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| **THEME 10.** **THE RESULTS OF A SCIENTIFIC PAPER.**  **TASKS OF LITERATURE REVIEW** |

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| Learning outcomes  This lesson offers you opportunities to:   * Gain an overview about the results and discussion part of the paper; * Learn how to organize results and discussion sections; * Develop note-taking skills while watching speech; * Learn tips how to write effective results and discussion section.   *Key-words: discussion part, subsections, subheadings, summarization, validate,* *submit, measured, variables, statistical analyses.* |

The **results and discussion** section might be particularly difficult to write. This part needs careful thought, since it may include a significant degree of scientific information that must be conveyed succinctly and clearly. Incorporating the main results of your study in the Results section is essential. The results and discussions may be organized as distinct parts or integrated, depending upon the particular rules of the publication to which you want to submit your research report.

Structure your text using subsections and subheadings to enhance clarity and conciseness. All tables and figures include numerical data and captions. Exhibit your findings using figures and tables, and ensure to analyze the outcomes. Furthermore, direct the reader to pertinent resources for further information. This part must include the P values for statistical analyses, along with any significant or compelling discoveries. Identify any adverse results and emphasize any limits included in the study. Recognizing the limits of your study is crucial to mitigate criticism from reviewers. Have confidence in highlighting them, since they often serve as excellent topics for debate.

**How to Set Up the Results Section:** Considering the sequence of your parts, it is essential to include pertinent information on your results and research data in the outcomes section, which succeeds the procedure section. It would be beneficial to provide more details on the data collecting methodology, variables, treatments, and statistical analysis.

Initially, prioritize your study data according to its pertinence to your research subjects. This section should highlight significant data that either corroborate or contest your research hypothesis. When submitting to the journal, it is prudent to include any ancillary data that may not be of paramount importance as supplemental materials. It is now necessary to prioritize your study findings according to significance. Concentrate on the facts pertinent to your research inquiries and structure it using subheadings. The subheadings in the results part often correspond to those in the procedures section, reflecting a systematic and professional methodology. It must be well organized and adhere to a coherent timetable.

**Subheading organization:** The subheadings in your results section will delineate the key findings from each pivotal experiment. The first paragraph of your results section should concentrate only on your noteworthy findings (Hofmann, 2013). Each subheading may contain a combination of (Hofmann, 2013, pg. 62):

* texts: to explain about the research data
* figures: to display the research data and to show trends or relationships, for examples using graphs or gel pictures.
* tables: to represent a large data and exact value

**Data or Results?** Data denotes the information collected via research. Results are the written representations that communicate the importance of your research results (Bahadoran, 2019).

**Elements Found in Figures and Tables.** Figures and tables function as visual tools to convey information about your study results. Visual representations are essential for readers to effectively summarize, compare, and analyze extensive amounts of information. Graphs and figures serve as efficient instruments for comparing groups or trends. Tables are optimal for presenting extensive datasets and exact numerical figures. A variety of elements is required to produce your figures and tables. These elements are crucial for classifying your data (or interventions). Readers will have improved insight into the similarities and differences among the categories. When presenting your research data via figures and tables, organize the information according to the chronological phases of the investigation that culminate in your conclusion.

***Common elements of the figures*** (Bahadoran, 2019):

* Figure number
* Figure title
* Figure legend (for example a brief title, experimental/statistical information, or definition of symbols).
* Data
* Labels

***Tables in the result section*** may contain several elements (Bahadoran, 2019):

* Table number
* Table title
* Row headings (for example groups)
* Column headings
* Data
* Row subheadings (for example categories or groups)
* Column subheadings (for example categories or variables)
* Footnotes (for example statistical analyses)

**Tips to Write the Result Section**

* Direct the reader to consult the research data and clarify the importance of the results.
* Avoid use duplicate phrase structures while explaining new information.
* Record and highlight significant findings in your study.
* Organize the information in accordance with the order of the subheadings presented in the methods section.
* Ensure the results correspond with the research questions set in the introduction. The results of your study should provide a definitive answer to your research questions.
* Verify that there is no inconsistency between the table or figure number referenced in the text and the matching table or figure.
* Provide just proof that corroborates the significance of your findings. Supplementary material may be used to provide more facts in the form of tables and figures.

