes the materials used and explains how the materials were prepared and describe the research protocol logically (usually in chronological order). For every method, a

reference must be used if it has been used before, *e.g.*, *Protein analysis, according to Uddin et al., 2018*. In case of modification of a method, state the reference too, if not modified by you. Experimental design and statistical analysis must be stated for field or laboratory of science research.

The method part that follows the introductory part should include a clear description of the experimental procedure and a reason for choosing a particular experimental method. The method section should be detailed enough so that the reader can repeat the experimental procedure and reproduce the results. The scientific rigour of the paper is determined in the Materials and Methods section, so be sure to cover all the details of the experiment. Divide the main section into several subsections and walk through the steps. Use subheadings to sort the processes in chronological order. Use the past tense to report what you did after reporting on the completed experiment. In the method part, you need to explain how you answered the survey questions and how you evaluated the results. Describes the various statistical methods used to test significance and why they were chosen. Some common first sentences (*Adapted/adopted from agricultforest.ac.me*) used in material and methods:

This experimental design was employed because \_\_\_  
In the course of the experiment, \_\_\_ played an important role.  
The experiments were performed with \_\_\_  
This was experimentally investigated by \_\_\_  
Most experiments have been carried out with \_\_\_  
The main focus of the experiments was to calculate \_\_\_  
Prior to each experiment \_\_\_  
The experiments are completely based on \_\_\_  
There were \_\_\_ participants in this sample.  
Participants first provided informed consent about \_\_\_  
We performed additional data collection with \_\_\_  
For this study, we analyzed the data collected from \_\_\_  
The data are less clear-cut than \_\_\_  
Data were collected and maintained by \_\_\_

For this purpose, we employ survey data collected from \_\_  
The application employs data obtained from \_\_  
However, there are trends in our data to suggest that \_\_  
The trend values were then subjected to \_\_  
We analysed data as a function of \_\_  
We used an established technique, namely \_\_, to analyse \_\_  
This showed a judgement error of \_\_  
To investigate this statistically, we calculated \_\_  
We explored these effects statistically by \_\_  
Statistical analyses were performed by using the \_\_ applying a  
significance level of \_\_  
The results were statistically significant when compared using \_\_  
This was normally distributed throughout the study population.  
This distribution resulted in \_\_  
Significant differences in the \_\_ remained.  
This was the only parameter that had a statistically significant  
correlation with \_\_  
We used \_\_ statistics to report \_\_  
This had a statistically significant impact on \_\_  
The correlation between \_\_ and \_\_ is positive and statistically  
significant at \_\_  
This assumption is supported by the fact that \_\_  
Under certain assumptions, \_\_ can be construed as \_\_  
These assumptions result in \_\_  
This assumption might be addressed in future studies by \_\_  
This compilation of research assumptions should result in \_\_  
These assumptions have been disproved by \_\_  
According to \_\_ assumption, the study reports faithfully \_\_  
We started by investigating .....

We designed a new technique for .....

We used a new approach.

These experiments were carried out to find out .....

In order to verify the validity of the ..... Method, we carried out  
several experiments.

All the tests/measurements were carried out at room temperature.

The (signals) were measured before and after .....

To illustrate ..... a simulation was performed.

The ..... Analysis was performed in order to .....

We checked for the presence of .....

(The chemical structure of ..... ) was examined by (the ..... technique).

A gradual change (in temperature) was observed.

The increase in ..... Was not caused by/was not due to a decrease in .....

The (optimized condition) was obtained from .....

Describing numerical methods...

The equation that describes ..... Is as follows:

Equation (2) represents/defines/expresses .....

The equation can be written as....., where .....

Thus, the following equation is obtained:

This study used batch sorption experiments to examine...

Twelve treatments were derived as all combinations of two rates of NPK fertilizer (Nil-NPK and NPK), two rates of lime (Nil-lime and 5  $\text{tha}^{-1}$  ) and three biochar amendments (Nil-biochar, FW and GW).

An experiment initiated in 2002 was used to test this hypothesis

The glasshouse study was a  $4 \times 2 \times 3$  factorial experiment with one control in a randomized complete block design and three replicates.

Two water salinity treatments (channel water;  $\text{EC}_w = 0.07$  and groundwater;  $2.4 \text{ dS m}^{-1}$ ) and four irrigation frequencies were included in a factorial design with four replicates

### **English for Result/Finding Writing**

The Results and Discussion section is part of a difficult section to write. It is important to plan carefully as this section may contain large amounts of scientific data that need to be presented clearly and concisely. The purpose of the Survey Results section is to present the key findings of the survey. Findings and discussions can be grouped into one section or organized as separate sections, depending on the needs of the journal submitting the study. Use subsections and subheadings to improve readability and clarity. Number all tables and figures

with descriptive titles. Present your results as figures and tables and point the reader to relevant items while discussing the results. This section should highlight significant or interesting findings along with P values for statistical tests. Be sure to include negative results and highlight the potential limitations of the paper. The reviewers will criticize you if you don't discuss the shortcomings of your research. This often makes up for a great discussion section, so do not be afraid to highlight them.

