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An Epistemological Reading of the Cognitive and Methodological Dimensions of the Fundamentals of the Introduction and Conclusion of Scientific Research: A Conceptual and Analytical Approach

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Abstract:

Scientific writing in the academic field constitutes one of the core tasks undertaken by the university alongside pedagogical duties. The quality of scientific research requires that both the professor-researcher and the student master the techniques of preparing scientific research across its various stages and phases. Scientific research and academic studies are divided into three permanent and fixed components: an introduction, followed by the presentation of the core of the subject—known as the body of the text—which includes the chapters, sections, and subsections of the study, and concluded with a conclusion presenting the research findings.

This article addresses and focuses on elucidating two prominent stages, namely the introduction and the conclusion of scientific research, considering that their pure substance is woven from the researcher's own thought. The article seeks to present a conceptual and analytical approach through which it clarifies the essential elements that should be included in both the introduction and the conclusion of scientific research, while indicating their value and their functional role methodologically and cognitively.

Keywords: method, methodology, scientific research, elements of the introduction, introduction, conclusion, recommendations, findings.

Introduction:

There is no doubt that education is a continuous and purposeful process, whether for acquiring knowledge and information or for refining talents and skills. Therefore, methodological issues

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in research practice and the possession of its techniques and tools fall within the endeavor to achieve quality in preparing scientific research in theory, preparation, formulation, and presentation. Scientific research, regardless of its cognitive fields and the diversity of its specializations, is ultimately a process of integrated intellectual construction with interrelated stages and steps, such that each step refers to the next within a coherent, logical, and sound harmony free of contradiction and disorder. Each element has a functional role in establishing this intellectual structure in order to achieve the objectives, purposes, and goals set for it. This requires the researcher to be familiar with the basic rules of scientific research on the one hand, and to observe and strive to adhere to them in carrying out scientific activities on the other, in pursuit of achieving scientific integrity and aspiring to comply with recognized scientific standards and the quality outputs they require.

As is well known, there is some variance and slight difference among cognitive fields in certain methodological issues, often due to the specificity of the nature of the cognitive field to which the studied topic belongs. Nevertheless, there remain controls and fundamentals that constitute common points without which scientific research cannot be established. Both the introduction and the conclusion constitute two fixed pillars and are essential joints of research. The introduction represents the façade of the research by occupying its forefront, and on the other hand it is the researcher-reader's compass that presents the keys to reading the research map and determines the features and contours of the study. The conclusion, in turn, comes as an intellectual creation produced by the researcher to derive results. From this perspective, both acquire great importance due to their position and order within scientific research and in view of their cognitive role. Accordingly, they deserve greater attention and care, and all that undermines their roles should be avoided.

Since every work has motivating drivers, the idea of this article stems from objective motivating justifications as well as subjective ones. The most prominent objective justification—though in reality stemming from subjective motives—emerged through field experience in evaluating students' presentations and research in directed work sessions, as well as in evaluating and discussing graduation theses of master's and even doctoral students. We observed and recorded several remarks, including that most students neglect or overlook certain elements, perhaps out of ignorance or deliberately to evade bearing the burden of additional work, or perhaps due to a misjudgment of the weight and value of the introduction. Some confuse contents, failing to distinguish, for example, between significance and objective, while at times elements are

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mentioned without including appropriate content under them, such as the research methodology and previous studies. The conclusion of research also constitutes a major intellectual confusion for students, as it often becomes a repetition of some ideas and sometimes does not include a clear and precise answer to the core problem presented in the introduction. Based on these observations, the desire arose to elucidate the elements that constitute the structure of the research introduction and conclusion.

Based on the study's justifications, the objectives of the study were formulated as follows:

- Highlighting these elements and encompassing their nature and distinctive role.
- Primarily, since students' works are subject to evaluation, the desire to unify the vision regarding the elements of constructing an introduction, so that a unified conception or specific criteria may be available to rely upon in the evaluation process.
- Ensuring that the student researcher is familiar with the elements of constructing the introduction and conclusion and does not neglect any of their components.
- Demonstrating the strength and coherence of the research introduction as an indicator of the student's mastery in controlling the study topic and the strength of its content.
- Providing the student with practical methodological steps that spare them the trouble of returning to numerous methodology books and previous studies that condense and summarize multiple perspectives, as well as the burden of hesitation, superficial treatment, and sometimes indifference.

