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Case Studying Educational Research: A Way of Looking at Reality

Maria de Nazaré Castro Trigo Coimbra, Alcina Manuela de Oliveira Martins*

Centre for Studies on Education and Training (CEEF/CeiEF), Lusófona University of Oporto, Portugal, Rua Augusto Rosa, Portugal
*Corresponding author: amom@ulp.pt; amanuela13@gmail.com

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Abstract This study has investigated the use of case studies, applied by Master´s students in Educational Sciences. Given the increasing use of case study in educational research, key aspects of its construction were analysed, including literature review, methodological choices, data collection and analysis, the researcher´s positioning and the applicability of the results. The research was predominantly qualitative and category-based, having as sample 42 Master´s dissertations, including single and multiple case studies, from students attending a Portuguese university. The results show that mixed methodology, qualitative and quantitative, is predominant. However, not all students connect theory to their empirical study, nor do they look for the common and the particular. Even though students reveal awareness of the multidimensionality of social phenomena and the researcher´s role, only a minority adds alternative perspectives and control mechanisms, so as to safeguard methodological rigour. Often, it lacks the researcher's reflexivity, usually implicated in the context research. In addition, the research report does not always present an appealing writing, capable of attracting the reader's attention and enabling forms of generalization, by approximation to similar contexts. Finally, the study shows Master´s students need more training, to strengthen their knowledge of methodological approaches. University courses, about empirical research in education, should prepare students to design and conduct their research project, in order to achieve a new way of looking at educational reality.

Keywords: *educational research, mixed methodology, case study, dissertations, Master's students*

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1. Introduction

The case study approach is often used in educational research, either by experienced researchers or students. The choice of the qualitative paradigm, in educational research, owing to the multidimensionality of social phenomena, implies the intersection of perceptions, behaviours and attitudes, in a subject-object interrelationship. The intention of investigating reality, situated in the "here" and "now" of social interactions, privileges the case study for the research of practices and behaviours, in the educational community. The goal is a descriptive and interpretive understanding of the object of study. However, the case study is not always applied with the required methodological rigour. Often, it is just a choice of convenience, by belonging to the researcher's professional context. Therefore, it is of relevance to confirm whether the study design sets an effective case study, or whether it is the incomplete analysis of a case. Beginning with the literature review, we present an overview of distinctive aspects, in order to select some categories, to be applied on qualitative dissertations of Portuguese Master's students.

Presently, there are numerous case studies in Educational Science, which cover different areas and school subjects. In contrast, there is a lack of research about their implementation. Our study intends to fill this gap in the existing research, contributing to the analysis of case study research carried out by students attending a Master's Degree on Educational Sciences.

2. Literature Review

Case study is a research method of a social phenomenon, through the analysis of a specific context of its reality. It is an approach that allows the in-depth analysis of a phenomenon, situation or problem. Case study answers the research questions "why" and "how", and facilitates the understanding of social phenomena, through the detailed analysis of the context. [1] Therefore, it is a study of a social phenomenon, within the unity and totality of a system, which is temporally and spatially limited. [2] This research approach involves systematic investigation of human behaviour, in natural settings, relying on verbal and visual communication, so as to answer research questions.

The distinctive characteristics of the case study include [1,3]: (i) the case should be complete, respecting three indicators: the boundaries of the case, namely the distinction between the phenomenon to be studied and its context; the comprehensive analysis of evidence,

unconditioned by time or resource limits; (ii) the case should consider alternative perspectives or hypotheses, looking for explanations or perspectives that are different from those adopted in the study and examining the evidence according to these perspectives; (iii) the evidence must be conclusive and disclosed in an appealing writing, in order to attract the reader. Regarding the typology, case studies can be exploratory, if the purpose is to obtain preliminary information about the object of study; descriptive, when the aim is to describe “how”; or analytical, whenever they develop a new theory, comparing it with already existing ones. All typologies assume that reality will be interpreted by the investigator.

The interpretative perspective is a theoretical orientation based on two approaches. [4] Firstly, there is phenomenology, an approach that highlights the understanding of events and personal interactions. Secondly, there is the symbolic interactionism approach, which states that human experience is mediated by interpretation, since it is people who ascribe meanings to goals, situations and events. Senses are produced and modified through a dynamic interpretative process, encompassing context, emotions and social interactions, which connect the researcher and the participants. This implies that, in data analysis, researchers should consider multiple forms of interpretation, incorporating their point of view and the participants' subjective thinking.

