

Am i a Competent Researcher?: Reflections from Novice Researchers*

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Abstract

This study aims to explore the methodological preferences, research practices, and research competencies of novice educational researchers. 11 novice researchers working at a state university in the southern part of Turkey were requested voluntarily. The data for the study were collected using a semi-structured interview. In the data analysis, inductive content analysis was used. The findings were organized into three themes: research method preference, research practices and applications, and novice researchers' research skills competencies. Novice researchers prefer three different research methods. Participants define the research problems according to personal interests, the needs of society, and literature review. The practices and applications of researchers in sampling, data collection, analysis, validity-reliability and ethics were revealed. Lastly, the research skill competencies were explored. The findings provide an understanding of the novice researchers' research process. In conclusion, novice researchers should be supported in their research skills.

Keywords: Educational Research, Methodological Preferences, Research Competency, Novice Researchers.

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INTRODUCTION

Higher education policies are regarded by countries as agents for promoting social and economic growth as well as international competitiveness. The benchmark for academic success is raised by higher rates of scientific publications and PhD student completion (McAlpine & Amundsen, 2011). Doctoral students, also known as early career researchers, are expected to make contributions to new knowledge and innovation, and therefore play a critical role in developing the European Research Area (ERA) into a world-class capital of the global knowledge economy of the 21st century (Evans, 2010).

Doctoral education and early career research education were emphasized and included in the third cycle of the Bologna Process at the European Union Ministerial Conference in Berlin (Bologna Process: Berlin, 2003). The objective of incorporating highly trained people in the knowledge economy has led to an increase in doctoral education in the European Union in recent years (Balaban, 2017). Therefore, the importance and value bestowed on PhD education are constantly rising. Turkey has been a full member of the Bologna/EHEA European Higher Education Area since 2001, the number of doctoral students has increased by 8,5% in the last five years (Turkish National Higher Education Council, 2021).

The researcher identity is formed during doctoral education, and one of the goals of earning a PhD is to train professional researchers and independent scientists (Mantai, 2017). Doctoral students are more than simply students; they are colleagues, professionals, and even academic and administrative equals. Graduate students are commonly assigned to professional positions such as teaching and research assistantships, and they are no longer considered students (Gardner, 2009). In addition to studying for and completing their PhDs, doctoral students at universities participated in a variety of academic activities such as writing and submitting manuscript reviews, journal and conference papers, research funding applications, and collaborative book editing (Jazvac-Martek, Chen, & McAlpine, 2011). According to Kamler and Thomson (2014), PhD candidates develop new identities as researchers and prospective academics when they participate in such scholarly writing.

Early-career researchers' experiences commonly mirror the dominant culture of the research system (Christian et al., 2021). The preferences and practices of these new researchers also affect their future researcher identities, positionalities and existing research literature. Tomorrow's academic influencers and decision-makers will be today's novice researchers, so additional attention should be paid to comprehending the process of developing future researchers (Niemczyk, 2018). Early-career researchers provide a unique perspective on how research methods are changing and will continue to change in the future (Nicholas et al., 2019). Since research is directly influenced by researchers' assertions of knowledge, values, and processes (Creswell, 2002), it is noteworthy to identify the preferences and practices of novice researchers and to uncover the reasons.

The doctoral training curricula provide research methodology courses but rarely include the ontological and epistemological background of methodologies (Adams, 2016). Planning and conducting educational research is a complicated, deliberative, and iterative process in which ontological and epistemological issues must be taken into account (Cohen, Manion & Morrison, 2018). The philosophical perspectives of researchers determine the type of research, methodology, design and instruments (Tuli, 2010). For novice researchers determining their epistemological and ontological positionality is difficult, yet crucial for scholarly writing. The positionality develops by doing research over time (Holmes, 2020).

Although doctorate students are supposed to be competent and prolific writers, how they learn to write research papers remains ambiguous (Aitchison, Catterall, Ross & Burgin, 2012). As consumers and producers of research, novice researchers must have a clear understanding of the various facets of conducting a proper research study (Ellis & Levy, 2009). Because the findings of educational research have an impact on educational programs, teaching methods, teaching materials, and assessment procedures (Milss & Gay, 2018), the nature of the studies applied is influenced by the

quality of educational research (Feuer, Towne & Shavelson, 2002). One of the main factors affecting the quality of research is methodological consideration.

