Educational Research: Essential Stages in Developing a Degree Thesis

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Abstract: The development of the bachelor's thesis represents a crucial moment in the academic journey of every student in the educational field, marking the transition from the status of a consumer of knowledge to that of a producer of scientific research. This article aims to provide a comprehensive perspective on the essential stages of educational research in the context of completing a bachelor's thesis. Starting from the identification and delimitation of the research problem, passing through the theoretical and methodological foundation, to the analysis of data and the formulation of conclusions, each stage is analyzed from the perspective of current academic requirements and challenges specific to the educational field. The article emphasizes the importance of a systematic and rigorous approach, in the context of educational research is becoming increasingly complex and more closely linked to modern educational practices. Through concrete examples and practical recommendations, the material aims to guide students in their research journey, highlighting both the technical elements and the creative aspects of the process of developing a bachelor's thesis. The role of educational research is emphasized not only as an academic exercise but also as a tool for improving pedagogical practices and contributing to the continuous development of the educational system.

Keywords: educational research; bachelor's thesis; research methodology; research stages; educational issues

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1. Introduction

Writing a bachelor's thesis represents a major challenge for students in the field of educational sciences, while also constituting a unique opportunity to apply the theoretical knowledge accumulated during their studies within their own research project. As Cohen, Manion, and Morrison (2018) emphasize, educational research is not just an abstract academic exercise but a dynamic process through which real phenomena from the educational context are investigated to generate new knowledge and contribute to the improvement of pedagogical practices.

In recent years, the field of educational research has undergone significant transformations, being influenced by technological developments, social changes, and new pedagogical paradigms. Creswell and Creswell (2018) highlight that contemporary researchers must navigate through an increasingly diversified methodological landscape, choosing between quantitative, qualitative, or mixed approaches depending on the nature of the research problem and the proposed objectives. This methodological diversity offers students the freedom to personalize their research, but also involves the responsibility to deeply understand the foundations of each approach.

The bachelor's thesis should not be viewed merely as a formal requirement for obtaining a degree, but as a first serious foray into the world of scientific research. Bell (2014) argues that this formative experience develops critical thinking, analytical capacity, and synthesis skills of the future education specialist. Moreover, the research process cultivates intellectual autonomy and confidence in one's own investigative abilities - essential qualities for any professional in the educational field.

The Romanian context of educational research presents particularities that must be taken into consideration. Jigău (2016) observes that, although there is a solid academic tradition in the field of pedagogy, there are still challenges related to access to updated bibliographic resources, participation in international research networks, and the application of research results in daily educational practice. These aspects make the process of writing a bachelor's thesis require careful planning and a proactive approach from students.

Structuring the research process into clear and well-defined stages is essential for the success of the project. Punch (2016) maintains that, although research is an iterative and not linear process, identifying clear methodological milestones helps novice researchers navigate more efficiently through the complexity of the scientific

endeavor. Each stage has specific objectives, its own working methods, and final products that must be delivered, thus creating a map of the research journey.

A fundamental aspect of contemporary educational research is its relevance to pedagogical practice. Hammersley (2013) warns against purely theoretical research that remains disconnected from the concrete realities of the educational system. Therefore, from the very beginning of the thesis writing process, students must ask themselves the question: how will this research contribute to understanding and improving educational phenomena? The answer to this question will provide direction and motivation throughout the research.

2. The Initial Stage: Delimiting and Grounding the Research Problem

Identifying a relevant and well-delimited research problem constitutes the foundation of any quality bachelor's thesis. This first stage is perhaps the most difficult, but also the most important, because a well-formulated research problem guides the entire subsequent scientific endeavor. In the educational field, the challenge lies in identifying problems that are simultaneously specific enough to be investigated within a bachelor's thesis but also relevant enough to make a significant contribution to the field of pedagogical knowledge.

The process of identifying the research problem usually begins with an observation or curiosity related to a certain aspect of educational reality. It might be a difficulty encountered during pedagogical practice, a contradiction between studied theories and observed reality, or a question that the specialized literature does not address satisfactorily. Thomas (2017) recommends that students start from their own experiences and interests, but quickly relate them to the specialized literature to verify whether the identified problem is truly a research one and not just a personal curiosity.

After identifying an area of interest, the initial documentation stage follows. This phase involves extensive reading of specialized literature to understand the current state of knowledge in the respective field. Boote and Beile (2005) emphasize that a substantial literature review does not mean just reading articles and books, but a critical analysis and synthesis of previous contributions. In this process, the student must identify what is already known about their topic, what gaps exist in current knowledge, what methodologies have been used by other researchers, and what debates are ongoing in the respective field.