The interpretation applies to a range of research objects from a person to a group, event or institution, be it one or multiple cases. [5] This multiplicity is visible in the introductory verbs of the objectives allocated to case studies [1,6], such as to observe, explore, locate, understand, describe, interpret, explain, compare, analyse, verify and prove.

Consequently, qualitative research values the process, the dynamics and the context, induction as a way of adjusting the research design (starting question, objectives and instruments), the social interactions between participants, the role(s) of (the) investigator(s) and the detailed and reasoned reporting of the case. However, the case study is not limited to the description and interpretation of situations. Similarly to quantitative research, it may be based on methodically built hypothesis. [7] It is important to point out that the increasing use of mixed methods shows that the case study is not merely a qualitative technique, often using a mixed methods approach - qualitative and quantitative. [8,9] In other words, despite the differences between qualitative and quantitative paradigms, at the ontological and epistemological level, a convergence, at the more pragmatic level of the methods of collecting and analysing data, is possible [10].

Accordingly, in Educational Sciences, the case study provides numerous opportunities for research and analysis of a student, a teacher, a class, a teaching plan, a curriculum or an educational community, among others. Nevertheless, the apparent easiness of data collection also stimulates the use and abuse of case studies. [5,11] Much of the research in Education, classified as case study, is not situated in a framework of collective dialogue, for the construction of knowledge, being confined to a closed, unfinished and discontinuous circle of a school or class instead.

Regarding the teacher-researcher, he seeks, in the case study, the advantage of deepening the phenomena in a real context, with reduced resources. Furthermore, it is possible to match the process of research to the cycles of daily school life, either during one semester or one or more academic years, which facilitates the implementation of the research. However, teachers´ involvement, towards the improvement of the quality of teaching and learning, can impair a vision exempt from reality. [12,13] Researchers, immersed in their own professional context, risk failing to safeguard the required objectivity and reflexivity, due to the lack of distancing from the object of study. Consequently, for many researchers, case study becomes synonymous with complacency, available sample and study of convenience. The data analysis becomes shallow and fragmentary, without recourse to context and history. Often, it configures a partial and decontextualized case, instead of the paths and challenges of a real case study [2].

As for the generalization and applicability of case studies, there are two investigative positions. The first defends that one cannot generalize from a single case or experience. However, when generalization is based on a set of experiments, measured using the same research design, under different conditions, it is possible to generate hypotheses to be tested by replication in similar contexts. If they are confirmed, the researcher can generate theoretical propositions applicable to other contexts, in a process of analytical generalization [1,3].

The second position [2,14] criticizes restrictions on a study of the particular, given that the intrinsic study of a case is complex and researchers cannot avoid generalization, applying the criteria similar/different from to other cases. A detailed and appealing narrative of the study case may lead readers to associate that case to other contexts. This process, known as "naturalistic generalization" [2], constitutes an alternative to representative samples of a population. There is a change in perspective, as instead of defining the populations for which the results can be generalized, the investigator refers such decision to the reader. This communicative validation [14,15] is based on how procedures and results are presented, through a reflexive, detailed and motivating writing. Thus, the generalization anchors in the investigative report, which will substantiate the reader´s decision, concerning the applicability of the results to similar contexts.

In summary, the following fundamental characteristics of case studies can be enumerated: comprehensive analysis of the multiple reality of the social world, critical analysis of scientific production in the subject area, procedural construction of the case and its delimitation, data collection and analysis within the context, the researcher´s positioning as a guide, interpreter and evaluator, and the applicability and relevance of the results. In this brief theoretical framework, characteristics such as easiness of access and complexity of the case study also emerge. On one hand, these features constitute advantages, on account of the possibility of investigators and participants knowing (and possibly transforming) a specific educational reality. On the other hand, they can become disadvantages, if the researcher does not maintain a critical attitude. The greater the familiarity and

immersion in a research context, all the more this attitude is necessary.