The complexity of the research methodologies used in conducting scholarly research might be daunting to novice researchers (Ellis & Levy, 2009). Timmerman, Feldon, Maher, et al., (2013) revealed that the research skills of graduate students develop gradually. The ability to situate studies in context using literature and to generate testable hypotheses emerged early in students' careers while the ability to analyse and draw conclusions from data appears to have developed later. Defining a research-worthy problem for novice researchers is also a challenging process (Ellis & Levy, 2008). Whatever the research methodology, novice researchers in educational research confront some challenges. Henson, Hull, and Williams (2010) highlight shortcomings in quantitative research applications including methodological reporting, misconceptions and inconsistencies, and overreliance on conventional techniques. On the other hand, Kalman (2019), found that data collection, analysis and interpretation, representation of findings, and the research process as a whole are all challenges in qualitative research. Onwuegbuzie and Daniel (2003) found analytical and interpretive errors in both quantitative and qualitative educational research. The most frequent errors in quantitative research are inaccurate statistical significance interpretation and inadequate reports of confidence intervals and effect sizes. In qualitative research, the most common mistakes include failing to give evidence to assess the credibility of the findings and generalizing conclusions beyond the sample (Onwuegbuzie & Daniel, 2003).

Professional educators obtain most of their understanding of today's educational problems through published educational research. The requirement for quality research that yields relevant, interpretable information is crucial in this critical communication process (Ward, Hall & Schramm, 1975). Educational research can be classified as scientific if it follows scientific methods and is relevant to educational issues (Feuer, Towne & Shavelson, 2002). The findings of educational research provide a significant contribution to both educational theory and educational practice. Educational research becomes a cornerstone of pre-service teacher training and graduate education programs as the quantity and quality of studies increase. (Mills & Gay, 2018). In this context, it is important that novice researchers studying in the field of educational sciences have sufficient research competencies.

However, novice researchers continue to produce scientific publications despite having difficulties in methodology and lacking research skills, and early studies can help to shape future researcher identities. Hence, it is critical to understand how novice researchers do their research. This is critical to improving the quality of scientific research. Therefore, this study aims to explore the methodological preferences and research competencies of novice educational researchers in Turkey.

METHOD

In this qualitative case study, we investigate the methodological preferences and research competencies of novice educational researchers using the interview method. Case studies are used in design research to investigate a specific issue in a multidimensional in-depth perspective (Merriam, 2013). A single case study design was chosen as Yin (2003) suggested collecting data from different sources within the same context. Therefore, the novice educational researchers' methodological preferences and their competencies at one university were considered as the case of this study.

Participants

A purposive criterion sampling method was used to select the participants of this study. The primary criterion determined to recruit participants for this study is that they must be novice researchers who have just achieved or are studying for a PhD degree in educational sciences. Eleven educational researchers working at a state university in the southern part of Turkey were requested voluntarily. Two of the participants have just completed their PhD, five are at the doctoral dissertation stage, and four are at the doctoral coursework stage. Participants are studying at, German Language Education (f:1), Computer Education and Instructional Technology (f:1), Curriculum and Instruction

(f:1), Psychological Counseling and Guidance (f:3), Preschool Education (f:2), Fine Arts Education (f:1) and Primary Education (f:2) programs. Nine of the participants are women and two are men.

Data Collection and Analysis

The researchers used a semi-structured interview form with six questions to collect data for the study. Concerning the content validity, a draft interview form was designed and presented to three experts who are experienced in qualitative research and educational science. The interview form was revised after receiving feedback from the experts. The interviews were held with each participant individually at their place of work. The interviews took around 35-45 minutes. All the interviews were recorded with a digital voice recorder with the participants' permission. The recordings were listened to by the researcher and then transcribed into text. For data analysis, inductive content analysis was used. In the analysis of the interviews, the written transcriptions of the voice recordings were typed into text. Then, the transcripts of the interviews were read many times by the researcher and the significant phrases or sentences were coded. Open coding was preferred in this process using NVIVO 10 software. Finally, three themes emerged as a result of the coding process.

