Teaching to Define Concepts:
An Alternative for the Development of Thinking

Enseñar a definir conceptos:
Una Aalternativa para el Desarrollo del Pensamiento

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ABSTRACT

This article presents a validated technique for the definition of school, academic, and applied research concepts, for doctoral training students at our university, who, in addition to adopting or critically evaluating the definitions of expert authors, must be able to express their theoretical position. in "concept definition" mode, of the key terms of your degree thesis and partial assignments. The "*RFG technique of three colors*" is inspired by the ideology of, among other scientific leaders, Hegel, Vygotsky, Davydov, Bruner, and Wittgenstein; and constitutes a useful resource for the training of critical thinking and scientific argumentation.

Keywords: Thought; Definition of Concepts; Definition Techniques; 3 Color RFG Technique; Quality Criteria.

RESUMEN

Este artículo presenta una técnica validada para la definición de conceptos escolares, académicos y de investigación aplicada, para los estudiantes de formación doctoral de nuestra Universidad, que además de hacer suyas o valorar críticamente las definiciones de autores expertos deben ser capaces de expresar su posición teórica en modo "definición de conceptos", de los términos claves de su tesis de grado y asignaciones parciales. La "*técnica RFG de los tres colores*" se inspira en el ideario entre otros lideres científicos, de Hegel, Vygotsky, Davydov, Bruner y Wittgenstein; y constituye un recurso útil para la formación del pensamiento crítico y la argumentación científica.

Palavras-chave: Pensamiento; Definición de conceptos; Técnicas de Definición; Técnica RFG de 3 Colores; Critérios de Calidad.

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Introduction

"Reality is defined with words. Therefore, he
who controls words controls reality."
Antonio Gramsci, (1891 – 1937),
Italian philosopher

The objective of the article is to present and substantiate a technique to define academic concepts that have been useful to master's and doctoral students as an alternative that contributes to the precision of thinking.

The Thought

Human life is impossible without thinking as well as without feeling and of course without acting. Thinking, feeling, and acting constitute a dynamic unity that allows human beings to grow fully. Any attempt to overvalue one over the others, or separate them, leads to a limited, reductionist, and therefore incomplete interpretation of the human dimension (HEGEL,2010; FERREIRO,2022; VIGOTSKY, 1977; WITTGENSTEIn, 2012).

In the multifaceted relationship that man establishes with his environment, human cognitive activity and thought appear which allows him to know the objects and phenomena of reality. Thought is the result of the influence of reality on the human brain, in its cerebral cortex or neocortex as it is also called (LURIA, 1984; FERREIRO, 2022).

Thinking allows us to know the essential links of objects and their characteristics, through the extremely complex operations that are commonly grouped under the definition of reasoning.

Through thinking we generate ideas, we relate them, we define concepts, we formulate theories, we discover laws, we invent procedures, we identify and solve problems, and we have our mental representations of the phenomena of objective and subjective reality.

Each of the activities "requires" mental operations and functions that make them possible, for example, analysis and synthesis, abstraction and

generalization, comparison, and evaluation, etc. But first, it is necessary to specify the object of study, in other words, what we are "talking about", what ideas appear in the mind about the object in question, and how we express it; Scientists call these concepts (FERREIRO, 2018; 2022).

The Concept

The concept is the basic form of human thought, a minimum unit of knowledge, which expresses the general and essential characteristics of things and phenomena (facts, events, happenings, processes) of reality, which distinguishes an object from another to use it consistently (DE GOTARI, 1972; WITTGENSTEIN, 2012; COPI AND COHEN, 2005).

The concept is human thought expressed with terms, that is, with words. The concept is in turn a unit of "meaning" of knowledge of reality. The concept is to human thought what the cell is to the organism and the atom to matter, that is, its structural and functional unity.

The concept is obtained from the analysis and generalization made of a countless number of isolated facts, making abstractions from the secondary, non-essential properties, and prioritizing the fundamental characteristics that characterize it as such and distinguish one from another. others, in the environment of a specific culture (FERREIRO GRAVIE, 2012, 2018, 2020).