In pursuit of achieving these objectives and embodying them in the student researcher's work, the background of the central problematic was formulated based on what was revealed through the discussion of directed assignments and graduation theses. We pose the following: if scientific research necessarily rests upon fundamental elements, and since both the introduction and the conclusion represent the culmination of the research outcome and constitute part of its foundational structure, what exactly are the implicit elements that govern the structure of the introduction and conclusion of scientific research? In other words, how can a functional introduction be accomplished and results be formulated more precisely?

First: Conceptual Definition of Key Terms:

1. **Definition of Methodology:** "Research methodology can be defined as the means and method relied upon by the researcher to accomplish their research and achieve its objective or objectives, which they have previously determined."

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2. **Definition of Scientific Research:** "It is an organized intellectual process carried out by a person called the 'researcher' in order to investigate facts concerning a specific issue called the 'research topic,' by following an organized scientific method called the 'research method,' with the aim of reaching appropriate solutions or results that can be generalized to similar problems, called 'research results.' Accordingly, the components of scientific research are three: the researcher; the research problem or topic; and the research method."
3. **Definition of the Introduction:** The introduction of research has been defined in several ways, the most prominent of which include:

   "It is a comprehensive historical presentation of the thesis topic and its importance within the field to which it belongs, and the reasons that prompted the student to address it, such as the absence, scarcity, inadequacy, inaccuracy, or lack of objectivity of studies on it, etc. It also includes the difficulties faced by the student, the results or purpose sought from the research that may contribute to shedding light on the topic and increasing knowledge, in addition to mentioning the main sources and important references relied upon, rare manuscripts and hidden documents found or discovered, and the individuals who assisted and guided the student—professors, researchers, supervisors in public libraries, etc.—as well as journeys undertaken, if any, the research method used, and the chapters and sections into which the research is divided. It is preferable not to mention research results in the introduction, as some researchers do, but to place them in the conclusion in a detailed manner as the culmination of all research stages from beginning to end."

The introduction is written at the end of the research but placed at its beginning after acknowledgments and dedication, observing a sober scientific style free from affectation. Its purpose is to prepare the reader's mind to receive a new and researchable topic or issue, through a brief review of theories related to the research problem. It is the opening of the research, despite being the last part written. Usually placed after indexes, the introduction includes three main elements:

- First element: presenting the research problem, its scientific nature, and explaining its importance within the discipline.

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- Second element: a historical study of the topic, its development, perspectives from which it was studied, researchers who addressed it, and the point at which the new study begins.
- Third element: a study of the main references relied upon and how they contributed new material to the research.

The introduction is of great importance as it situates the study within the broader framework of previous work, introduces the topic and its significance, and clarifies the researcher's position regarding previous studies, with balanced critique and acknowledgment. It should not merely summarize previous works but discuss them in relation to the research topic. The researcher should also explain the reasons for choosing the topic, the angles of analysis, difficulties encountered, the methodology adopted, and conclude by outlining the research plan. The introduction should constitute approximately 2% to 3% of the research length. It is preferable to write it after completing the research, and if written earlier, it should be revised afterward. References need not be cited in the introduction unless they are not used elsewhere in the research.

The introduction is the most important element of the research as it:

- Serves as an entry point for expressing the researcher's thoughts.
- Reflects the researcher's personality and scientific qualities.
- Provides an initial impression of the adopted methodology.
- Gives the examination committee a preliminary impression of the researcher's thinking and objectivity.

How to Write the Introduction:

Several criteria should be observed, including conciseness, clarity, scientific style, appropriate pagination, and structure. The introduction may be referred to in Arabic as "مقدمة" and in English as *Introduction*, *Foreword*, or *Preface*.

Elements of the Introduction:

- Brief explanation of the research topic or problem.
- Historical overview of the topic.
- Review of researchers' contributions in chronological order.
- Explanation of research objectives and significance.
- Presentation of hypotheses, if any.
- Definition of necessary terms.