The results and discussion section of your research paper should include the following:

1. Findings
2. Comparison with prior studies
3. Limitations of your work
4. Casual arguments
5. Speculations
6. Deductive arguments

*(Adapted from agricultforest.ac.me)*

### **1. Findings:**

*(Adopted from agricultforest.ac.me)*

From the short review above, key findings emerge:

We describe the results of \_\_, which show \_\_

This suggests that \_\_

We showed that \_\_

Our findings on \_\_ at least hint that \_\_

This is an important finding in the understanding of the \_\_

The present study confirmed the findings about \_\_

Another promising finding was that \_\_

Our results demonstrated that \_\_

This result highlights that little is known about the \_\_

A further novel finding is that \_\_

Together, the present findings confirm \_\_

The implications of these findings are discussed in \_\_

The results of the experiment found clear support for the \_\_\_  
This analysis found evidence for \_\_\_  
Planned comparisons revealed that \_\_\_  
Our results cast a new light on \_\_\_

## **2. Comparison with prior studies:**

*(Adapted from agricultforest.ac.me)*

The results demonstrated in this chapter match state-of-the-art methods.

Here we compare the results of the proposed method with those of the traditional methods.

These results go beyond previous reports, showing that \_\_\_

In line with previous studies \_\_\_

This result ties well with previous studies wherein \_\_\_

Contrary to the findings of \_\_\_ we did not find \_\_\_

They have demonstrated that \_\_\_

Others have shown that \_\_\_ improves \_\_\_

By comparing the results from \_\_\_, we hope to determine \_\_\_

However, in line with the ideas of \_\_\_, it can be concluded that

\_\_\_  
When comparing our results to those of older studies, it must be pointed out that \_\_\_

We have verified that using \_\_\_ produces similar results

Overall these findings are in accordance with findings reported by \_\_\_

## **3. Limitations of your work:**

*(Adapted from agricultforest.ac.me)*

Because of the lack of \_\_\_ we decided to not investigate \_\_\_

One concern about the findings of \_\_\_ was that \_\_\_

Because of this potential limitation, we treat \_\_\_

The limitations of the present studies naturally include \_\_\_

Regarding the limitations of \_\_\_, it could be argued that \_\_\_

Another limitation of this \_\_\_

This limitation is apparent in many \_\_\_

Another limitation in \_\_ involves the issue of \_\_  
The main limitation is the lack of \_\_  
One limitation is found in this case.  
One limitation of these methods, however, is that they \_\_  
It presents some limitations such as \_\_  
Although widely accepted, it suffers from some limitations due to

#### **4. Casual arguments:**

*(Adopted from agricultforest.ac.me)*

A popular explanation of \_\_ is that \_\_  
It is by now generally accepted that \_\_  
A popular explanation is that \_\_  
As it is not generally agreed that \_\_  
These are very small and difficult to observe.  
It is important to highlight the fact that \_\_  
It is notable that \_\_  
An important question associated with \_\_ is \_\_  
This did not impair the \_\_  
This is important because there is \_\_  
This implies that \_\_ is associated with \_\_  
This is indicative of a lack of \_\_  
This will not be biased by \_\_  
There were also some important differences in \_\_

#### **5. Speculations:**

*(Adopted from agricultforest.ac.me)*

However, we acknowledge that there are considerable discussions among researchers as to \_\_  
We speculate that this might be due to \_\_  
There are reasons to doubt this explanation of \_\_  
It remains unclear to which degree \_\_ are attributed to \_\_  
However, \_\_ does seem to improve \_\_  
This does seem to depend on \_\_  
It is important to note, that the present evidence relies on \_\_  
The results show that \_\_ does not seem to impact the \_\_

## English for Writing Discussion

*(Adopted from agricultforest.ac.me)*

The such comparison suggests .....

Such changes may well have effects on ..and thereby .....

Given that....

The results are in agreement with..those of the previous studies on highly weathered soils...

Typically

Despite this contention, it is acknowledged that ..... appears the most plausible explanation

The fact that... further suggest that .. was existed.

However, we contend that this is unlikely given that ...which is consistent with the observations from other studies

The only possible explanations for these phenomena are...

This finding differed from our second hypothesis as well as a mechanism previously proposed by other researchers ..., who focused mostly on ...

Driven by as much as physical properties as by its chemical properties....

A targeted strategy for managing .....is s topic of growing interest and inadvertent changes

Instead, they favoured an explanation whereby .....

Mia attributed similar....

Mia speculated .....

In several reports, experimental results have rather indicated the opposite and not only a lower .....but also a lower .....

Overall, these imply-

Contrary to our expectations,.....

In our case, soil analyses indicate that ... than... were more important to enhance ... leading to ...

This assumption is corroborated by the study of X et al. (2000), who found only...was presumed to be mainly due to ...

The initially greater ..was ascribed to its higher .. than ...

Our finding that the addition of biochar to a clay loam soil impacts PAW and soil water retention differs from the results of Further, our results are opposite those reported by

N uptake was substituted for N fixation  
Therefore, generalizations concerning P sorption on biochar  
cannot be made  
As might be expected.....

### **English for Conclusion**

Research papers should end with well-structured conclusions. The conclusion is similar to the introductory part. You paraphrase your goals and objectives and summarize your important discoveries and evidence for your readers. Usually, this can be done in one paragraph with three main points and a powerful takeaway message. No new discussion should be added to the conclusion. You can ask some free-form questions to prepare for your next study. This is a good place to write down your thoughts on possible future work. Explain to your readers what you can do more. What do you think is the next step? What other questions do you need to investigate further? Remember that the conclusion is the last part of the essay that the reader sees. So it takes a little time to write the conclusion, so you can finish with a high grade. The conclusion section of your research paper should include the following (*Adopted from agricultforest.ac.me*):

