

Preliminary Methods and Illustrative Examples in Formulating the Research Frameworks on the Research Writing Process for Senior High School Students

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ABSTRACT

This research article describes and presents preliminary methods and illustrative examples in formulating the research frameworks on the research writing process for senior high school students. This paper takes initiative in research education to help the students in establishing and maintaining the research skills with the help of preliminary methods and illustrative examples in writing and presenting the theoretical or conceptual frameworks in research. A framework gives a transparent explanation about the relationships of variables to show how the framework structures the parameters or boundaries of the research study in terms of what needs to be covered. In this case, the theoretical framework shapes the justification of the research problems to provide the legal basis for defining its parameters. On the other hand, the problem statement serves as a reference for constructing the conceptual framework. In presenting the conceptual framework, researchers may use a diagram, paradigm, a pattern, model, or set of forms that contain particular elements as a reference in formulating the conceptual framework such as the IPO (Input-Process-Output) Model, IV-DV (Independent Variable - Dependent Variable) Model, PC (Predictor-Criterion) Model, and P Model. In addition, there are various styles that a researcher may use in presenting the theoretical or conceptual framework; it depends as well on the format, guidelines, policy, and requirement of the institution whether in a journal or university. In this light, these methods, illustrative examples, and processes help the students in demonstrating the research skills in writing and presenting the theoretical or conceptual frameworks on the research writing process.

Keywords: *conceptual framework, framework, illustrative example, research, theoretical framework, variable*

1. INTRODUCTION

The main goal of the research process is to preserve and improve the quality of human life [1]. In this circumstance, there is a need to look at the teaching of research methods, since equipping the students with these research literacy skills leads to increased research output by the individual, particularly on the preliminary method in formulating the research frameworks [2, 3]. Thus, this research article takes initiative in research education to help the students in establishing and maintaining the research skills with the help of preliminary methods and illustrative examples in formulating the research frameworks on the research writing process. Understanding research from the perspective of researchers is very important, from its nature to important guidelines, as well as to the research process itself. In the preliminary process, a student-researcher will be used the research variables to formulate a conceptual framework. A framework in research is a basic structure or frame of reference which is designed to support or enclose something similar to the skeleton. This gives a transparent explanation of the relationships of variables. A variable is defined as a quantity or a characteristic that two or more mutually exclusive values of properties [4]. Further, it is anything that may assume varied numerical or categorical values [5].

1.1 Research Variables

There are five types of variables, namely, (a) independent, (b) dependent, (c) moderate, (d) control, and (e) intervening variables [6]. The Independent variable (cause variable) identifies the forces or conditions that act on something else while the dependent variable (effect variable) is the effect, result, or outcome of another variable. For example, a researcher wanted to see if sleeping hours might affect the academic performance of his students in Mathematics. In this case, sleeping hours is the independent variable, and academic performance is the dependent variable; academic performance is dependent on the number of sleeping hours. On the other hand, mediating variables are presumed to cause changes in another variable. There are three types of mediating variables: (a) moderate variable is a secondary or special type of variable chosen by the researcher to determine if it alters or modifies the relationships between independent and dependent variables; (b) control variable is controlled by the researcher in which the effects can be neutralized by eliminating or removing the variable; and (c) intervening variable interferes with the independent and dependent variables but its effects can either reinforce or weaken the independent and dependent variables.

Further, there are other types of variables: (a) categorical or discrete variables (qualitative variables) which includes nominal variable- consists of two or more categories (e.g. Language Level), ordinal variable - as ranked or ordered (e.g. Always, Sometimes, Often, Never), and dichotomous variable- consists of two levels of categories (e.g. Yes or No); and (b) continuous variables (quantitative variables) which include interval variable - numeric value, and ratio variable - zero (no) measurement. Discrete data is a count that can't be made more precise. Typically it involves integers (whole). For instance, the number of children in your family is discrete data, because you are counting whole, indivisible entities: you can't have 2.5 kids or 1.3 pets. Other examples such as number of participants, number of enrollees, number of students. On the contrary, continuous data could be divided and reduced to finer and finer levels. For example, you can measure the height of the kids at progressively more precise scales—meters, centimeters, millimeters, and beyond—so height is continuous data. Other example measurements such as temperature, distance, area, monetary value.

2. RESEARCH FRAMEWORKS

The framework is a basic structure or frame of reference which is designed to support or enclose something (Merriam-Webster Inc., 2020) that is similar to a skeleton. This gives a transparent explanation of the relationships of variables. There are two kinds of frameworks in research: theoretical framework and conceptual framework. According to Dacanay [7], concepts are ideas or abstractions from observed events/situations while theories are sets of interrelated concepts, constructs, definitions, and propositions that present a systematic view of the phenomenon (observable fact) by specifying relationship among variables with the purpose of explaining and predicting the phenomenon. The conceptual/theoretical framework therefore is made up of concepts and theories that form the basis of the study.