The concept is in addition to a result, a mental process, an intellectual activity of a theoretical nature, which allows us to specify and delimit the object of knowledge in depth either because we are interested in it or we need it to make a decision, solve a problem, consider a project or well, among many other things, understand the situation we face, give it meaning and meaning (FERREIRO GRAVIE, 1980. 1986).

The notion or construct, as the concept is also called, is a manifestation in our mind of the element of reality that we need to name and distinguish from others so that we can use it in what we do. The concept as a recreation in our mind of reality and as part of it is dynamic and evolves according to time and the environments of belonging. Hence, the way we express concepts changes

according to the historical and cultural moment. But also, to the extent that when we communicate it we express it.

The concept is the basic unit of human thought that expresses the general and essential characteristics of the things and phenomena of reality, which allows one object to be distinguished from another to use it consistently, regardless of whether they are concepts of specific objects, such as that of "chair", or of traits or qualities such as "beauty" and both one and the others can be defined, that is, expressed through words. In both cases, we turn to words to express the mental representation or reference that we have of them (WITTGENSTEIN, 2012).

The Definition of Concepts

Writing is a form of language, it is an instrument to express thought and build the knowledge and feelings associated with the object of study, in such a way that the structure of the mind, human consciousness, is shaped by the activity and communication of the person who learns and grows. Writing is much more than a complex motor skill, it is a type of social and cultural language, which transcends the here and now and is key to the development of thought, feelings, and human behavior. As Wittgenstein, the great philosopher of language, said, "The limits of my language mean the limits of my world" (WHITE ROGER, 2006; WITTGENSTEIN, 2012).

According to Luria (1984), "Written language is the essential instrument for thought processes including, on the one hand, conscious operations with verbal categories, allowing, on the other hand, to return to what has already been written, it guarantees conscious control over the operations that are carried out.". All this makes written language a powerful instrument to specify and elaborate the thought process" (LURIA, p.189).

The definition of terms, that is, concepts, is the expression, verbal or written, of the idea or object, of its meaning, which distinguishes it from any other no matter how close or similar it may be, to differentiate it and "treat" it as such, what it is.

Furthermore, the definition of the term is required so that the concept as such exists, has recognition, and helps in the understanding and transformation of reality.

The definition of concepts helps us to understand in essence, in-depth, what is being studied and investigated. At the beginning of a topic or research process, it is necessary to specify the definitions of the concepts involved in the study because this helps considerably to know not only what we understand as such but also, among other things, to express it, to communicate to others what we understand. in this regard (VIGOTSKY, 1977; HEGEL, 2010; BRUNER, 1990; DAVIDOV, 1972).

The definition of concepts is essentially a written or verbal representation of an aspect of reality given by a person or group of experts. Hence, there can be as many definitions of a "concept" as there are verbal representations that can be constructed (GRAMSCI, 2000; FERREIRO, 2022).

The Types of Concept Definitions

There are in the literature, among others, two types of definitions, verbal representations, of concepts. One is the conventionally called "*Conceptual*" definition and the other is called the "*Operational*" definition; or "Job definition". But in both, there must be the essential, the invariant characteristics, the totality of what is common to the object of definition that distinguishes it even from what is closest and most similar.

Conventionally, we know as "*conceptual*" definitions those given by experts on the subject and the discipline and which we usually find in recent scientific articles or textbooks, or classic works, while we understand "*operational*" definitions as those that we develop each time one of us to the extent that we process information about a topic, make observations and exchange ideas with others, all of which helps us form in our minds what we understand by the object in the process of construction.

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Techniques to Define Concepts.

There are several ways to define concepts, including:

- *Synonyms*, expressing those words, nouns, adjectives, or verbs, that are similar, with the same or close meanings that could, in a sentence, be replaced by the other without changing the meaning of what we want to express. This way of teaching to define concepts is very useful at an early age.

- *Dialogue*, private or with others, about what is common and uncommon between the object of definition and others close by its meaning. While this is a good exercise to learn to define concepts when the student already knows how to read and write.