1. Overall summary
2. Further research

#### **1. Overall summary**

The paper concludes by arguing \_\_  
On this basis, we conclude that \_\_  
The authors concluded that \_\_ is not confined to \_\_  
This allows the conclusion that \_\_  
The findings of this study can be understood as \_\_  
This may be considered a promising aspect of \_\_  
This may be considered a further validation of \_\_  
The remaining issues are the subject of \_\_  
In summary, this paper argued that \_\_

This aspect of the research suggested that \_\_\_  
In conclusion, \_\_\_ seems to improve \_\_\_  
In summary, this paper argued that \_\_\_  
In conclusion, it would appear that \_\_\_  
The analysis leads to the following conclusions: \_\_\_

## **2. Future work:**

Future research should consider the potential effects of \_\_\_ more carefully, for example, \_\_\_  
This assumption might be addressed in future studies.  
Future research on \_\_\_ might extend the explanations of \_\_\_  
this is very much the key component in future attempts to overcome \_\_\_  
In future work, investigating \_\_\_ might prove important.  
This is desirable for future work.  
Future investigations are necessary to validate the kinds of conclusions that can be drawn from this study.  
Future studies could fruitfully explore this issue further by \_\_\_  
Future research is needed to delimitate \_\_\_  
It will be important that future research investigate \_\_\_  
It is a question of future research to investigate \_\_\_  
We believe that apart from looking for \_\_\_, future research should look for \_

## **English for Acknowledgments and Appendix**

There is no standard way to write an acknowledgement. In this section, we can thank everyone who helped with the project. They can adopt formal or informal tones. You will not be penalized. Supplementary material can be placed in the appendix and referenced in the text. There is no limit to what you can put in the appendix section. This can include figures, tables, costs, budgets, maps, etc. Anything that is essential for the paper but might potentially interrupt the flow of the paper goes in the appendix. The followings are examples (*Adopted from [agricultforest.ac.me](http://agricultforest.ac.me)*) of phrases and sentences:

### **1. Acknowledgements:**

The authors gratefully acknowledge the financial support of \_\_\_  
The authors acknowledge the infrastructure and support of \_\_\_

The authors would like to thank \_\_  
The work was supported by the \_\_  
The authors very much appreciate the support by the \_\_  
The authors appreciate the unknown referee's valuable and  
profound comments.  
The authors wish to express their thanks for the financial support of \_\_  
This material is based upon work supported by the \_\_  
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The opinions of the authors expressed herein do not necessarily  
state or reflect those of \_\_  
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The authors sincerely acknowledge the \_\_  
Authors also acknowledge the \_\_ for the support in \_\_  
The authors thank \_\_ for discussions on \_\_

## 2. Appendix:

For interested readers, a detailed description is presented in  
Appendix \_\_  
Further description is available in the Appendix or from the  
author \_\_  
Complete data is available in \_\_  
Supplementary data associated with this article can be found, in  
the online version, at \_\_  
The full-colour images can be found in the online version, at \_\_

## **Conclusion**

A crucial issue among researchers is using proper English in their theses and publications. Lack of English knowledge often makes it difficult for researchers to describe or develop their research ideas. This causes an unexpected delay in completing the research project within the given timeline. In this chapter, we discuss how to prepare scholarly research works using English usages that are necessary and useful. One by one, this chapter discusses the most important English usages.

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## Chapter Ten

### Preparation and Presentation of Scientific Research

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#### Abstract

This paper is aimed at equipping new researchers and post graduate students with skills for an effective scientific presentation of their researches during conferences, seminar presentation and viva voce examination. It highlights some tips on scientific presentations, types of presentations, technical aspects of presentation, presentation structures as well as slid preparations for seminars and conferences. It also elaborates on poster presentation in conferences, selection and organization of posters for presentation, presentation skill and material. Lastly, it highlights stage preparation for scientific presentation, non-verbal skills in presentation, the dos and donts in presentation and effective techniques in answering questions.

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#### Introduction

Scientific Presentations is an important part of sharing the contents of one's work, reports or research findings on a topic of interest of field to an interested enthusiastic audience in a clear and concise language in order to achieve recognition in the larger scientific communities. An effective scientific presentation appeals to a wide range of audience and contributes to the career

success of an individual. It has the ability to attract audiences from those who work in a similar area of interest or related field, those who may find the work interesting and useful, potential funders and the media.

Scientific presentations differ in types, designs and contents, therefore most scientific presentations are casual, extemporaneous and require the use of visual aids in presentation. This "scientific style" place some additional burdens on the presenter because he must be able to both manipulate visual media, project the aura of being at ease with the material being presented, and still possess the ability to answer all questions arising from the presentation.

This chapter, therefore presents various types and steps involved in the art of scientific presentations. Specifically, details on how to prepare an effective scientific presentation, what is required of a presenter, the presenter's personality, the does and don'ts on the stage during presentation, answering anticipated and unanticipated questions, preparation of effective visual aid amongst other issues has been discussed. This chapter will assist new researchers, undergraduate and postgraduate students in preparing and presenting their research works and research findings to the scientific community in particular.

### **Types of presentation**

Generally, research, presentation are divided into two categories, namely the verbal presentation and non-verbal presentation. Verbal presentation refers to information being transmitted via display while for non-verbal presentation is where the information is transmitted via symbol or gesture (Buck, 2002).

### **Verbal Presentation**

## **Public Lecture**

Public lecture is seen as a tool in communicating instruction and imports benefits of useful knowledge (Inkster, 1980). Public lecture is one of the communications with local community in terms of delivered and share knowledge. It is also as an opportunity to engage with government, business and the public to give information as well as to educate the community through open discussion of certain relevant issues that confront our nation, region and world generally (ANU, 2019).