2.1 Preliminary Method in Writing the Research Frameworks

In relation to this, a student-researcher should be able to present the research ideas, concepts, and or theory/ies or even time-tested theory/ies that will use or help to structure the research study, the links between the existing literature and own research goals and objectives. One should be able to show how the framework structures the parameters or boundaries of the research study in terms of what needs to be covered. The conceptual/theoretical framework can be presented in a graphical diagram showing the research problem/topic area, the variables (dependent, independent, and even intervening variables), and how they relate to each other. Put in mind that one's conceptual/theoretical framework serves as the basis or backbone of the research study (i.e. thesis/dissertation) and therefore should give direction and help the researcher as to how he/she would carry out the research effectively.

3. THEORETICAL FRAMEWORK

Theory, from *theoria* (Greek), meaning “vision”, is a conceptual idea that is used to describe, explain, predict, or understand a certain phenomenon. The theoretical framework shapes the justification of the research problems to provide the legal basis for defining its parameters. A researcher should identify key concepts that are used in the study for better comprehension of the role of theory in research.

In this case, in the study of Tabuena [8] entitled Development and Validation of a Philippine Music Achievement Test in Addressing the K to 12 Music Curriculum Learning Competencies, the following (Figure 1) is an excerpt of the theoretical framework of the study.

The theoretical basis of this study is anchored in the provisions and policy guidelines on classroom assessment for the K to 12 Basic Education Program issued by the Department of Education, Order No. 8, s. 2015 [9]; at the heart of this assessment framework is the recognition and deliberate consideration of the learners' Zone of Proximal Development [10]. Appropriate assessment is committed to ensure learners' success in moving from guided to an independent display of knowledge, understanding, and skills, and to enable them to transfer this successfully in future situations. From this point of view, assessment facilitates the development of learners' higher-order thinking and 21st-century skills. The view of assessment, therefore, acknowledges the unity of instruction and assessment.

Fig. 1: Illustrative example of a theoretical framework [8]

Another example, in Figure 2, is by means of policies, guidelines, memorandum, reports, and others related to public documents, in this case, a policy guideline or an act, a Republic Act [11].

This study is anchored on the policy guidelines of the K to 12 basic education program and on the Philippine's Republic Act No. 10533 otherwise known as the Enhanced Basic Education Act of 2013, in which one of the policy statements as prescribed by Republic Act No. 10533, the Department of Education shall adhere a learner-centered, inclusive, developmentally relevant, and appropriate curriculum [12]. This approach to education puts the needs and interests of the students at the center of the teaching-learning process demanding a relevant, responsive, and research-based approach based on learning theories, principles, sound research, and studies in teaching and learning dynamics. In the context of the transition from elementary education to secondary school, one of its general functions is the preparation for a vocation or a higher level of education [13], in which the foundation of education among the students should prepare them towards success as teachers explore various approaches, strategies, and methods for the learners' curricular experiences.

Fig. 2: Illustrative example of a theoretical framework [11]

3.1 Formulating a Theoretical Framework

The theoretical framework may be formulated from an existing theory/ies that serve as the foundation of the study. Relevant theories must be provided. Cite and discuss related theories that serve as the foundation of the variables and their relationships to make the study more scientific and understandable. Search for a relevant theory that supports the research study. In this case, a researcher may have more than one (1) theory. A student-researcher could use the theories he/she has learned in other subject courses (previous or present subjects) or it may be a concept, a principle, or a law that describes, explains, predicts, or understands certain phenomenon in the research study. In this light, a student-researcher may use and write the details of the theoretical framework in the provided figure (Figure 3) below as a preliminary guide in formulating the theoretical framework. It is important to keep the source of the used theory. One may include it together with the conceptual framework in the part of the research introduction of the paper.

