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METHODOLOGICAL CLASSIFICATION FOR ACADEMIC-SCIENTIFIC RESEARCH: A DIDACTIC-PEDAGOGICAL PROPOSAL

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ABSTRACT

Among researchers in general, especially in scientific initiation, methodological classification has been a challenging and confusing subject, even controversial. In this paper, as an introductory contribution to this debate, our objective is to address what are the basics in academic, scientific, or professional research applied to several knowledge fields, that is: knowing its language and mastering to a certain extent the technical vocabulary regarding the academic-scientific methodology (subject, problem, hypothesis, rationale, objectives, methods, etc.), as well as the methodological orientation of the research (qualitative, quantitative, etc.). Thus, by means of a classification matrix, this paper aims to present a didactic-pedagogical proposal of the paths and methods for academic-scientific research.

Keywords: Methodology; Scientific methodology; Research methodology.

RESUMO:

Entre pesquisadores em geral, especialmente na iniciação científica, a classificação metodológica tem sido um tema desafiador e confuso, até mesmo controverso. Neste artigo, como contribuição introdutória a esse debate, nosso objetivo é abordar o que são os fundamentos da pesquisa acadêmica, científica ou profissional aplicada a diversas áreas do conhecimento, ou seja: conhecer sua linguagem e dominar em certa medida o vocabulário técnico referente à metodologia acadêmico-científica (tema, problema, hipótese, justificativa, objetivos, métodos etc.), bem como a orientação metodológica da pesquisa (qualitativa, quantitativa etc.). Assim, por meio de uma matriz de classificação, este artigo visa apresentar uma proposta didático-pedagógica dos caminhos e métodos para a pesquisa acadêmico-científica.

Palavras-chave: Metodologia; Metodologia científica; Metodologia de pesquisa.

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INTRODUCTION

Among researchers in general, especially in scientific initiation, methodological classification has been a challenging and confusing subject, even controversial. In this paper, as an introductory contribution to this debate, our objective is to address what are the basics in academic, scientific, or professional research applied to several knowledge fields, that is: knowing its language and mastering to a certain extent the technical vocabulary regarding the academic-scientific methodology (subject, problem, hypothesis, rationale, objectives, methods, etc.), as well as the methodological orientation of the research (qualitative, quantitative, etc.). Thus, by means of a classification matrix, this paper aims to present a didactic-pedagogical proposal of the paths and methods for academic-scientific research.

METHODOLOGY

Here, based on a pedagogical approach, we will do a technical-methodological description. This is necessary because academic, scientific, and professional research does, as a distinctive feature, a careful and systematic usage of the method. Pursuing this goal, some researchers might consider as a challenge to classify and describe their methodology, and the existing models for doing this may not consider the characteristics of the research in different knowledge fields, which sometimes have very particular aspects. Here, we propose a matrix that encloses those elements that have been recognized as essential when planning and describing a research process.[1-9] However, despite its ambitious scope, we consider that our proposal is descriptive, not prescriptive, and our intention is introductory, not exhaustive.

RESULTS AND DISCUSSION

There is some confusion regarding this criterion, which is often considered a requirement to obtain recognition or academic status (undergraduate, graduate degree, etc.). It generally requires that the paper or essay should be the result of rigorous research (Undergraduate Thesis, Degree Project, Dissertation, Thesis), within the academic and scientific genres available (technical report, article, monographs, etc.). These should not be mistaken for the types of possible methods used to perform research (theoretical essay, literature reviews, document analysis, exegesis, clinical trials) or the emphasis and approaches used (historical, anthropological, biological, theological, epidemiological, etc.), which may even overlap themselves. For example, “University Y” has, as the last requirement for students’ graduation, the completion of a research activity called “Undergraduate Thesis”, which might finally be presented with a “monograph” (academic genre), whose focus (approach) might be epidemiological and historical, based on the method of document analysis (research method).