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- Explanation of data collection and analysis methods.
- Specification of temporal and spatial limits.
- Presentation of difficulties encountered and how they were overcome.
- Outline of the research structure.

4. **Definition of the Conclusion:**

"The conclusion refers to the final part of the research that outlines its summary, clarifies its results, and records its recommendations."
The conclusion is the logical outcome of what has been presented and discussed. It represents the original contribution and new scientific addition attributed to the researcher. It declares judgments and determines results, sometimes recommending further research. It leaves the final impression on the reader and requires careful organization and high-quality formulation. Research has no value without meaningful results.

Second: Implicit Elements of the Introduction and Conclusion of Scientific Research:

1. **Contents of the Introduction:**

- Appropriate opening to the topic, defining the research problem, its relation to the general and specific scientific field, and relevant theories.
- Importance of the research.
- Reasons for choosing the topic.
- Research methodology and procedures.
- Main sources and references.
- Research plan.
- Previous studies.
- Difficulties encountered.
- Formulation of the research problem.

Second: The Implicit Elements of the Introduction and Conclusion of Scientific Research

1- Contents of the Introduction:

The introduction includes the following elements:

A- An appropriate opening to the topic, through:

= "Announcing the topic and defining it in light of the issues that will be raised therein. The research problem is declared and defined with precision and clarity, such that this definition

includes all the main and subsidiary points it encompasses, in a comprehensive definition expressed in a concise phrase.

- The relationship of the research topic to the general subject of the science within whose scope the research is conducted.
- The relationship of the research topic to the specific subject in which the research is carried out. If there are scientific theories that have been proposed regarding this problem, the problem should be linked to these theories, 'especially if the researcher's aim is to select one of the theories and introduce new variables into the existing theory, or to benefit from advances in scientific measurements and tests in shedding new light on the existing theory.' In other words:

  Definition of the research: a brief presentation of the specific topic and an indication of its value among other studies.

  "Importance of the research:" this refers to the benefit that the research adds to society from the theoretical and practical perspectives.

  "The researcher mentions the importance of this topic in relation to the subject under whose scope the research topic falls, and in relation to the general subject in which the research is conducted, as well as other reasons derived from various aspects that demonstrate the importance of the topic."

B- Reasons for choosing the research and motivations for interest in it.

"This step includes a set of conditions, among which are:

- Desire and interest in a specific topic.
- Availability of scientific material on the topic (references).
- That it addresses a researchable research problem."

  The reasons motivating the study of the topic may also be identified "based on the clarification of its importance and on previous studies that have shown neglect of certain points or insufficient coverage of the topic, as well as other reasons that call for writing and research, such as collecting what is scattered, arranging what is mixed, detailing what is summarized, etc."

B- Determining the research methodology, the scientific approach adopted, and the practical procedures used in addressing the research.

Methodology: "the method followed by the researcher in studying the problem in order to discover the truth." Badawi described the scientific method as "the art of properly

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organizing a series of numerous ideas either for the purpose of discovering the truth when we are ignorant of it, or for proving it to others when we are aware of it." Accordingly, methods or approaches to discovering the truth vary according to topics; therefore, there are several types of scientific methodologies. In reality, there is no single scientific method that can be relied upon alone to uncover the truth, because scientific approaches differ depending on the topics studied by each researcher.

D- Mentioning the most important sources, references, and scientific works that contributed to the completion of the research and the development of the topic.

"The most important sources relied upon in researching the topic, and an explanation of the aspects of reliance on them. The researcher mentions the main sources used in the research, which have particular importance in providing new information or significant impact on the study undertaken. It is preferable to divide the main sources into groups and link each group to the point that benefited from it. For example, one may say that books on the principles of jurisprudence, such as *Al-Mustasfa* and *Al-Ihkam fi Usul al-Ahkam* by Al-Amidi, and *Al-Mahsul fi 'Ilm al-Usul* by Al-Razi, were of special importance in the research… and provided useful information. Likewise, books of exegesis, such as *Jami' al-Bayan* by Al-Tabari, *Al-Kashshaf* by Al-Zamakhshari, and *Ahkam al-Qur'an* by Ibn al-'Arabi, were of great benefit in…"

E- Determining the steps of the research:

The research plan expresses the essence of the study conducted by the researcher. The plan embodies the content of the research and provides a clear conception of what the researcher seeks to achieve through the study intended to be carried out. Most researchers agree that a researcher's skill is primarily manifested in delimiting the aspects of the topic and identifying the points on which the research will focus. If the researcher succeeds in this, they will have defined the general path of the research. "…It consists of the main headings of the research, including chapters, sections, subsections, demands, and reasoned issues."