<i>Theory (Concept, Law, Principle), Proponent, Year</i>
<i>Connection of the Theory in the Research Study</i>
<i>Role of the Theory in the Research Study</i>
<i>Reference (e.g. APA style)</i>

Fig. 3: Preliminary guide in formulating the theoretical framework

4. CONCEPTUAL FRAMEWORK

The conceptual framework guides the researcher/s by giving clear directions to the research. The problem statement serves as a reference for constructing the conceptual framework. Identify the independent, dependent, and other variables that will affect the outcome of the study. The basic design components are boxes, arrows, and lines as shown in Figure 4:

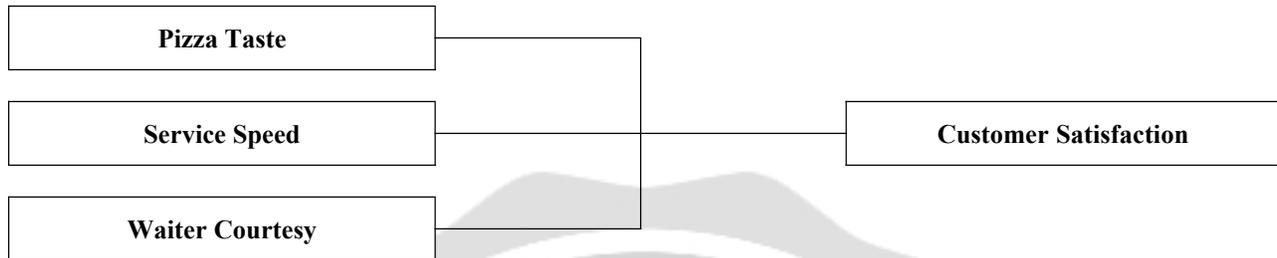


Fig. 4: Basic design components of a conceptual framework

In presenting the conceptual framework, researcher/s use a paradigm, a pattern, model, or set of forms that contain particular elements. The following are the models that a student-researcher may study, one might use it as a reference in formulating the conceptual framework.

4.1 IPO (Input-Process-Output) Model

Input-Process-Output Model, known as IPO Model, is commonly used for factor-isolating questions. The research attempts to isolate the factor or major variable that causes the problem, subject, or phenomenon under investigation. Below is an illustrative example of the IPO Model based on the undergraduate research of Tabuena [14] as shown in Figure 5 and another in Figure 6:

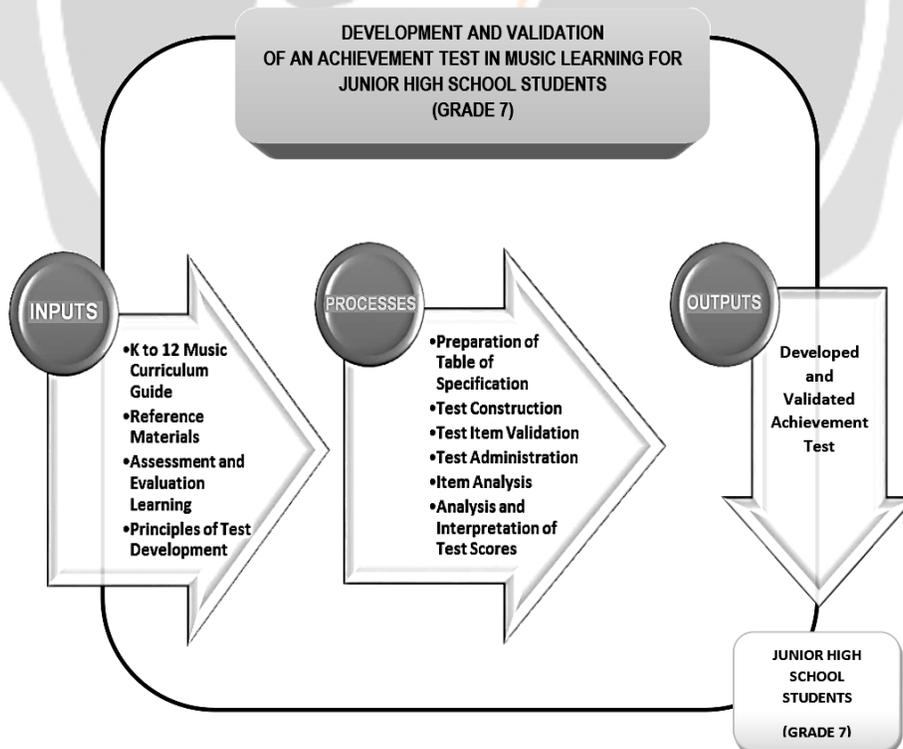


Fig. 5: Sample IPO model for conceptual framework [14]