After the research data was analyzed by one researcher, peer examination was obtained from the other two researchers and the analysis process of the data was completed by a discussion on the codes, categories and themes. In addition, the research process and the findings were described in detail without interpretation and the findings were supported by direct quotations from participants in order to establish the credibility of this study. The identities of participant novice researchers were ethically concealed and codes such as P1 and P2 were used in the findings and direct quotations.

RESULTS

The findings obtained from eleven novice researchers were organized into three themes: research method preference, research practices and applications, and novice researchers' research skills competencies.

Research Method Preference

The scientific research methods preferred by novice researchers have diverged. Accordingly, four of the participants adopted quantitative research, four qualitative, and three mixed research methods. Table.1 shows the scientific research methods preferred by participants and the reasons for their preference.

Table 1. Research methods preferred by participants and reasons

Research Methods	Reasons
Quantitative Research	Objective stance of research Being directed to
Qualitative Research	Suitable for social sciences Avoidance of generalization In-depth research opportunity Feeling freedom
Mixed Method	Requirement of interpretation of quantitative data Proper to research problems

Table 1 shows that participants preferred the quantitative research method because they were directed to do so and because of the objective stance of the method. P3 stated that; *"Because I was directed to do it, I think. In my PhD education, I took compulsory scientific research and statistics courses in two semesters. Inevitably, I found myself in quantitative research and learned about it."*

On the other hand, participants preferred the qualitative research method for its suitability for social sciences, avoidance of generalization, and in-depth research opportunities. P7 said that *"... qualitative research methods seem to be more like a research paradigm in which a social scientist can*

touch people [...] for example, communication between us can open a different door in the interview, as we do with you now."

Three novice researchers preferred the mixed methods for the requirements of interpretation of quantitative data and because it is proper to research problems. P4 said that *"Sometimes I find the answers to my questions in one paradigm, while I can find the answers in the other paradigm. But I do not want to reduce the study to only qualitative and quantitative methods; mixed-method studies in which both methods are used together satisfy me more."*

Participants set out from different sources and considered different points while defining the research problem. Accordingly, the participants mostly create the research problems according to personal interests (f:6), needs of society (f:4), literature review (f:4), observations (f:3), and current situation analysis (f:2). In addition, a participant decided the research problem according to the congress themes, while another participant preferred to discuss it with her colleagues while defining the problem.

Individual interests played a critical role in defining the research problem. P7 said, *"My priority is to start with something that touches me. [...] Almost all of the research I have done so far is research that has happened or been affected by something in my life."* P2 stated that, "I created research problems that arise in daily life, that is, the needs of society." She stated that she considers the needs of society in her words.

While defining the research problem, participants took into account the related literature. Accordingly, the participants tend to find different topics (f:3), consider the effect size (f:1), and base their decisions on the related literature (f:1). P10 expressed his views on this issue as follows: *"What could be the problem? How can I reveal different aspects? [...] I focused on the missing aspects of literature."*

Research Practices and Applications

The participants' practices and applications while doing research, such as selecting the study group/sample, data collection, data analysis, validity-reliability, and ethics were revealed in interviews.

Table 2. Participants' considerations in research process

Research Process	Practices and Applications
Sampling	Convenience sampling Alignment with the research problem Considering the diversity Literature support
Data Collection	Researcher participation Data loss prevention The nature of the data collection tool
Data Analysis	Using analysis software Getting expert support Preparing data for analysis Choosing a well-known the data analysis method
Validity-Reliability	Expert judgement Reliability coefficient calculation Intercoder agreement Content validity Member checking Conducting a pilot study
Ethical Concerns	Informed consent Voluntary Participation Anonymity Avoiding plagiarism Avoiding data manipulation Request permission for measurements

The novice researchers consider convenience sampling, alignment with the problem, providing diversity, and literature support while selecting the study group or sample in their research. P8 stated that she frequently works with a convenient sampling while determining the study group; *"To be honest, I usually work with students in my department. Therefore, I worked with an easily accessible sample. However, since I do not want to call it 'easily accessible', I specify it as 'purposive sampling' or 'criterion sampling methods'."* Although she wrote that she used different sample determination strategies in her research, she stated that he worked with convenience samples. The study group/sample selection strategies that these researchers frequently prefer are convenience sampling (f:6), purposeful sampling (f:4), maximum diversity sampling (f:2), random sampling (f:2), and cluster sampling (f:1).