3. Materials and Methods

The research focuses the use of case studies by students attending a Master's degree, on Educational Sciences, in a Portuguese university, during three consecutive years, from 2011 until May 2013. Forty-two Master's Research Projectson Pedagogical Supervision, School Administration and Education, as well as on School Libraries, were selected as samples. The study intends to confirm if their case studies include the scientific production in the area, contemplate the limits and procedural construction of the research, put into context the collection and analysis of data, consider the researcher's positioningand address the applicability and generalization of the conclusions.

In accordance, a mixed methodology was applied, combining qualitative and quantitative approaches.[6, 10]According to the research problem, we have collected qualitative data, applying category-based analysis, supported by numerical data, with statistical treatment. Once the final *corpus* was gathered, the written discourse was analysed, considering categories *a priori* and *a posteriori.* Categorical aggregation was based in the characteristics of the case study, as previously referred in literature reviewing.

4. Results and Discussion

According to thestated categories, we analysed research projects accomplished by students.

Table 1. Analysis of scientific production in the subject area

Category 1 Scientific production in the subject area	
Subcategories	%
Analysis of scientific production in the subject area	100.0
Analysis of the common and of the specific in the study	9.5

In what concerns scientific production in the subject area (Table 1), the two subcategories show different results. Although Master´s students achieve an analysis of scientific production in the subject area, the opposite happens with the analysis of the common and of the specific, which only reaches 9.5%. This means that students actually undertake the theoretical framing, which usually composes the first structural part of any scientific research report. Nevertheless, they do not reach an in-depth analysis, of the common and of the specific, neither in the studies that compose the theoretical frame of their research, nor in their own study. Frequently, literature review takes the form of authors´ summaries, in a descriptive text without the consistency of a transversal and argumentative analysis of concepts, theories and researches. Usually, it lacks the investigator´s critical positioning, supported by different sources, from books to journal articles and unpublished theses and dissertations. These are essential to build up a picture of the existing body of scientific knowledge, in relation to the research topic, helping to define the retrospective and prospective coordinates of a new study [10,14].

Table 2. Analysis of case study design

Category 2 Case study design	
Subcategories	%
Selection of a complex phenomenon	100.0
Gradual selection as a general principle of research	7.1
Selectionof research questions	100.0
Defining study-context boundaries	73.8
Characterizing thestudy context	100.0
Alternative perspectives or hypothesis	4.8
Priority of qualification, though with quantification	90.5
Relevance of process and product altogether	54.8

Regarding case study design, Table 2 shows that students select a complex educational phenomenon. Amongst the research areas, they specified, as topic, educational policies, school management, school culture and leadership, teacher's supervision and evaluation, continuing professional development, curriculum planning, school libraries, the teaching-studying-learning process, classroom management, teaching strategies, assessment and evaluation, educational projects and learning communities. All students formulate general and specific research questions (100%), narrowing the focus of research. Globally, they characterize the study context (100%) and the majority defines study-context boundaries (73.8%), preserving the unitary character of the social object being studied.

Moreover, students select various types of mixed methods designs, giving priority to qualification, but also using quantification(90.5%). Although almost all students write about the importance of the research process, only one half (54.8%) describes an intensive process of deep attentiveness and analysis, linking multiple methods and sources to emerging findings and contradictions, in particular settings. Gradual selection categories, as a general principle of research (7.1%), and alternative perspectives or hypothesis (4.8%) have a minimal expression. Once again, there is a gap between theory and practice, already observed in category 1.

Table 3. Data collection and analysis

Category 3 Data collection and analysis	
Subcategories	%
Selection of a representative sample	95.2
Data collection in natural research context	90.5
Qualitative content analysis, without quantification	9.5
Qualitative content analysis, with quantification	90.5
Data analysis supported by control criteria	9.5
Data analysis supported by context and history	47.6
Analysis of multiple evidences	38.1
Triangulation of different types of data	50.0

In data collection and analysis, shown in Table 3, selection of a representative sample is accomplished by students (95.2%), justifying data collection in a natural research context. Crossing data from priority of qualification, though with quantification (Table 2), with qualitative content analysis (Table 3), both with 90.5%, the predominance of mixed methodology, combining qualitative and quantitative approaches, is confirmed. Qualitative content analysis, without quantification, has got a small expression (9.5%).Data analysis, supported by context and history, is accomplished by 47.6% of the

students, which is lower than expected, in a study case research.