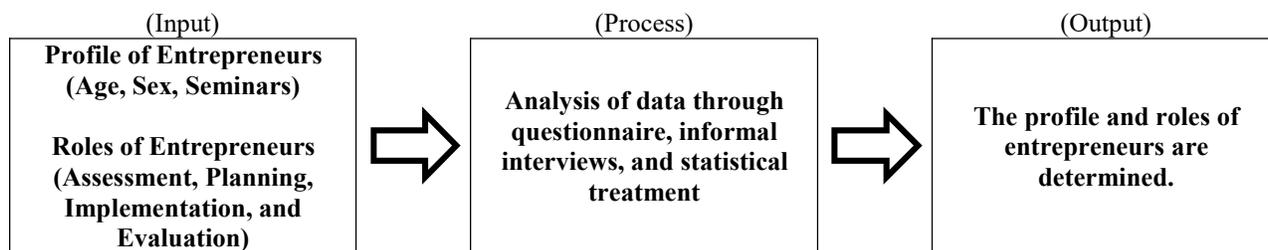


Fig. 6: Sample IPO model for a conceptual framework

4.2 IV-DV (Independent Variable - Dependent Variable) Model

IV-DV Model (Independent Variable - Dependent Variable Model) is usually used for experiment-based studies. The questions raised are higher-order and classified as situation-relating. Below is an illustrative example of the IV-DV Model, as shown in Figure 7 and 8 [15]:



Fig. 7: Sample IV-DV model for a conceptual framework



Fig. 8: Sample IV-DV model for a conceptual framework [15]

4.3 PC (Predictor-Criterion) Model

PC Model (Predictor-Criterion Model) is used according to relationships, associations, differences, and impacts. This model is used when relating and assessing the influence between two or more variables. Below is an illustrative example of the PC Model, as shown in Figure 9. Be guided by the question: What criterion was used for making a judgment or decision?

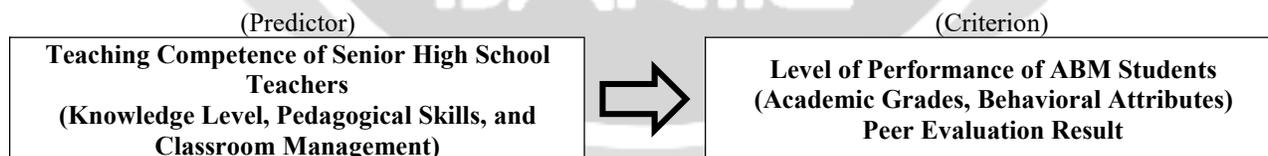


Fig. 9: Sample PC model for conceptual framework

4.4 P Model

P Model is a situation-producing level of questioning. This model is used in research studies that propose a program or any intervention measure. One may use the above model (Figure 9) and at the end of it, a program or an intervention is proposed or planned as shown in Figure 10:

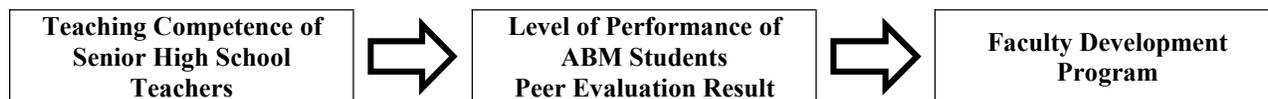


Fig. 10: Sample P model for a conceptual framework

5. STYLES OF PRESENTING THE THEORETICAL OR CONCEPTUAL FRAMEWORK

Theoretical framework refers to the set of interrelated constructs (concepts), definitions, and propositions that present a systematic view of phenomena by specifying relations among variables [16]. Sevilla et al. [17] enumerated three (3) styles of presenting the theoretical or conceptual framework as indicated below.

5.1 Style No. 1

The theoretical framework is integrated with the problem in the first chapter of the research, thesis, or dissertation report. There is no Literature Review section (others termed as Review of the Related Literature and Studies) as a separate chapter but it is incorporated in the first chapter. The term Theoretical or Conceptual Framework is labeled or not in this chapter. This design is also known as the journalistic style. Punsalan [18] used the journalistic style in her thesis “The Effects of Socio-Economic Status, Sex, and IQ on the Spatial Concept Development of Children,” in which she eliminated the otherwise voluminous literature review supposedly written in the second chapter (in a traditional Germanic format [3]).

5.2 Style No. 2

The theoretical framework is included in the first chapter and labeled as such but there is still a separate chapter for the literature review. This style is evident in the undergraduate research by Tabuena [14] “Development and Validation of an Achievement Test in Music Learning for Junior High School Students”, which followed the full research paper in a traditional Germanic Format (Chapter 1 as The Problem and Its Background, Chapter 2 as the Review of Related Literature and Studies, Chapter 3 as the Research Methodology, Chapter 4 as the Presentation, Analysis, and Interpretation of Data, and Chapter 5 as the Summary, Conclusion, and Recommendation) and had a separate section for the theoretical framework and conceptual framework (Figure 5).