In the data collection process, the participation of the researcher, data loss prevention, and the nature of the data collection tool were considered. P2 said that *"I usually set up a face to face interview. I also apply the quantitative scales to the participants by myself. A few times I tried to distribute surveys but I did not get good results."* P2 preferred to be involved in the data collection process in person. In addition, the participants stated that they take measures to prevent data loss. P3 said that *"As soon as I take a questionnaire that I give to a parent or teacher, I check the form to see if it is all coded or not, then I ask them to fill it out completely because it is difficult to find them later."*

Participants used a wide variety of data analysis techniques according to the research methodology. While content analysis (f: 7) and descriptive analysis (f: 2) are often preferred in qualitative research, t-test (f: 5), ANOVA (f: 4), and regression analysis (f: 4) are preferred in quantitative research method. In addition, in the process of data analysis, novice researchers preferred to use the software in analysis, get expert support, prepare the data for analysis, and choose a well-known data analysis method. P4 expressed the advantages of using software programs in the analysis process as; *"There are programs such as MAXQDA, NVIVO [...] but I usually prefer NVIVO in analysis. Because it's time-saving and provides data and findings holistically, the software offers many opportunities, so I prefer to use it."* P8 preferred to get expert support in the data analysis process, stated that *"Sometimes there are such variables that you can make decisions very easily, but sometimes I cannot get out of it. Therefore, I ask my advisor's opinion because he is an expert on measuring and evaluation."* P10 stated that she preferred the analysis method she had already known as: *"In the analysis process, I consider collecting suitable data suitable for the analysis method that I have known."*

Novice researchers also ensure the reliability and validity of data collection tools. They preferred; expert judgement, reliability coefficient calculation (KR20, KR21, and Cronbach Alpha), determining the content validity rates, member checking, and conducting a pilot study. In both research methods, it was determined that the researchers chose expert judgement about the measurements. P5 said that *"I get the expert judgement before I conduct a pilot study. I consider the recommendations and rearrange the interview questions. Then I request a second expert judgement process."* All researchers working in quantitative method prefer to calculate the reliability coefficients of data collection tools. P1 expressed that, *"After I decided on the data collection tool, I applied a sufficient number of sample and conducted the Cronbach Alpha reliability analysis on SPSS."* Researchers preferred the qualitative method applied to the intercoder agreement in the analysis process. Besides, content validity, member checking, and pilot study were used to increase the validity and reliability of the research.

The participants also have ethical considerations while researching. They care about receiving informed consent, voluntary participation, anonymity of participants, avoiding plagiarism and requesting permission for measurements. P4 mentioned that *"I care about voluntary participation. The participants are not included in the study by force or having anxiety, It is not ethical."* P7 said that; *"I try to be ethical when I cite references during the reporting phase. I paraphrase the sentences of the original references and cite them in-text. I also try to be objective in findings, I do not manipulate the data. I am concerned about ethics."* "as their own words P4 and P7 express their ethical concerns while doing research.

Research Skill Competencies

When novice researchers are asked to evaluate themselves for research competence, three themes emerge that show a need for improvement; research planning, methodology, and reporting of research. Related categories for each theme are shown in Table 3 below.

Table 3. The participants need for improvement regarding the research process

Improvement Needed in	Categories
Planning a Research	Selecting the research method Determining the research topic
Methodology of Research	Data analysis Validity-reliability Using software in data analysis Selecting the data collection tool Reaching to the sample
Reporting of Research	Writing the introduction Writing the discussion Using references Publishing

Novice researchers frequently stated that they needed improvement in the methodology of research and reporting. P3 stated that she had difficulty selecting the method while planning, as, *"I think that the method and findings titles are the most difficult parts in the writing process [...]. It is due to both my lack of knowledge of qualitative analysis and the scarcity of courses and research examples for qualitative research. Also, I could not get support from professors."*

Participants often stated that they felt incompetent in the analysis. P2 said; "I don't feel good enough in quantitative research. [...] Actually, it is impossible to memorize all the techniques or analysis methods, but I need to learn more about quantitative analysis." P11 expressed that she should improve herself using software in data analysis; "For data analysis, I want to use statistical methods, but I can't use them most of the time. Because I feel inadequate. That's why I want to improve the statistics."