The factors that should be focus on when delivering public lecture are Strategic Communication and Public Affair (SCAPA). This SCAPA helps to maximize the lecture's potential, boost the outreach and protocol as well as meeting the objective of the lecture. The important component involve in public lecture is to set your objective and target audience, secondly is who should be invited such as alumni, students, or general public (ANU, 2019). An Example of public lecture topics include:

1. The Corona Crash: How The Pandemic Will Change Capitalism.
2. How Has Genomics Altered the Way Humanity Understands Itself?
3. From Microbe to Mars: How Can We Use Bacteria in Search for Life Beyond the Earth.
4. The Unknown Universe, etc.

## **Research scientific/ conference presentation**

Research scientific or conference presentation is one of the core parts of scientific communication for researchers and academic. Finding a suitable conference with the right audience and communicating one's latest findings successfully is a boots to one's career prospects. It is a wonderful opportunity to share ideas and meeting researchers in same field. This is possibly one of the most important platform where young researchers meet

with their potential supervisors and employers who also find their potential candidates. There a large scope for asking asking questions on the presented reseaches and therefore, authors get valuable feedbacks on their works. In turn, one learns about the newest development in his/her research area and generating new ideas on how things are done in other climes. Scientific conference is a great way to share and develop knowledge among researchers and academics in one's fields (Campbell and Casserly, 2019).

### **Motivational Speech**

Motivational speech is a tool to give motivation to target audience. The target audiences for this motivational speech are in a broad range such as secondary school students, university students, and company workers and so on. Usually, these motivational speeches are used to enhance workplace performance, enhance them to work harder and smart, to increase commitment as well as to improve satisfaction and self-developments.

Motivational speech should be delivered with sincere so the audiences can heartfelt sincerity and honesty, they will take it as serious. Next, it should be short and on target, and be smart to tackle the audience attention and emotional (Tony, 2019).

### **Non – verbal Presentation**

#### **Poster Presentation**

Poster presentation is one of the communication skills to deliver information that represents the focus of your topic. A poster presentation is an opportunity to present selected result and information to people at a conference or public display, highlight conclusion, relevance and importance of your work and chances to discusses your work and get feedback from the expert. The main reason to present a poster presentation is to inform and engage people and attract interest in your work, other than that,

to advertise your department, university, research group and yourself. Next, to make new contacts for collaborating and job opportunity as well as an added value into your CV (Imperial College London, 2017).

In a poster presentation, there are a few factors that needed to be considered such as layout and formatting, venue requirement such as size and shape of your poster, space provided, regulations of font and graphic, last but not least your audience. The audience will not approach you if your topic or theme is not clear from 3 meters. Other than that, to capture your audience you only have 3 seconds to attract and 30 seconds to secure their attention by conveying an overall understanding of your message. They will interact with you, thus, keep in mind your behaviour and body language can affect this (Imperial College London, 2017).

### **Slide preparation for verbal presentation**

A verbal or oral presentation is beyond reading papers or a set of slides to the audience. It is not just a person behind a lectern, giving a speech. Oral presentation commonly uses visual aid and teaching tools to stimulate interest and further enhance the spoken information. Visual aid and teaching tools can include a slide presentation, models, prototypes, posters, video clips and images. A slide presentation is an easy useful visual aid in helping a presentation apprehensible. The presenter needs to make a story of his presentation and presented in a way so that the audience can follow. Therefore, wording of the presentation should be chosen based on the audience level of knowledge. A good slide presentation can attract audience's attention to listen and understand the given information that would be difficult to follow through speech alone.

### **Presentation Structure**

Basic structure of presentation are introduction, main body, and conclusion. Data, information, and graphics need to be prepared and arrange in structure to guide the audience through the

presentation. Well-structured presentation creates continuity and flow of the slides, like a logic story. The last point on one slide should anticipate the next slide.

### **Technical Aspects of a Presentation**

Designing slide presentation is important. There is an art of designing a good and an effective and attractive slides presentation, considering the following design features.

#### **Colour and Contrast**

Use a simple contrasting background and text colour. For example; light colour background with dark letter which is best for smaller room, or dark colour background against light coloured letter which is best for large room. Colour also used to emphasis a point and to tie points together. Chosen colours for both background and text should be highly readable.

#### **Background**

Use simple background that would provide some visual interest. Use the same background throughout the presentation to enhance continuity and view ability. Avoid elaborate design and colour schemes which can overwhelm the content.

#### **Font**

Use clear and easy to read font such as **Arial** and **Calibri** throughout the presentation. Avoid complicated font such as Algerian, and Collonna MT. Use capitalize letter if only to emphasize a point. Recommended slide title is about 36 to 44 points and slide body should be 18 to 24 points. Avoid too small font that will cause strain to the audience.

#### **Layout**

Use simple text in slides and apply the 'Rule of 8s' maximum 8 words per line and 8 lines per slide. Avoid full paragraphs text, except for quotes. Avoid abbreviations or acronyms.

Use different slides for each main point or title to keep presentation focused, and helps the audience understand and concentrate on each point. If using bulleted lists, arrange each bullet line parallel structure and in the same grammatical form. For example; using a verb for each first line opens.

### **Graphic and images**

Use graphics to add audience retention. Graphics are useful to visualize complex information, represent data and, exhibit trends. Choose a right type graphics; bar graph for comparison and line graph to demonstrate changes over time. All figures in graphics should be readable, understandable and uncluttered.