**How to Organize the Discussion Section.** The discussion section of your publication is probably the most original component in conveying the narrative of your research (Moore, 2016). In this section, you will validate your findings by justifying your responses to the research questions and generating compelling arguments to reinforce your conclusions. Ghasemi (2019) proposes a strategy for organizing the discussion section by partitioning it into three separate components:

***The beginning part:*** The first sentence of the introductory paragraph must explicitly articulate the importance and innovative findings of your research. The first paragraph may also include answers to the research questions stated in the introduction section.

***The middle part:*** The primary portion must include explanations of the results to validate your replies, the rigor of the inquiry, the limitations of the research, and a contemporary assessment of the literature that corroborates your findings.

***The end part:*** The conclusion signifies the culmination of the inquiry and underscores the significance of your research. A different method for organizing the discussion part is using the structure suggested by Viera et al. (2018):

* Examination of significant findings;
* Comparison of results with existing literature;
* Strengths and limits of the research;
* Conclusion and potential implications of the study (including its relevance);
* Future research inquiries derived from the findings.

**Structuring your discussion (Hofmann, 2013, p. 104):**

* ***First Paragraph:*** Provide an interpretation based on your key findings. Then support your interpretation with evidence.
* ***Middle Paragraphs:*** The middle paragraphs should include the following
* Secondary results
* Limitations
* Unexpected findings
* Comparisons to previous publications
* ***Last Paragraph:*** The last paragraph should provide a summarization (conclusion) along with detailing the significance, implications and potential next steps.

**Tips to Write the Discussion Section**

* Highlight the significance of your findings
* Mention how the study will fill the gap of knowledge.
* Indicate the implication of your research.
* Avoid generalizing, misinterpreting your results, drawing a conclusion with no supportive findings from your results.

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| **Activity 1. Reading. Read the text and answer the following questions.** |

1. What is the distinction between the paper's results and discussion sections?
2. What's the distinction between data and results?
3. What elements are present in figures and tables?
4. Do you have any suggestions for writing the result and discussion sections?
5. What is the best framework for organizing the discussion section?

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| **Activity 2. Watch the video about “How to Write Results Section”, make notes while watching.** |

You tube link: <https://www.youtube.com/watch?v=WP4gDG0q63k&ab_channel=Scribbr>

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| **Activity 3. Speaking. Answer the following questions.** |

1. How should you report your findings in result section?
2. What kind of subjective words should you avoid using?
3. When should you write a result section?
4. In which field there is no need for a separate result section?
5. How statistical analysis done in qualitative research?
6. What are the Mean and Standard deviation in research?
7. Why should you give both positive and negative results?
8. How visual elements should be demonstrated in quantitative analysis?
9. Where should you include transcripts of your interview?
10. What tense should be used in writing result section?

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| **Activity 4. Listening. Complete the notes below. Write ONE WORD ONLY for each answer.** |

**How to Write Results Section**

This section is where you objectively report the main findings of your research.

***What should you do here?***

* You should report your findings concisely and objectively in a 1\_\_\_\_\_\_ order.
* Present only brief observations in relation to each question.
* Avoid 2\_\_\_\_\_\_\_\_\_\_\_ words like appears or implies.

***When should you write a result section?***

* It's important to report the results of your study before you start discussing their 3\_\_\_\_\_\_\_\_\_\_\_.
* This gives the reader a clear idea of exactly what you found and keeps the data itself separate from your 4\_\_\_\_\_\_\_\_\_\_\_\_ of it.

***Quantitative research***

* For each question or hypothesis, present the following: A reminder of the type of analysis you used.
* A concise summary of each result, including relevant 5\_\_\_\_\_\_\_\_\_\_\_ statistics, like means and standard deviations and inferential statistics, like t-scores, degrees of freedom, p-values.
* A brief statement of how the result relates to the question of whether the 6\_\_\_\_\_\_\_\_\_\_\_\_ was supported. Make sure to include all relevant results, both positive and negative.