Another need for improvement stated by participants was to write the discussion part in the reporting of research. P2 mentioned that *"The most difficult part of reporting is the discussion. I want to express my thoughts freely. [...] But I try to create a discussion according to the rules of scientific research. It is difficult for me to do it."*

P1 also said, *"I feel lacking in some aspects of scientific research, mostly in the literature part. I find it challenging to write a literature review."* Similarly, P4 stated that *"Maybe I can get support in terms of finding the right keywords more directly and more purposefully to make a more accurate search for the literature review. Because it wastes time."*

DISCUSSION

The participants of this study preferred to use both qualitative and quantitative methods, as well as mixed methods. According to Mills and Gay (2018), the philosophical assumptions that form the basis of an educational researcher's decision to conduct research are shaped by these three: the nature of reality (ontology), the quantitative or qualitative methods they use to study a particular phenomenon (methodology), and how researchers know what they know (epistemology). In this study, there are different reasons for the method preferences of NRs'. For these reasons, being directed to quantitative research in graduate education processes is remarkable. The lecturers trained in the positivist paradigm may have led novice researchers to quantitative research. Advisors have academic and social effects on postgraduate students. In their longitudinal study of seven years, Saudelli and Niemczyk (2020) concluded that the mentoring relationship between a graduate student and a

professor affects future career behaviours. In addition, although qualitative research is widely used in educational research today, it is controversial to direct researchers to quantitative research in graduate education. Also, it is noteworthy that each participant chooses one method. In other words, researchers prefer either qualitative research, quantitative research, or mixed research. The reason can be associated with the adopted paradigm. Another remarkable point is the possibility that the researchers act according to the paradigm they have adopted. Although researchers are sometimes unaware of their assumptions about the nature of knowledge and reality, every research is shaped by a high-level theory, and the task of a researcher is to determine which philosophical and theoretical perspective will form the basis of the study they aim to conduct (Glesne, 2013). When determining the method of research, the nature and quality of the planned research should be taken into consideration. Although it is not quick and easy for novice researchers to recognize and express their disposition towards doing research, it is crucial to determine the researcher's identity. Furthermore, novice researchers should be aware that their position towards research may change over time (Holmes, 2020). The researcher's identity may change and develop over time.

Novice researchers who preferred quantitative research also advocated that quantitative research is objective. Considering that quantitative research emphasizes objectivity, measurement, reliability, and validity (Jean Lee, 1992), it is usual for participants to prefer quantitative research because of their search for objectivity. However, focusing only on objectivity in educational research may be contrary to the nature of the social sciences. Social science is a field that includes subjectivity by its nature (Giddens, 1986), and it is mentioned that the search for objectivity derived from the natural sciences may be inadequate for the social sciences (Jean Lee, 1992).

The most challenging but crucial step of a doctoral dissertation is writing the problem statement of the research (Kerlinger & Howard, 2000). Writing the research problem is the first step in writing a dissertation, and doctoral PhD students have difficulty in this process. However, the success of the thesis depends on a well-stated research problem (Ali & Pandya, 2021). Writing the problem statement of the research correctly and choosing the related literature for the problem are essential. Individual interests come to the fore in determining research problems. As well as individual interests, the needs of society, literature reviews, observations, and current situation analysis are taken into consideration. There is no single strategy to identify the research problem. Besides, many resources can be used in defining the research problem, such as the researcher's interests and practices (McMillan, 2004). Toptaş, Şahin-Kürşad & Çokluk-Bökeoğlu (2018) discovered that novice educational researchers struggled to identify problems because they preferred topics that were original, relevant, and exciting. According to Willison & O'Regan (2007), research is driven by a desire to learn more about how things work and what they could do. It does not require any specific skills but it does require a sense of curiosity. According to Brindley (1991), the researchers investigated the problems they faced in their own experiences. Toptaş, Şahin-Kürşad, and Çokluk-Bökeoğlu (2018) found that while researchers frequently benefit from the literature, experts, and the field of practice when defining research problems, academic conferences and social media benefit them less. McMillan (2004) stated that books and journals are the main resources and asking an expert's advice to recognise contemporary problems is crucial for many researchers. In our study novice researchers also mentioned the same resources in the literature. The research findings and the literature revealed that the researcher's interests, experiences, observations, and literature reviews were important in determining the research problem.