### **Design and template**

Use horizontal orientation rather than vertical. Use animation, transitions and sound effects if only contribute to highlight the point. Overuse of those elements especially audio-based transition may lead to distract audience's concentration.

### **Presentation for Postgraduate Seminar**

Postgraduate students in Faculty of Agriculture UPM, are required to present their research proposals, research progress and final research results or exit seminars during Postgraduate Seminar organized by the faculty research and innovation committee.

### **Research Proposal (SPS 5903 for Master and SPS 6903 for PhD)**

Presentation of a research proposal is a brief overview and plan of work a student choose to carry out in his/her research. The

student is required to inform his audience (Supervisory Committee, Postgraduate research committee and other stakeholders) the purpose, aim and objectives, benefits/significance of the study, the problem or gap in which the research will address and how he/she intends to address the identified problem or gap.

The presentation may be divided into nine components as below;

1. Title of the research project (1 slide) – including student's name and supervisory committee members.
2. Introduction (3 slides) – a brief introduction about the research subject; including general description, usage/application/function, economic overview.
3. Problem Statement (1 slide) – emphasis on research gap and challenges, and why the research is important.
4. Objective (1 slide) – a statement of research purpose or goal.
5. Literature Review (12 slides) – synthesis information and discussion from previous studies with citation.
6. Materials and methods (10 slides) – a brief about how the research will be conducted including experimental design, treatments, parameters and data collection method.
7. Expected Results (1 slide)
8. Gantt Chart (1 slide)
9. References

### **Research Progress (PRT 6903 for PhD)**

Presentation of research progress for PhD students is a brief report about research achievement and future work to be completed. The duration for presentation is about 20 minutes.

The presentation can be divided into nine components as below;

1. Title of the research project (1 slide) – including student's name and supervisory committee members.
2. Introduction (3 slides) – a brief introduction about the research subject including general description, usage/application/function, economic overview.
3. Problem Statement (1 slide) – emphasis on research gap and challenges, and why the research is important.

4. Objective (1 slide) – a statement of research purpose or goal.
5. Literature Review (5 slides) – synthesis information and discussion from previous studies with citation.
6. Materials and methods (8 slides) – a brief about how the research was conducted including experimental design, treatments, parameters and data collection method.
7. Results and Discussions (20 slides)
8. Conclusions (1 slide) – conclude research findings
9. Future Study (1 slide) – elaborate on the research scope that needs to be accomplished.
10. Gantt Chart (1 slide)
11. References

**Research results (PRT 5903 for Master and PRT 6904 for PhD)**

Presentation of research progress for PhD students is a brief report about research accomplishment. Duration for presentation is about 30 minutes. The presentation can be divided into nine components as below;

1. Title of the research project (1 slide) – including student’s name, supervisory committee members.
2. Introduction (3 slides) – a brief introduction about the research subject including general description, usage/application/function, economic overview.
3. Problem Statement (1 slide) – emphasis on research gap and challenges, and why the research is important.
4. Objective (1 slide) – a statement of research purpose or goal.
5. Literature Review (5 slides) – synthesis information and discussion from previous studies with citation.
6. Materials and methods (8 slides) – a brief about how the research was conducted including experimental design, treatments, parameters and data collection method.
7. Results and Discussions (25 slides)
8. Conclusions (1 slide) – conclude research findings
9. Gantt Chart (1 slide)
10. References

## **Poster Preparation for Non-Verbal Presentation**

Posters are widely used in the academic community. Most conferences include poster presentations in their program (NYU, 2018). Research posters summarise information or research findings in a concise and attractive manner so as to help publicise one's work and to generate discussions. Posters are usually a mixture of a brief text mixed with tables, graphs, pictures, and other presentation formats. At a conference, the researcher displays his/her posters, stands by them while other participants come to view the presentation and interacts with the author.

### **Sections and organization**

Scientific posters should follow the IMRaD format (introduction, methods, results, and discussion). It is easiest to break down all the information into distinct sections. Posters are read from left-to-right and top-to-bottom, usually with 4-8 sections laid out in 3 or 4 columns. A good poster should keep length to approximately 1000 words or less, with about 700 words in paragraph form (body text), plus 300 words in the legends of all figures and tables. Standard scientific poster sections:

#### **Title**

A short title with author names directly underneath followed by the names of associated institutions.

#### **Introduction or Background**

Presents the background and the purpose of the research. The background information typically consists of a statement summarizing the current knowledge in an area, what knowledge is missing, and how this research project addresses the knowledge gap. A hypothesis can be included in the introduction.

#### **Materials and Methods**

Briefly describe experimental equipment and procedure. Use figures and flow charts to illustrate experimental design if possible. Include a photograph or labelled drawing of organism or setup. Mention statistical analyses that were used and how they allowed you to address the hypothesis.

### **Results**

This section includes quantitative data. Consider comparisons of the outcome variables between various subgroups within the study. Numerical results should include standard deviations or 95% confidence limits and the level of statistical significance should be indicated.

### **Discussion or Conclusions**

Explain why your results are conclusive and provide the reader with a short but solid justification of your hypothesis

### **Literature Cited or References**

Make a list of the literature you have cited regarding this project. List the names of authors, publications and publishing dates.

### **Acknowledgement**

Thank individuals for specific contributions and mention who has provided funding. Do not list people's titles.

### **Further Information**

Provide your contact information, or possibly a URL where the readers can download a PDF version of the poster or relevant data.

### **Technical Aspects of a Poster**

An effective poster should be organized and easy to read and follow the flow of information. It should also be attractive and attention-grabbing, due to judicious use of colours, use of

graphics, and arrangement. Here are 10 tips and tricks for designing an effective scientific research poster that stands out (Livingston, 2018; Oswald, 2016).