- *Game*, "What do you think when I say, "X Such a word?" which facilitates in small groups the exchange of ideas about what we are striving for and requesting to name with the best of words the concept that is going to be worked on.

- *Brainstorming*, the Brainstorming technique, by Alex F. Osborn (1888 – 1966) is useful for intermediate and higher levels as a preamble to agree on what is to be understood by the term being worked on.

- *Hypernym,* the precision of a concept through other more specific ones to which it covers or belongs, in which it is included or encompasses it. The word "hypernyms" itself refers to a term whose meaning is included in other, more specific terms.

- *RFG technique of the "three colors",* or three components by Dr. Ramón Ferreiro Gravié.

Job definitions

A concept can be defined in different ways; in other words, what is meant by this or that thing can be expressed in different ways. The form suggested below is known as "Operational definition", from "work", which allows us to express, to each of us with our words, but with scientific rigor, the very essence of an object, fact, phenomenon, etc. of reality.

The operational definition of a concept allows us to specify what we understand by such a thing, to understand it in depth given the variables and the perspective that we take as reference, and what is most important to communicate precisely what we are calling or recognizing by the said object under study.

There is no concept of everyday life for which we do not have a mental representation. For example, each one has a concept of friendship, of a friend, of a colleague, of a brother, or of family, couple, love, or democracy. When expressing each of them we define it and name the defined object, that is, expressed, "concept". Each one of us, to the same extent that we delve into a topic under study, can be able to express it if we follow certain suggestions to do so with the academic and scientific precision that is required (FERREIRO, 2020).

School, academic, and scientific work requires the precision of the concept that is studied or investigated through writing, which is a form of language, a system of signs, a psychological tool, and an instrument. We propose the three-color technique, also recognized as the RFG strategy, alluding to its creator, Dr. Ramón Ferreiro Gravié from Nova Southeastern University, to teach doctoral students how to define, in their own words, each term involved in their thesis. This technique also contributes to the cognitive independence of the subject who applies it and to the development of cognitive operations and functions that help to specify the essence of the object of study through written or verbal language (FERREIRO, 2012, 2018, 2020, 2022).

RFG technique of the three colors to define concepts.

The operational definition of a concept involves three important steps:

1- Specify the determinant

2- List the attributes

3- Express the complement

The three steps are equally important, although they must be completed in that order, and at the end review and improve the wording of the prepared statement.

- *First Step: Specify the Determinant*

Specifying the determinant means placing the object of definition in a more general category that contains and encompasses it. The determinant answers the question: What is it? Or what does it consist of? And it is about a character" Who is he?

When we specify the determinant, we give a term that identifies the essence of the object or phenomenon we define. Some concepts admit more than one determinant and all of them are correct, but we must select the one that best expresses our position about the concept we define

An example: we want to define "dog". A possible determinant is "animal." The dog is an animal. Animals are the largest category in which we place dogs, and it is therefore the determinant that we use to define what we understand by dog. But we can also state that the dog is a living being. Being alive is also a possible determinant of the concept of a dog, as valid as an animal. Another possible and correct determinant of a dog is a quadruped or quadruped animal. Another could be a vertebrate or a mammal. In other words, it is suggested to brainstorm possible determinants of the object of definition, and then select the most appropriate one according to the reference from which we want to express it.

- *Second Step: List the Attributes*

Listing attributes means making a list of the traits, properties, qualities, or properties that characterize the object we are trying to define. Specifying the attributes answers the question: What is it like? What is it characterized by? What does it have or possess that makes it peculiar? In other words, what makes it the way it is and not something else?

Attributes are the elements that are part of the definition of a concept that allow them to be distinguished from nearby concepts that share the same determinant.

For example, the concept of "table" and "chair" share the same determinant: furniture. The attributes that we use in the definition are what allow us to distinguish whether we are referring to one thing or another:

· The table is a piece of furniture that has four ends and a flat surface on it.

· The chair is a piece of furniture that has four ends, a seat, and a backrest.