***In Quantitative research***

* Include visual elements, such as graphs, charts and tables. But only if they 7\_\_\_\_\_\_\_\_\_\_\_\_\_\_ reflect your results and add value photo reader.

***In Qualitative research***

* The results might not all be directly related to specific hypotheses.
* Structure your results section around key themes or topics that emerge from the 8\_\_\_\_\_\_\_\_\_\_\_ of the data.
* For each theme, make general observations about what the data showed and present relevant 9\_\_\_\_\_\_\_\_\_\_\_\_\_\_.
* Full transcript of your interviews can be included in an 10\_\_\_\_\_\_\_\_\_\_\_.
* The results section is written in the past tense.

**Listening. Key:**

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| 1. Logical 2. Subjective 3. Meaning 4. Interpretation 5. Descriptive | 1. Hypothesis 2. Accurately 3. Analysis 4. Quotations 5. Appendix |

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| **Activity 5. Vocabulary. Match the words with an appropriate definition.** |

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|  | **Words** | **Definitions** |
| 1 | concisely | a) a particular way in which something is done or organized, or in which something happens |
| 2 | empirical | b) to guess possible answers to a question when you do not have enough information to be certain |
| 3 | expectation | c) in a short and clear way that expresses what needs to be said without unnecessary words |
| 4 | interpretation | d) a general development or change in a situation or in the way that people are behaving |
| 5 | pattern | e) to form something from several different things or to combine several different things, in a complicated or skilled way |
| 6 | reflect | f) based on what is experienced or seen rather than on theory |
| 7 | standard deviation | g) a number that shows the amount by which members of a group are different from the mean value for the group |
| 8 | speculate | h) to show, express, or be a sign of something |
| 9 | trends | i) what you believe or hope will happen in the future |
| 10 | weave | j) an explanation or opinion of what something means: |

**Activity 5. Vocabulary. Key:** 1.c, 2.f, 3.i, 4.j, 5.a, 6.h, 7.g, 8.b, 9.d, 10.e

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| **References** |

Bahadoran, Z., Mirmiran, P., Zadeh-Vakili, A., Hosseinpanah, F., & Ghasemi, A. (2019). The principles of biomedical scientific writing: Results. International journal of endocrinology and metabolism, 17(2).

Brown, J. D. (2004). Research methods for applied linguistics: Scope, characteristics, and standards. In A. Davies & C. Elder (Eds.), The handbook of applied linguistics (pp. 476–500). Oxford: Blackwell.

Cohen, L., Manion, L., & Morrison, K. (2007). Research methods in education. Routledge, 301 p.

Cottrell, S. (2019). *The study skills handbook*. 5th edition, Bloomsbury Publishing.

Dornyei Z. (2007) Research Methods in Applied Linguistics: Quantitative, Qualitative, and Mixed Methodologies, Oxford University Press, 335 p.

Ghasemi, A., Bahadoran, Z., Mirmiran, P., Hosseinpanah, F., Shiva, N., & Zadeh-Vakili, A. (2019). The Principles of Biomedical Scientific Writing: Discussion. International journal of endocrinology and metabolism, 17(3).

Hofmann, A. H. (2013). Writing in the biological sciences: a comprehensive resource for scientific communication. New York: Oxford University Press.

Moore, A. (2016). What's in a Discussion section? Exploiting 2‐dimensionality in the online world…. Bioessays, 38(12), 1185-1185.

Scarry, S., & Scarry, J. (2013). The writer's workplace with readings: Building college writing skills. Cengage Learning.

Vieira, R. F., Lima, R. C. d., & Mizubuti, E. S. G. (2019). How to write the discussion section of a scientific article. Acta Scientiarum. Agronomy, 41.

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| **Internet sources** |

<https://dictionary.cambridge.org/>

<https://www.youtube.com/watch?v=WP4gDG0q63k&ab_channel=Scribbr>

<https://www.goldbio.com/articles/article/Guide-to-results-and-discussion-section>

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