### Nutrient loading in the river systems around major cities in Bangladesh: A quantitative estimate with consequences and potential recycling options



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 Patuakhali Science and Technology University

#### Introduction

Biological organisms including human being acquire mineral nutrients from foods for their growth and development. A significant amount of these nutrients remain unused in the leftover materials, known as waste and in the metabolic residues i.e., urine and faeces. The nutrients of the waste and metabolic residue released through decomposition and drained to the river system through sewerage channels. Consequently, the nutrient loading, particularly nitrogen, phosphorus and potassium, in the river and water bodies often crosses the carrying capacity of the aquatic ecosystems deteriorating environmental health and quality. The nutrients retained in waste and metabolic residue can be a potential source of plant nutrients, if they are recycled. Ecological sanitation strategies can be used either singly or in combination for sustainable recycling of these nutrients. In Bangladesh, there is no studies that looked into nutrient loading in the water bodies around cities while recycling options are not explored.

#### Research question

- How much nutrients are released from municipal organic waste and human excreta to river system around the cities?
- What are the potential nutrient recycling options?

#### Methods

##### Calculation of Nutrient Loading

###### A. Organic Waste

$$\text{Nutrient loading (kg d}^{-1}\text{)} = P \times \text{PWGR (kg d}^{-1}\text{)} \times \text{FOW} \times \text{FWCR} \times \text{FMA} \times \text{NC}$$

Where,  
 P= Population of the city (World population review, 2018)  
 PWGR= Per capita waste generation rate (kg d<sup>-1</sup>) (adjusted for 2018, Mia et al., 2018)  
 FOW= Fraction of organic waste (average of literature data, Mia et al., 2018)  
 FWCR= Fraction of waste considered to release in the water stream (Expert judgement)  
 FMA= Moisture adjustment Factor (70% moisture, Mia et al., 2018)  
 NC= Nutrient content in the biomass (average of literature data, Mia et al., 2018)

###### A. Human Urine and Faeces

$$\text{Nutrient loading (kg d}^{-1}\text{)} = P \times \text{PWGR (kg d}^{-1}\text{)} \times \text{FWCR} \times \text{NC}$$

Where,  
 P= Population of the city (World population review, 2018)  
 PWGR= Per capita waste (urine/faeces) generation rate (kg d<sup>-1</sup>) in dry basis  
 NC= Nutrient content in the urine/faeces (average of relevant literature data)

#### Results

##### Impact of nutrient loading on ecosystem services

| Direct services   | Indirect services  | Options/ services   |
|---|--|---|
| <ul style="list-style-type: none"> <li>Reduction of fish production</li> <li>Reduction of wild life i.e., birds/deer</li> <li>Hindrance in transport/aviation</li> <li>Soiling down of tourism</li> <li>Low prices of properties</li> </ul> | <ul style="list-style-type: none"> <li>Disease outbreak</li> <li>Ground water contamination</li> <li>Degradation of cultural value of water</li> <li>Loss of biodiversity</li> <li>Increase of water treatment cost</li> </ul> | <ul style="list-style-type: none"> <li>Deterioration of prestige and social pride</li> <li>Compromising with future uses</li> </ul> |

Figure 1. Effect of nutrient loading on ecosystem services

##### Table 1. Nutrient loading from municipal organic waste at different cities in Bangladesh

| Name of the City | Population (‘000’) | Waste generation (kg d <sup>-1</sup> ) | Fraction organic waste (%) | Organic waste generation (kg d <sup>-1</sup> ) | Carbon | Nitrogen | Phosphorus | Potassium |
|------------------|--------------------|--|----------------------------|--|--------|----------|------------|-----------|
| Dhaka            | 10157              | 0.56                                   | 73.14                      | 4239841  | 131808 | 12382    | 4767       | 12822     |
| Gazipur          | 336                | 0.56                                   | 73.14                      | 138202   | 10263  | 404      | 155        | 417       |
| Narayanganj      | 224                | 0.56                                   | 73.14                      | 91548  | 6797   | 267      | 103        | 276       |
| Rajshahi         | 700                | 0.36                                   | 78.65                      | 199975   | 14848  | 584      | 224        | 606       |
| Rangpur          | 343                | 0.27                                   | 82.62                      | 77923  | 5937   | 222      | 85         | 229       |
| Barisal          | 202                | 0.31                                   | 80.77                      | 50310  | 3736   | 147      | 56         | 152       |
| Chittagong       | 3920               | 0.45                                   | 71.92                      | 1268489  | 94185  | 3705     | 1423       | 3830      |
| Khulna           | 1342               | 0.33                                   | 79.42                      | 393773   | 26119  | 1027     | 395        | 1062      |
| Sylhet           | 237                | 0.39                                   | 73.49                      | 68102  | 5057   | 199      | 76         | 206       |
| Comilla          | 389                | 0.27                                   | 80.77                      | 84236  | 6254   | 246      | 95         | 256       |
| Mymensingh       | 225                | 0.27                                   | 82.62                      | 60825  | 3899   | 145      | 56         | 150       |
| Other cities     | 30448              | 0.21                                   | 80.72                      | 5265702  | 390978 | 15378    | 5908       | 15900     |
| Country total    | 48725              | 0.32                                   | 76.63                      | 11883370                                       | 882340 | 34705    | 13333      | 35882     |

#### Key Findings

- In Bangladesh carbon, nitrogen, phosphorus and potassium loading from municipal organic waste and human excreta to water bodies around cities are 3290, 307, 54 and 94 t d<sup>-1</sup>.
- Combined pyrolysis and composting of municipal organic waste while nutrient harvesting through adsorption, precipitation and aquaponics could be potential recycling options.