Attributes specify the notion of something, distinguishing one from another. The more essential attributes mentioned, the better. Although we always make a list first (Brainstorming) and then select the most relevant ones. Good definitions are brief and express in approximately 30 words the essence of the "object" to which we are referring.

- Third Step: Express the Complement

Expressing the complement means expressing the usefulness, use, importance, or functions of the object in the process of definition. The plugin answers the question why? And for what?

If it is important to specify the determinant and the attributes, it is also important to specify the complement. For example A chair is a piece of furniture that has four legs, a seat, and a backrest and is used for sitting.

In the previous definition of the concept of a chair, the complement is used for sitting. Of course, there are other possible complements to use when we define the concept of a chair, but this will depend on the interests of the author and, among other factors, the intentions and context by which the concept is defined.

When we have the three components of a definition, we "assemble" the statement through which we express the concept, that is, we define it, making an effort to avoid some terms being repeated, others not being precise, etc., and taking care of the extension of the definition: shorter is better, and it is important to comply with the "Quality Criteria" to correctly and rigorously express the definition we build.

To be able to produce good operational definitions of work, it is of course required to read a lot, process information, observe, reflect and, among other things, exchange with colleagues, as well as of course consult how accredited authors in the literature define these concepts and think. and write. Let us remember what for Vygotsky (1977) in Thought and Language, writing meant as a variant of language.

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Let us also remember that we conventionally call the definitions given by other authors *Conceptual definitions* and those we write, *Operational (Job) definitions.*

We will be intellectually independent, academically better teachers and researchers, to the extent that, however, we take into consideration the definitions of different authors, we are capable of rigorously developing our definitions, which we call "operational".

The *RFG technique of the 3 colors* helps to specify what we understand by each of the terms we use, which will be reflected in the clarity with which we express our ideas and write about them, making us understand better and establishing our position and criteria on the subject. the object of study, discussion, and analysis (FERREIRO, 2012, 2018, 2020, 2022).

Of course, a good operational definition is not achieved with a first version; it must be done repeatedly until we see that we correctly meet the quality criteria.

Quality Criteria

Among the quality criteria or indicators of a good operational definition of the concept are:

1- Start the definition like this: "The concept is…", or: "The concept consists of…" For example, the chair is… or the chair consists of…

2- Next, and in the order in which we express it, then decide the *Determinant*, write the *Attributes,* and at the end the *Complements*.

3- Express it in approximately 30 words, taking care of the order of the components: determinant – attributes and complements

4- Write a single statement. Do not use the "full stop" or the gerund.

5- Identification of the given definition of the three components or parts of the structure of an operational definition.

Let's look at the definition of the term "concept" using Dr. Ferreiro's technique of the 3 colors:

"The concept is the basic unit of human thought that expresses the general and essential characteristics of things and phenomena in reality, which allows one object to be distinguished from another to use it accordingly."

As can be distinguished, we begin by stating "The concept is…". We immediately place the "determinant", then the "attributes" and finally "the complement". A single statement, approximately 30 words.

Quality criteria for conceptual definitions

The conceptual definitions are those provided by other recognized authors in the discipline in question.

- Recognized authors in scientific literature.

- Definitions that appear in books or articles from indexed magazines from prestigious publishers.

- Sources from the last 10 years (Except those given by classic authors on the subject).

- Copy the text of the definition of each selected author between quotation marks, as expressed by the source.

- Record the data from the source to the APA style, or from the citation system used by the institution.

- Use of a file or template to save conceptual definitions or use applications such as "Zotero" to document information searches.

- List the best definitions found by recognized authors in the prestigious sources consulted, those that best express the essence of the concept in the theoretical context in which you work on it or are interested in placing it.

Quality criteria for operational (Job) definitions

Let us remember that the "operational or work" are those written by the student, or the teacher based on their conceptual reference and their cultural and professional experiences.

When starting the definition process:

1- Make sure you understand the technique, and each of its parts: determinant, attributes (properties, characteristics), and complement.

2- Search the subject in prestigious sources and reliable electronic search engines and read and process the information necessary and sufficient to understand it in depth: make notes, and visualize it using, for example, a mental or conceptual map.