A crucial aspect in this stage is the clear formulation of the research problem and derived research questions. Maxwell (2013) distinguishes between a general research problem and specific questions that will guide the investigation. For example, a general problem might be „the effectiveness of interactive methods in teaching science", while specific questions could explore aspects such as „What is the impact of interactive methods on students' motivation for studying science?" or „How does the effectiveness of these methods vary according to students' age?" The precise formulation of research questions is essential because they will determine the choice of methodology, data collection tools, and analysis methods.

Justifying the relevance of the research represents another fundamental element of this stage. Hart (2018) argues that a bachelor's thesis must demonstrate not only what will be researched, but also why it is worth researching. This justification must be made on several levels: theoretical (what gap in knowledge will the research fill), practical (how the results can be applied in educational practice), and methodological (what new approach or what new instruments will be used). In the Romanian context, Păun and Potolea (2017) emphasize the importance of connecting research to real problems facing the national educational system, thus ensuring that the bachelor's thesis does not remain a purely academic exercise, but has the potential to contribute to improving education.

Delimiting the research is just as important as identifying the problem. Any research, no matter how ambitious, must have clear limits in terms of the population studied, geographical or institutional context, time period, and specific aspects investigated. Yin (2018) warns against the temptation to address problems that are too broad or too complex for the resources available in a bachelor's thesis. Proper delimitation does not mean limiting the value of the research, but, on the contrary, it allows for a deeper and more rigorous investigation of the selected aspects.

Formulating research objectives derives logically from the problem and research questions. Objectives must be SMART—specific, measurable, achievable, relevant, and time-bound. For example, instead of a vague objective such as „improving mathematics teaching", a SMART objective would be „identifying and describing the interactive teaching strategies used by primary school mathematics teachers to develop students' logical thinking". Bloom, Engelhart, Furst, Hill, and Krathwohl (1956) proposed a taxonomy of educational objectives that can also be adapted for formulating research objectives, ensuring a hierarchy from simple objectives (knowledge, comprehension) to complex objectives (analysis, synthesis, evaluation).

Another essential component of this stage is formulating hypotheses or research premises, depending on the nature of the chosen methodological approach. In quantitative research, hypotheses are statements that can be tested empirically, expressing anticipated relationships between variables. In qualitative research, initial premises or assumptions are more flexible and can be revised during the research. Johnson and Christensen (2014) emphasize that, regardless of the type of research, it is important for the student to be transparent about their own expectations and assumptions, as these can influence how data is collected and interpreted.

Defining key concepts and terms represents a final, but crucial, step of this stage. Many concepts in the educational field are polysemous and can be interpreted in different ways. For example, the term „competence" can be understood differently depending on the theoretical framework adopted. For this reason, the student needs to provide clear operational definitions for the main concepts used in the research, referring to specialized literature, but also adapting these definitions to the specifics of their own research.

3. The Methodological Stage: Research Design and Data Collection

Once the research problem is clearly defined and theoretically grounded, the next crucial stage consists of designing the research methodology and implementing the data collection process. This stage is fundamental because it determines the quality and validity of the results obtained, and the choice of methodology must be perfectly aligned with the nature of the research problem and the established objectives.

The first step in this stage is choosing the research paradigm and general methodological approach. In the field of educational research, there are three major methodological directions: the quantitative approach, the qualitative approach, and the mixed approach. Denzin and Lincoln (2018) explain that each of these approaches starts from different philosophical premises about the nature of reality and how it can be known. Quantitative research, with roots in the positivist paradigm, seeks to measure educational phenomena, test hypotheses, and establish causal relationships between variables. It uses standardized instruments such as questionnaires, tests, or structured observations and analyzes data through statistical methods.

On the other hand, qualitative research, rooted in the interpretive or constructivist paradigm, seeks to understand in depth the meanings, experiences, and perspectives

of the actors involved in educational phenomena. Merriam and Tisdell (2016) emphasize that this approach uses instruments such as semi-structured or in-depth interviews, participant observation, document analysis, and focus groups, and data analysis is interpretive in nature, seeking to identify themes, patterns, and meanings. The mixed approach combines elements of both approaches, benefiting from the advantages of each and compensating for their reciprocal limitations.