##### Table 2. Nutrient loading from human faeces and urine at different cities in Bangladesh\*

| Name of the City | Carbon  | Nitrogen | Phosphorus | Potassium |
|------------------|---------|----------|------------|-----------|
| Dhaka            | 511831  | 57820    | 8629       | 12415     |
| Gazipur          | 16684   | 1885     | 281        | 405       |
| Narayanganj      | 11052   | 1248     | 186        | 268       |
| Rajshahi         | 34601   | 3909     | 583        | 841       |
| Rangpur          | 10957   | 1910     | 286        | 412       |
| Barisal          | 9995    | 1129     | 169        | 243       |
| Chittagong       | 193783  | 21896    | 3266       | 4707      |
| Khulna           | 66340   | 7494     | 1118       | 1612      |
| Sylhet           | 11313   | 1323     | 197        | 285       |
| Comilla          | 19249   | 2114     | 314        | 468       |
| Mymensingh       | 11126   | 1257     | 188        | 270       |
| Other cities     | 1504760 | 169988   | 25369      | 36557     |
| Country total    | 2408046 | 272010   | 40997      | 58592     |

\* Faeces and urine generation rates are 0.108 kg dry faeces d<sup>-1</sup> and 0.153 moisture free urine d<sup>-1</sup>.  
 \* Carbon, nitrogen, phosphorus and potassium concentration in faeces and urine are 45%, 1.0%, 0.4%, 0.6% and 6.7%, 4.5%, 0.4% 1.2% respectively.

Figure 2. Proposed methods of nutrient recycling from municipal organic waste and Human faeces and urine.

#### Reference

Mia et al. 2018. Waste Management 75:503-513

Figure 11.1: A template of poster presentation

## Content

The information which can be passed across using a poster is very limited. It is important that one chooses a single aspect of his/her

research which can explain fully in a small amount of text and graphics and focus on that alone.

### **Title**

Research title should be clear and obvious. Important research should be able to attract attention. Therefore, the use a large, bold font and leaving sufficient white space around your heading. A font size of around 60-90 point should suffice.

### **Layout Flow**

The flow of your poster should be natural and obvious to the reader. A viewer may only spend a minute or two looking at your poster so they should immediately be able to make sense of the organization and be able to identify the distinct sections. Try and make fit, everything to a basic grid and align each section with another.

### **Background**

When a document contains too much clutter, it can cause confusion and distract the audience from where they should be focusing their attention. Use dark type on a light, plain background, so that the scientific research poster will be easy to read.

### **Colour**

Too much colour can be distracting, while too little colour can be boring and lifeless. Use colours mainly to highlight important elements, and use no more than three colours.

### **Font and Text**

Fonts like Georgia, Helvetica, Open Sans and Verdana are all popular choices for print materials. Use no more than three different font sizes; the largest for the poster title, second-largest for section titles, and smallest for text. For all lettering, use both upper- and lowercase letters. Words composed of all uppercase

letters are difficult to read. The smallest font should be large enough, so it is easily read from a distance of 3 to 5 feet (usually, 24-point font).

The poster should not be too wordy, and the text should be clear and straight to the point. Use short sentences and paragraphs, and keep your text blocks small. Use of bullets, numbering, and headlines make it easy to read.

### **Graphics**

Effective use of photos, visuals and charts in presenting the data will help your reader understand and appreciate your work effectively. Ensure all graphics are of high resolution and are captioned with a brief explanation able to be understood quickly.

### **Other Tips**

Get feedback on your poster

Ask a friend to look at your poster before you print it out, preferably a scientist who is not familiar with the exact subject area. Take on board their comments about the poster's readability and overall appeal.

Stay at your poster and talk to people

There is no point in making a great poster and standing in the bar during the poster session. Stay with your poster and offer to talk people through it. Don't miss this great networking opportunity. If you are at a conference where you leave your poster up outside of the session, then include your email address on your poster. This will allow people can catch up with you later if you are not around.

### **Software Recommendations**

There are many software that can be used to design a poster.

### **PowerPoint**

A popular, easy-to-use option. The PowerPoint file can be sent directly to the printers for printing when you are done.

### **Adobe Illustrator, Photoshop and InDesign**

Feature-rich professional software that is good for posters including lots of high-resolution images, but they are more complex and expensive.

### **Open Source Alternatives**

Open Office is the free alternative to MS Office (Impress is its PowerPoint alternative). Inkscape and Gimp are alternatives to Adobe products. Other page layout applications such as QuarkXPress, LaTeX, or Scribus also allow control of text wrapping around images, automatic text flow among associated text blocks, and much more. Software such as CorelDRAW, Freehand and Omnigraffle will help to make posters with graphics (Purrington, 2018).

### **Presentation Skill**

#### **Purpose of presentation**

Give information

The informative presentation is to explain audience in the topic that they do not know yet. Therefore, the information must be clear and understandable. Generally, this kind of presentation, presenter need to give facts and data, so that the audience got information at the end of the presentation.

#### **Persuade people**

Persuasive presentation is a bit complicated because the audience already knows and are familiar with the topic that is going to be presented. Therefore, the best communication skill is required during the presentation to lure the audience and uphold their interest in the topic as well as the presentation.