F- Previous studies on the topic:

"When did this problem begin, and how did it develop? From which perspectives was it studied? Who researched it? To what extent did researchers reach conclusions? What is the point from which the new study will begin, given that it has not been studied before or not sufficiently examined?"

In presenting previous studies, the researcher may mention "a definition of the problems that were studied, the methodological steps followed in each study, and the most important results

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reached, with a discussion of strengths and weaknesses in each study. Often, through this presentation, the researcher identifies the points neglected by previous studies, which may be addressed—wholly or partially—through further study and research." Thus, the researcher provides an accurate description of the scientific state of the topic before addressing it and advancing it further. This clarifies the new contribution added by the researcher through comparison between the results of their study and those of previous studies (Shalabi, p. 134).

G- Mentioning the difficulties faced by the research and the obstacles encountered:

It should be noted that scientific research in the field of social sciences differs from scientific research in the natural sciences. Social issues addressed by research are often linked to political issues, emotions, and ideological orientations, making it difficult for the researcher not to be influenced by these human interactions and fluctuations, which may sometimes have negative repercussions. In the exact sciences, however, the situation differs, and the researcher can adhere to objectivity and precision in studying the topic. Difficulties may include the number of papers, time constraints, complexity of phenomena, and personal biases and inclinations.

H- Formulating the research problem:

The research must include a problem; otherwise, there would be no reason to conduct it. The question the researcher always asks is: What do I want to research? It is preferable that it be formulated in the form of a question requiring an answer.

I- Research objectives:

The purpose may include:

- Enriching the student's knowledge in certain topics.
- Research requires collecting information and facts that help in understanding the essence of the issue.

  Likewise, "the researcher outlines the objectives they aim to achieve through conducting research on the topic. Objectives are derived from the reasons motivating the study of the topic. There are also objectives related to the researcher personally, such as using research as a field for intellectual enjoyment, contemplation, or benefit to others."

2- Contents of the Conclusion: What should be included in the conclusion

"Many researchers and authors do not precisely define in their minds what is meant by the conclusion. Therefore, we find them adopting various approaches. Some make it merely a repetition of what was written in the research, but in a summarized form. Some make it the

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place for an issue or section that belongs to the core of the topic but was forgotten in the main body. Others make it general advice to Muslims or to a particular group. Others make it a place for documents relied upon in the research. However, the intended purpose of the conclusion does not support these approaches. In order to achieve the purpose of the conclusion, the following should be included:

- **Summary of the research:** The researcher outlines the research summary by briefly addressing its main headings, topics, and core ideas. While doing so, the researcher should recognize that the most important aspect of the research is its results. Thus, the summary is presented as premises leading to the most important element of the research, namely its results. This requires focusing on key points and ideas closely related to the results and analyzing them.
- **The most important results reached by the research:** The researcher presents a concise picture of the contribution made to serving science through this work, highlighting aspects of discovery and innovation, opinions and viewpoints regarding both the core and the details of the topic, and outlining the results reached and the strength or weakness of these results.
- **Proposals derived from the research:** The researcher also presents proposals and recommendations on matters worthy of attention that deserve research but could not be undertaken due to certain circumstances, recommending that those who are qualified and able pursue them further. These proposals and recommendations must be closely related to the results reached and clearly specified. The researcher's skill is manifested in linking results to proposed solutions for the problems revealed by the study, without exaggeration, padding, or unnecessary length. In doing so, the researcher opens new horizons for future research and presents issues that may be utilized in forthcoming studies.

A- Conclusions, recommendations, and proposals:

"Research recommendations constitute the final step of the research and include several items upon which the importance of the research depends: recommendations, proposals, future research and studies, and issues raised by the research. For these items to be valuable and beneficial, they must:

- Be linked to the research objectives.
- Be realistic and practical, capable of implementation.