Choosing the specific research design represents the next important step. In educational research, there are multiple design options, each with specific characteristics, advantages, and limitations. Experimental or quasi-experimental research is appropriate when testing the effect of an educational intervention is desired. For example, if a student wants to investigate the impact of a new teaching method, they could use an experimental design with an experimental group and a control group. Shadish, Cook, and Campbell (2002) offer a detailed analysis of different types of experimental design and the validity problems associated with each.

The case study is another popular option in educational research, being particularly useful when an in-depth understanding of a complex phenomenon in a specific context is desired. Stake (1995) distinguishes between intrinsic case studies (when the case itself is of interest), instrumental (when the case illustrates a broader problem), and collective (when multiple cases are studied for comparison). A student could, for example, conduct a case study about the implementation of a curricular reform in a particular school, exploring the experiences of teachers, students, and parents.

Action research represents a particularly relevant design for students who have completed their pedagogical practice and wish to investigate and improve their own practice. McNiff and Whitehead (2011) explain that action research is a cyclical process of planning, action, observation, and reflection, through which practitioners continuously investigate and improve their practice. This design is valuable because it combines research with professional development and has a direct impact on educational practice.

Other designs frequently used in educational research include descriptive survey research, correlational research, longitudinal or cross-sectional studies, educational ethnography, and content analysis. The choice of design must be justified in relation to the research problem, available resources, and ethical considerations.

The selection of participants and research context is another crucial aspect of the methodological stage. In quantitative research, the emphasis is on the

representativeness of the sample, so that results can be generalized to a larger population. Fowler (2014) discusses various probability sampling techniques that ensure this representativeness. In qualitative research, however, sampling is purposive or theoretical in nature, the aim being to select participants who can offer rich and relevant information about the phenomenon studied. Patton (2015) describes multiple qualitative sampling strategies, such as extreme case sampling, typical case sampling, maximum variation sampling, or criterion-based sampling.

The development of data collection instruments requires special attention and methodological rigor. In the case of questionnaires, for example, precise principles of question formulation must be respected to avoid ambiguity, suggestion, or biased wording. Dillman, Smyth, and Christian (2014) offer a detailed guide for developing effective questionnaires. Instruments must be validated and, if applicable, piloted before use in the actual research. For interviews, it is necessary to develop an interview guide that includes main questions and probing questions, while maintaining the flexibility specific to the qualitative approach.

The ethical aspects of research must be treated with utmost seriousness at this stage. Any research involving human participants must respect fundamental ethical principles: informed consent, confidentiality, the right to withdraw, protection against harm, and beneficence. Christians (2018) emphasizes that in educational research, where participants are often children or young people, ethical considerations are even more stringent. The student must obtain necessary ethical approvals, prepare consent forms, and develop protocols for protecting participants' identities.

The actual data collection process must be carefully planned in terms of time, logistics, and sequencing. It is important to have a realistic research calendar that takes into account school holidays, examination periods, and other contextual constraints. Vasilachis de Gialdino (2009) recommends a flexible but systematic approach to data collection, with careful documentation of all aspects of the process, including unexpected incidents or adjustments made along the way.

The management and organization of collected data is essential for subsequent stages of the research. Quantitative data must be entered into a database (for example, SPSS, Excel, or R) and checked for entry errors. Qualitative data, such as interviews, must be fully transcribed and organized in a way that facilitates subsequent analysis. Many qualitative research studies benefit from using specialized software such as NVivo or Atlas.ti for organizing and analyzing data. Regardless of the tools used, it

is crucial to have a clear system for organizing data, with regular backups to prevent loss of information.

An often overlooked aspect in this stage is keeping a research journal or reflective notes throughout the data collection process. These notes can include observations about context, difficulties encountered, initial impressions, or questions that arise. Ortlipp (2008) shows that these reflective notes are valuable not only for data analysis but also for the transparency and methodological rigor of the research, allowing the researcher to be aware of their own assumptions and how these can influence the research process.

Finally, this stage concludes with verifying the quality of the collected data. In quantitative research, this involves checking data completeness, response consistency, and, possibly, the normality of distributions. In qualitative research, quality verification refers to the richness and depth of data, the diversity of perspectives captured, and theoretical saturation - the point at which new data no longer brings significantly different information. If the quality of data is insufficient, an additional round of data collection or adjustments to the instruments used may be necessary.

4. Conclusions

Writing a bachelor's thesis in the field of educational research represents a complex and multidimensional process, which requires not only solid theoretical knowledge and methodological competencies but also perseverance, creativity, and well-developed critical thinking. Throughout this material, we have analyzed the essential stages of this process, from identifying and delimiting the research problem to methodological design and data collection, each stage having its own specific requirements and challenges.