3- Complies with the RFG strategy of operational definition of concepts.

4- Start the definition like this: "X is…" or "X consists of…"

5- Write a single affirmative statement of approximately 30 words.

6- Avoid abbreviations and repetition of terms already used in writing the definition.

7- Be precise, and concise.

8- Avoid descriptions of procedures, algorithms, and sequences of steps or stages.

9- Highlight the determinant first, then the attributes and finally the complement.

10- Brainstorm in writing or mentally about the possible determinants of the definition you want to build.

11- Remember that the determinant is a term that expresses or places the object of definition in a category that includes or encompasses it. For example, if we define "dog" they could be animal, mammal, or also quadruped.

12- Use three types of colors in the technique appropriation phase to distinguish the components of a definition: red (Determinant), blue (Attributes), and green (Complement).

13- Name the definition with a single term, simple or compound, in a singular form.

When you finish writing: corroborate the content of the constructed definition in several prestigious sources, apply a fraud detector such as Turnitin ("free" version), read it out loud, share it with close colleagues, listen to their opinion, rework the wording as many times as possible. times as necessary before publishing it.

In the phase of appropriation of the technique, do not stop using the three indicated colors. The experience during the validation of the technique showed us that the level of acquisition and incorporation of the technique, as a mental routine, is better and faster if they use colors, although when it stops being done when in "automatic" you define when terms you evoke or must refer to it is using it.

Examples of definitions

The following concepts are defined through the *RFG technique of the 3 Colors*. During the practice of appropriation of the technique, the use of the 3 colors is insisted upon to distinguish the three components that make up a good definition, which helps to become aware of their use and the order which they should appear in the definition and thus "automate" the presence of each of them in each definition that is built.

Essay

It is academic writing that argues a position on an issue based on the analysis of references from recognized authors to make a theoretical and/or practical contribution.

Teaching Strategy (Didactic Strategy – Instructional Strategy)

Activity-oriented by the teacher involves the construction of knowledge, which allows learning individually or in small teams, in the classroom, physical or virtual, or outside "class", to achieve an objective or the development of competence.

Critical Thinking

A peculiar way of thinking that makes one constructively doubt, add, and delete, justify and substantiate to have one's conclusions and be able to argue about it.

Partial Conclusion

The empirical evidence during and after the validation process of the "RFG Technique of the 3 Colors" in hundreds of students from different

school levels shows us that its conscious appropriation contributes to writing academic works with a higher level of focus and better conceptual treatment of the topic by including as part of its development the definitions of leading authors of the topic and their own definitions of the key terms, which allows, among other things, a better analysis of the topic in question that helps them compare their position. with that of others and understand in depth the object of study. It also contributes to greater fluency in verbal communication with two characteristics that stand out: security and terminological precision when writing and presenting on the topic. What is curious and no less important are the testimonies about how they extrapolate and use the technique in informal, work, social and family conversations. The research in this regard continued, now the focus of interest is to specify the impact that the appropriation and use of the technique has on the development of critical thinking in subjects who are authors of definitions with high levels of precision and conciseness.

Ensinar a definir conceitos:
uma alternativa para o Desenvolvimento do Pensamento

RESUMO
Este artigo apresenta uma técnica validada para definição de conceitos escolares, acadêmicos e de pesquisa aplicada, para estudantes em formação de doutorado em nossa universidade, que, além de adotarem ou avaliarem criticamente as definições de autores especialistas, devem ser capazes de expressar sua posição teórica, na modalidade "definição de conceito", dos termos-chave da sua tese de graduação e trabalhos parciais. A "técnica RFG das três cores" é inspirada na ideologia de Hegel, Vygotsky, Davydov, Bruner e Wittgenstein, entre outros líderes científicos e constitui um recurso útil para a formação do pensamento crítico e da argumentação científica.

Palabras clave: Pensamento; Definição de conceitos; Técnicas de Definição de Conceitos; Técnica RFG de três cores; Critérios de qualidade.

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