On the other hand, Uriarte [19] undertook a dissertation titled “Personal, Situational and Intellective Factors Related to the Senior Students’ Mental Health Status in Two Public Resettlement High Schools.” He drew his theoretical framework from concepts and theories he gathered from his survey of the related literature. His theoretical framework dealt primarily with mental health states as influenced by personal, situational - environmental, and intellective factors. He, therefore, posted the model below (Figure 11) to summarize the theoretical framework.

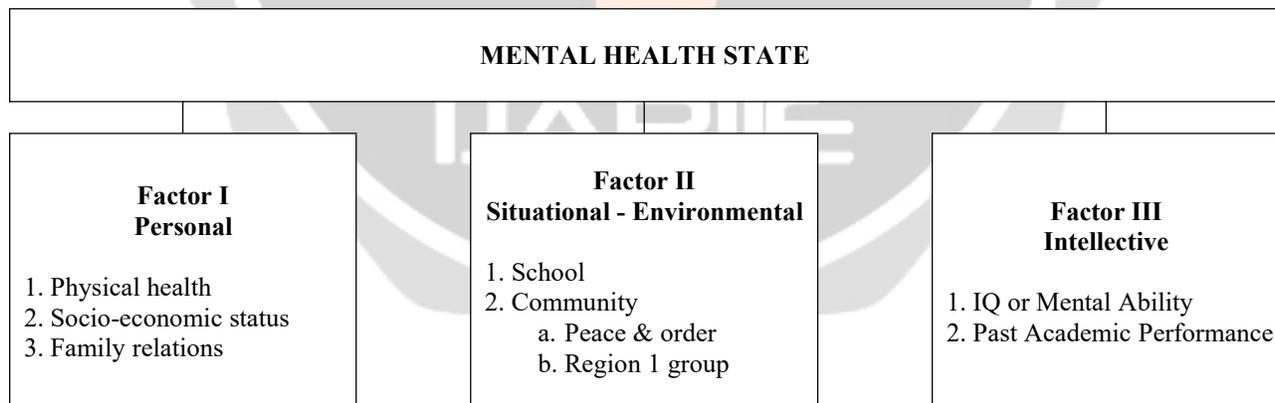


Fig. 11: Uriarte’s presentation of the theoretical framework [19]

5.3 Style No. 3

In this style, the usual contents of the first chapter are presented. The second chapter consists of the literature review and the theoretical framework is labeled at the end of the second chapter. It is to be understood here that the related literature is already a part of the theoretical or conceptual framework. What is being explained here is the labeling of the term Theoretical or Conceptual framework. In addition, it will be a summarized reporting of the inconsistencies, missing links, or gaps and consistencies with past studies. Sevilla [20] in her dissertation “The Pollyanna Hypothesis Among Selected Thirteen-to-Sixteen Year-Old Filipino High School Boys and Girls Across Five Philippine

Languages of Luzon” posts the usual elements found in most theses together with the rationale for the study in the first chapter (traditional Germanic format) minus the statement questions. In the second chapter, she includes the literature review that covers concepts and research findings that have a bearing on the thesis. Gaps and inconsistencies in the past studies and statement of the hypotheses are also found in this chapter.

6. CONCLUSION

A framework in research is a basic structure or frame of reference which is designed to support or enclose something similar to the skeleton. This gives a transparent explanation of the relationships of variables. There are two kinds of frameworks in research: theoretical framework and conceptual framework. Concepts are ideas or abstractions from observed events or situations while theories are sets of interrelated concepts, constructs, definitions, and propositions that present a systematic view of the phenomenon (observable fact) by specifying relationships among variables with the purpose of explaining and predicting the phenomenon. The conceptual/theoretical framework therefore is made up of concepts and theories that form the basis of the study. The conceptual or theoretical framework can be presented in a graphical diagram showing the research problem or topic area, the variables, and how they relate to each other. In this case, the theoretical framework shapes the justification of the research problems to provide the legal basis for defining its parameters. A researcher should identify key concepts that are used in the study for better comprehension of the role of theory in research. On the other hand, the problem statement serves as a reference for constructing the conceptual framework. In presenting the conceptual framework, researchers may use a paradigm, a pattern, model, or set of forms that contain particular elements as a reference in formulating the conceptual framework such as the IPO (Input-Process-Output) Model, IV-DV (Independent Variable - Dependent Variable) Model, PC (Predictor-Criterion) Model, and P Model. In addition, there are various styles that a researcher may use in presenting the theoretical or conceptual framework; it depends as well on the format and requirement of the institution whether in a journal or university. In this light, these processes help the students in establishing and maintaining the research skills with the aid of preliminary methods and illustrative examples in writing and presenting the theoretical or conceptual frameworks in research.

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