Despite the fact that 50.0% of graduate students include, in their final Master's dissertations, triangulation of different types of data, analysis of multiple evidences is not extensive (38.1%). Often, it occurs a deepening of one of the research tools, at the expenses of the other(s). As an example, there are students who, in their case studies, emphasise the questionnaire survey, but do not show the same level of detail in interviews. The result with the lowest value (9.5%) matches the analysis marked by control mechanisms. This occurs due to the fact that the number of students with pre or post-testing or consecutive cycles of observation, collection and data analysis, applying procedural control, is very small.

Table 4. Analysis of the researcher's positioning

Category 4 The researcher´s positioning	
Subcategories	%
Researcher as a participant observer	78.6
Researcher as a non-participant observer	21.4
Researcher as responsible for data collection	100.0
Researcher as interpreter and evaluator	100.0
Researcher´s critical analysis of his own subjectivity	19.0

In what concerns the researcher´s positioning, shown in Table 4, the subcategories indicate the degree of involvement and awareness. All students point out that the investigator assumes the responsibility for data collection, in the role of an interpreter and evaluator of the obtained results (100%). In 78.6% of the analysed case studies, the researcher prevails as a participant observer, in opposition to a non-participant observer (21.4%). Students' justify a convenience sample, which matches their professional context, mentioning that their involvement in the context may bring advantages of proximity and ease of access to data. However, many don´t value an attitude of critical analysis of their subjectivity (19%), creating the risk of bias and partiality. Nor throughout the dissertation, nor in the conclusions, do they fully justify their methodological positioning.

Table 5. Analysis of the applicability of the case study results

Category 5 Applicability of the case study results	
Subcategories	%
Transformation of action contexts	7.1
Discussion of different generalizability possibilities	9.5
Detailed conclusions of the case study research	95.2
Reference to the reader's responsibility in case study generalizability	7.1

Finally, regarding the applicability of the case study results, as shown in Table 5, the conclusions of the research projects are detailed (95.2%), testifying an individual and collective path of knowledge and discovery. However, the subcategories, concerning the reader's responsibility, in the case study generalization and in the transformation of action contexts, have a minimal expression (7.1%). Likewise, there are few research reports that discuss different generalizability possibilities (9.5%), which can be applied to similar contexts, due to the reader's responsibility in case study generalizability (7.1%).

5. Conclusions and Recommendations

Case study nature isn´t linear, presenting a multiplicity of definitions, that emphasize its multidimensional quality of organizing social data, in order to study one or a small number of cases in depth, in a bounded context. It may be classified as a method, a modality, a technique, an instrument or an approach. Being part of the qualitative paradigm, frequently it uses quantitative data collection and analysis techniques, in a mixed methodology. This diversity gives the case study the advantage to reveal the multidimensionality of social phenomena, together with some constraints, which come from a less insightful usage.

Thus, in the conducted study, Master´s students, as researchers in Educational Sciences, embrace the case study as methodology, strategy and instrument. Nevertheless, not all achieve a comparative and critical analysis of the existing literature and research, nor do they connect theory and practice. The same happens with alternative perspectives, the use of control mechanisms, the researcher´s critical analysis and the generalization of the results. Although a neutral observation and interpretation of the social reality isn't possible, many dissertations fail to include recognition of the researcher´s positioning. These issues, if not safeguarded, can lead to incomplete studies, which do not make up real case studies. Yet, students´ awareness as educational researchers is visible, in the intent of understanding the multidimensional "how" and "why" of social phenomena.

In conclusion, case study allows an investigation in real context, in a perspective of discovery both of the process and of the product. Firstly, the knowledge is built through the dialogue between the researcher and the participants, aiming to understand the complexity of the case, in its natural setting. Secondly, there is another dialogue, through the production and reception of a scientific writing, between the researchers and the readers of the Master´s final dissertation, which should be structured, interpretative and critical.

In view of the weaknesses detected in the analysed research projects, we further conclude that, in the future, it is necessary to reinforce specific training in Methodology, in Higher Education, so as to provide Master´s students with the necessary background for the construction and report of their case studies.

Statement of Competing Interests

The authors have no competing interests.

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