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- Finally, be characterized by precision, clarity, and objectivity."

The recommendations section includes the researcher's recommendations in light of the research results, while avoiding exceeding the scope of those results. Many researchers mistakenly consider recommendations an opportunity to list general or unrealistic suggestions. Others fail to distinguish between theoretical and applied studies. While theoretical studies focus on developing knowledge, applied studies focus on application and immediate benefit, as their final objectives are determined by the funding body.

Therefore, theoretical studies should focus on proposing future research that contributes to the development of knowledge, derived from the researcher's personal experience. Applied studies, on the other hand, should focus on practical recommendations to address specific problems, strictly within the scope of the results. Researchers should avoid presenting results as final or absolute truths. In all cases, recommendations that go beyond the scope of the research should be avoided.

Third: Controls of the Introduction and Conclusion in Scientific Research: Methodological Dimensions and Cognitive Value

1- Fundamentals of Constructing the Introduction:

A- Conditions to be observed when writing the introduction:

- It should be readable and concise.
- It should serve as an entry point to the problem.
- It should address general issues.
- It should be written in an engaging manner.

C- Importance of the introduction:

"The introduction outlines the main features of the research in its final form, including defining its topic, explaining the reasons for researching it, presenting its plan, and describing its methodology. It is the opening of the research and the first part encountered by the reader, through which an initial judgment is formed regarding the research's scientific level and whether to continue reading. Therefore, great care must be given to the introduction to provide an accurate image of the research, attract the reader, and ensure clarity, strength, organization, precision of the plan, and eloquence of language."

2- Criteria for a sound conclusion:

A- Conditions of the conclusion and forms of writing it:

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"The final part of the research is the conclusion, whose writing follows a triple structure: introduction, presentation, and conclusion. Two types of endings can be distinguished: closed and open endings.

- **Closed ending:** the classical and most commonly used, consisting of reminding of the problem, the methodology, and the results.
- **Open ending:** includes, in addition to the closed ending, indicators of possible future extensions opened by the research. This type is recommended.

B- Importance of the conclusion:

"The conclusion summarizes the research, presents a concise picture of its results, and records its recommendations. The results included in the conclusion are the most important part of the research, as research has no value without results of scientific, intellectual, or social significance. Readers often consult the conclusion first to decide whether the research is worth reading. Therefore, the conclusion must be written with clarity, strength, organization, and an engaging style."

"Research has no value if it has no result, or results with scientific, intellectual, or social significance."

Conclusion:

This study highlights the importance of the introduction and conclusion as cognitive and methodological tools in scientific research, as they form an integrated framework that ensures clarity of the problem and coherence between objectives and results. Through an epistemological and methodological reading, it becomes evident that writing the introduction and conclusion is not merely a formal process, but rather a deep intellectual exercise aimed at organizing knowledge and guiding the reader through the various stages of research. The introduction paves the way for understanding the topic and its theoretical framework, while the conclusion provides a coherent summary that reconnects results with the problem and core objectives. Despite their importance, many studies face common issues such as unclear objectives in the introduction or a conclusion disconnected from the general framework of the study. This underscores the need to enhance researchers' awareness of the importance of integration between the two to ensure the quality of scientific research.

Ultimately, attention to crafting a strong introduction and conclusion not only enhances the quality of scientific research but also contributes to improving cognitive communication between researchers and the academic community. Understanding their cognitive and

methodological dimensions thus represents a fundamental step toward developing scientific research on solid foundations.

Recommendations:

- Academic training and preparation: providing training courses for researchers and postgraduate students focusing on techniques for systematically and integratively formulating introductions and conclusions.
- Attention to prior planning: encouraging researchers to plan the drafting of the introduction and conclusion from the beginning of the research to ensure coherence between objectives and results.
- Benefiting from distinguished models: studying and analyzing introductions and conclusions of successful academic research to identify shared elements that contribute to improving the quality of formulation.
- **Relying on review and critique:** Encouraging researchers to critically review the introduction and conclusion to ensure their coherence with the rest of the research.
- **Producing reference guides:** That is, preparing specialized academic guides that address the principles of formulating the introduction and conclusion, including epistemological and methodological guidelines.

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