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Table 1 – Proposal for a methodological classification matrix for academic-scientific research

Scientific methodology			**Research Methodology**		
Approach Method	Approach (way of thinking).		Deductive, inductive, dialectical, hypothetical deductive.		-----
	Universe/discipline of origin.		*Examples:* Human Sciences, Exact Sciences; Educational Sciences, Religious Sciences, Business and Organizational Sciences, Sport Sciences and Human Movement, Health Care Sciences, Rehabilitation Sciences, Interdisciplinary, etc.		Note: there is an interesting discussion of new arrangements, such as in frontier sciences, inter sciences, etc. and its impact on the method.
	Paradigms.		*Examples:* structuralist; positivist; interpretivism; hermeneutic; phenomenological; frequentist, postcolonialism, etc.		Note: different understandings of what fits as a "paradigm"/theory are common, from which the reference that will guide the research is derived.
	Theoretical perspectives.		*Examples:* pragmatic; social determinants of health; social representations; complexity; constructivism; bioecological model, etc.		
Procedural Method	Search problem.		Qualitative.	Quantitative.	Methodological.
	Hypothesis.		General or theoretical.	Null or alternative.	General or theoretical; null or alternative.
	Study objectives.		Exploratory, descriptive.	Descriptive, inferential explanatory and/or predictive.	Validation of research tools and methods.
	Search strategy.		Case Study, Narrative Research; (Auto)ethnography; Action research, etc.	Experimental (clinical trial), quasi-experimental, non-experimental.	Particular aspects of each area of knowledge.
	Data Gathering Methods	Search environment.	Non-empirical (internet, publications of different types); empirical (field).	Non-empirical (secondary data); empirical (collected data).	Empirical (validation evidence); non-empirical (proposition).
		Analysis Unit.	Individual or collective.	Individual or colective.	Parameters/dimensions.
		Population and sample.	Based on criteria; in general, intentional and with spontaneous adhesion. It allows a theoretical or random sampling.	Probabilistic; non-probabilistic (with or without sample size calculation). Possible random distribution (randomization).	Intentional; or based on quantitative criteria.
		Data Gathering source.	Documents, textual and contextual analysis; media; interviews, focus groups, etc.	Subjective (non-invasive) and objective (invasive and non-invasive) measurement instruments; records, etc.	Guest judges; "real world" (interest group).
		Time direction.	Retrospective/Prospective.	Retrospective/Prospective.	Prospective.
		Time cut.	In general, it is not applicable.	Transversal or cross-sectional (single measure). Longitudinal (study with follow-up in which measurements are taken on several occasions).	In general, it is not applicable.
	Analysis Methods.		Speech analysis; Content analysis; Discourse of the Collective Subject, etc.	Statistical criteria. In general, aimed at identifying the correlation or difference between variables of interest.	Statistical and practical criteria; or based on consensus.

Source: Author's creation.

Another frequent source of confusion is the terms “qualitative” and “quantitative”. We clarify that both may represent different things depending on the context or research setting. For example, in statistics, which is a quantitative science, we may come across so-called estimations of “qualitative” and “quantitative” levels. Apart from this, many methodologists endorse the idea that there are qualitative and quantitative methods or that the literature review is a “qualitative production”. Logically, in each case, these terms have different meanings.

Therefore, we developed a proposal for a matrix of methodological classification for academic-scientific research. Perhaps there will be situations in which applying all the categories presented in this classification proposal (Table 1) to categorize some investigations will not be possible. For example, Clinical and Interventional Research might be based on a question of research whose nature is both qualitative and quantitative, or certain particular aspects of epidemiological research (analytical / descriptive).8,9 Despite that, the table that we created contributes to a categorical overview of the recurrent research methods, and it is useful both to hospital chaplains and professionals from other knowledge fields.

CONCLUSION

This paper, which is only an introduction to the matter explored here, represents an effort to sum up the scientific and research methodology in a didactic-pedagogical way. This initiative is desirable and useful to educate university students in activities related to scientific initiation or even in other disciplines or tasks related to research.

NOTE

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