A first aspect that deserves to be emphasized in this final synthesis is the iterative and not strictly linear nature of the research process. Although we have presented the stages in a logical succession, in reality, research involves frequent returns, adjustments, and redefinitions as the student delves deeper into the subject and faces unforeseen challenges. This flexibility should not be viewed as a methodological weakness, but as an intrinsic characteristic of authentic research, which responds to the complexity of the educational phenomena investigated.

The practical relevance of educational research at the bachelor's level cannot be sufficiently emphasized. Although the bachelor's thesis is primarily an academic

exercise, it has the potential to genuinely contribute to understanding and improving educational practices. In the current context, when the Romanian educational system faces multiple challenges—from integrating technology into the teaching-learning process to adapting to the growing diversity of students and the need to develop skills for the twenty-first century—the contributions even of small-scale research can be valuable. Therefore, students who write bachelor's theses should not limit themselves to fulfilling formal requirements, but should view this process as an opportunity to contribute to the development of the educational field.

Methodological rigor represents a fundamental pillar of any quality research. We have highlighted throughout the article the importance of respecting high methodological standards at each stage of the research, from the precise formulation of the problem and research questions, to the careful choice of design and instruments, to respecting ethical principles. However, this rigor should not inhibit creativity or transform research into a mechanical exercise. On the contrary, a solid methodological framework offers the freedom to explore phenomena of interest in depth, having confidence that the results obtained are valid and reliable.

Another essential dimension that runs through the entire material is the importance of solid theoretical grounding. Educational research does not take place in a vacuum, but in dialogue with a rich tradition of pedagogical thinking and with the results of numerous previous research studies. The ability to identify, critically analyze, and synthesize relevant specialized literature is not just a formal requirement, but a sine qua non condition for the research to make a significant contribution. At the same time, the student must avoid the danger of remaining captive to existing theories, maintaining independent and critical thinking.

The ethical aspects of educational research deserve special attention in this conclusion. Responsibility towards research participants, respecting their rights, and protecting them against any harm are not just formal requirements but reflect the fundamental values of the academic community and the teaching profession. This ethical dimension of research shapes the character of the future education specialist, cultivating sensitivity towards human dignity and towards the power relations that may exist in educational contexts.

The development of research competencies through writing the bachelor's thesis has formative effects that far exceed the strict domain of scientific research. The ability to identify and analyze complex problems, to search for and critically evaluate information, to think systematically and methodically, to formulate coherent and

well-grounded arguments—all these are transferable competencies that will be valuable in any subsequent professional endeavor. In addition, the experience of completing a complex and long-term project, overcoming the inherent difficulties and frustrations, contributes to developing resilience and confidence in one's own abilities.

In the current context of educational research, characterized by increasing methodological diversity and rapid developments in terms of available tools and techniques, future researchers need to maintain an attitude of continuous learning and adaptability. The methodological competencies acquired during the writing of the bachelor's thesis constitute a solid foundation, but one that must be constantly updated and expanded throughout one's professional career.

Collaboration and dialogue with other researchers, whether they be scientific supervisors, fellow students, or members of the broader academic community, represent a valuable resource throughout the research process. Constructive feedback, exchange of ideas, and different perspectives enrich the research and help overcome blockages or impasses. It is important that the student does not approach writing the bachelor's thesis as a solitary endeavor, but takes advantage of opportunities for collaboration and learning from others.

In closing these reflections, we want to emphasize that writing the bachelor's thesis, beyond all the challenges and difficulties it entails, can and should be a deeply satisfying intellectual experience. The moment when the student discovers something new about the phenomenon they are investigating, when the data begins to make sense and answer the questions posed, when different pieces of the puzzle come together into a coherent picture—these moments make the effort not only justified, but also rewarding. We therefore encourage students to approach this endeavor not just as an academic obligation, but as a journey of intellectual discovery, which will contribute not only to their own professional formation, but also to the development of the educational field as a whole.

Contemporary educational research needs new voices, fresh perspectives, and bold questions. The students who are writing their bachelor's theses today are the educational researchers and practitioners of tomorrow, and the quality and rigor with which they approach this first major research project will influence their entire subsequent career. The investment of time, effort, and passion in writing a quality bachelor's thesis is thus an investment in one's personal future and in the future of Romanian education.

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