#### **Verbal communication skills**

Verbal communication skills in a presentation are very useful in many aspects of work and life. Effective communication skills are not just about talking but how you deliver the information and

how you receive them. Generally, you must know how to answer the questions.

Here five tips to improve verbal communication skills;

1. Organize the presentation material

Organizing the presentation material helps to construct the flow of presentation throughout the period. This may mean jot down the important notes or entire text. So, the information can deliver clearly without any circumstances. If you forget the flow, you can refer to the text. However, do not read the entire text during the presentation.

2. Practice

Practice in front of the mirror to see the reflection of yourself and record the voice. It helps to improve your gestures and any kind of bad habit that you may be unaware of. Therefore, you will evaluate the words you choose, the tone of your voice, eye contact, body language that leads to speaking confidently.

3. Be friendly

Engagement with audience is essential during presentation. It makes the audience comfortable, so that, they will listen to the presenter. In addition, the presenter should speak in friendly tone and warm smile.

4. Speak clearly

Most of the audience has no enough time to spend on our emotional energy to figure out what the presenter is trying to say. Be clear in the information that you want to deliver and do not ask audience to find it by themselves. The voice tone also plays important roles to control the environment throughout the presentation period to avoid the audience lost their focus.

5. Know your audience

The successful presentation depends on the ability of information to reach the audience. The way you talk with professional should be different from a room discussions with students. It helps you

to choose appropriate language, word selection and little bits of humour that suit to your specific audience.

### **Non-verbal skills**

Presentation skills are not what you say, but the audience wants to see how you elaborately present your research. Generally, the way you present yourself is as important as the way you present the information. You should appear confident and engaging with the audience. The following items need to be observed before you deliver the speech by doing some rehearsal.

### **Movement**

Some movements during presentation helps the presenter engage with the audience. The audience will feel closure to the presenter without barriers. However, too much movement in a short time will distract the audience.

### **Gestures**

The gestures are useful to emphasis what information do you want to deliver. The natural gestures inhibit anxiety and make presenter more confident. However, the presenter should avoid unnecessary gestures that will distract the audience such as keep hands in pocket, keep hands behind the body and keep the arm crossed.

### **Voice**

Not to forget, voice is vital in presentation. The presenter should control the voice neither too soft nor too loud. A soft voice may show the presenter in lack of confidence. Before you start delivering the information, you may check either the audience especially in the back will listen to your voice.

### **Postures**

The postures must be in relax mode. You can stand straight but not stiff that will distract your audience and make the environment intense.

### **Eye contact**

Eye contact helps to establish the communication between people and build the confidence. It makes the presentation more personable. The presenter should see around all the audience. Do not focus on the same side too long. It makes the person that you see not comfortable and another person being isolated.

### **Facial expression**

Use the facial expression well to attract the audience. The audience will see your enthusiasm while delivering information.

### **Stage preparation**

Stage preparation needs to be checked before delivering the presentation. It helps to avoid panic and anxiety if the tools that you prepared are not working. In addition, the presenter should come early to make sure the items are working very well. The list of items needs to be checked before the presentation.

### **Computer hardware or software**

The software and hardware that you are going to use must be functioned well before a presentation. Always check the tools especially when the organizer prepares the computer for a presenter.

### **Projector**

How you can show the information to the audience if the projector is not working? Therefore, you need to check either the screen is suitable to audience or not.

### **Microphones**

Microphone is needed when the audience are more than 50. You can request a portable microphone, so that, your hands-free and easy to deliver the information using appropriate gestures.

### **Lighting**

Lighting is essential and gives mood to the audience. Dimming the light might cause the audience to doze off especially in the afternoon session.

### **Question and Answer technique**

#### **Prepare the expected questions**

Preparing the expected questions will help you practice answering them. You can choose the way you will answer the question and satisfy the audience. You also can prepare an unexpected question as preparation. So, you are not feeling guilty and frustrated.

#### **Listen attentively to the question**

The presenter should watch the person who gives the questions. It shows the enthusiasms of a presenter to receive the question.

#### **Clarify**

Some of the audience like to ask a lengthy and complex question which is can compress in simple word. Therefore, it is good if the presenter clarifies the question with the simplest word. Clarifying the question helps the presenter to have more time to answer the question clearly and precisely.

#### **Be honest**

If the presenter does not know the exact answer, it is okay, to be honest and try to find out. Please avoid the unnecessary answer that you are not sure of or confirmed. It will hurt your ability as a presenter.

#### **Keep an answer to the point**

The presenter should answer the question precisely and avoid adding an unnecessary point that did not answer the question.

## **Personal Appearance**

### **For Women**

- Clothes should fit well to presenter. It is advisable that the presenter not to wear tight clothes. Formal appearance is highly recommended.
- Minimal accessories are necessary and sparkle jewellery causes a distraction to the audience.
- Do not wear more than three colours and bright colours are not suitable especially in a formal presentation.
- Use simple makeup.
- Hair or scarf styles should be neat.

### **For Men**

- Men suit should be well-tailored and fit well to the presenter.
- Bright colour caused a distraction to the audience.
- Ties should be in subtle colour.
- Shoes should be appropriate, comfortable and well-shined.
- Hairstyle should be well-groomed.

### **Conclusion**

In conclusion, this chapter described the different types of scientific presentations, presenters requisite requirements, personality, the does and don't and ways of achieving an effective scientific presentation in order to appeal the audience and stakeholders in the scientific community. The information presented therein will go a long way in helping new researchers, undergraduate and postgraduate students in presenting an effective scientific presentation during seminars, conferences and viva voce examination.

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