The novice researchers prefer the convenience sampling method, this finding is dramatic. The appropriateness of the research sample to the research problem is essential (McMillan, 2004). Sampling has a significant impact on the quality of research results. In quantitative research, sampling affects the reliability and generalizability of the results (Morse, 1991), and in qualitative research, purposive sampling enables exploration of the research questions (Creswell, 2009). Selecting the sampling methods as convenient sampling may cause problems regarding the validity, generalization, and competence of the research. Merriam and Tisdell (2015) state that although convenient sampling offers some opportunities, it can limit creativity and depth of information. Time and budget are also important factors in the sampling of the study (Baştürk & Taştepe, 2013). Therefore, the reason for

preferring convenience sampling may be the time and budget constraints. Additionally, novice researchers also pay attention to the issues related to the research problem, ensuring diversity and literature. Research objectives and the nature of the research are important factors in sampling (Morse, 2000). Usually, novice researchers take the research problem into account in sampling.

In the data analysis process, the participants considered using analysis software, receiving expert support, preparing the data for analysis, and choosing a well-known data analysis method. Using computer software in the analysis is a necessity in today's technology age. Scientists are increasingly incorporating technological developments and devices directly into research and educational research (Towns, Cockerill, Dahan, Foster, Gaither, Grimshaw, et al., 2014). Computerized data analysis in research can provide speed, consistency, and accuracy to the researchers (Weitzmann, 1999). Therefore, novice researchers prefer to use analysis software. They also receive expert support in data analysis indicating that novice researchers require guidance in analysis. It is also noteworthy that the participants chose a well-known data analysis method. Researchers should use the relevant techniques in data analysis (Abulela & Harwell, 2020). Appropriate data analysis is essential for the validity and reliability of the results. However, preferring well-known analysis methods instead of the analysis method that should be used due to the nature of the research may cause problems. The findings point out that the researchers have some inefficiencies in data analysis.

One of the significant results of this study is the research competencies that novice researchers need to develop. Mostly they need help in research methods. Büyükgöze and Gün (2017) stated that graduate students assessed the graduate courses as low quality, with a limited number of research methods courses restricting the research. According to the results found by Karadağ (2010), doctoral dissertations in education have some errors in the research designs that were not appropriate for the purposes, were inappropriately named, and were not described. In our study, novice researchers have similar problems with the research method and are required to develop research skills, as well as the planning and reporting processes of the research. Brindley (1991), found that researchers had problems with focusing on the research problem in a limited and precise way, interpreting the findings, planning, time management, quantitative techniques, and academic writing. According to the American Psychological Association (APA) (2009), there are several problems in scientific research design and reporting. The lack of reporting in some statistical methods, various reporting errors, and compliance gaps between the research process and the interpretation of the results are among them. Many studies focus on the nature of and errors made in educational research (Boote & Beile, 2005; Bozan, 2012; Karadağ, 2010; Kennedy, 1997; Onwuegbuzie & Daniel, 2003; Pring, 2001). Therefore, developing the research skills and competencies of novice researchers affects the quality of research.

In conclusion, this study provides an understanding of the novice researchers' research processes. The findings were revealed into three themes: Research method preference, research practices, and research skills competencies of novice researchers. The participants were generally competent in scientific research, but they needed improvements in some stages.

The results and conclusions suggest that novice researchers should be supported in their research skills. To increase the knowledge and skills of novice researchers, research education workshops can be organized. Also, the content of research methods courses in graduate education can be revised. Furthermore, novice researchers can be involved in research project groups that have experienced researchers. This study is limited to eleven novice educational researchers working at one university, to reach a general stance among novice researchers, a comprehensive study can be conducted in different areas.

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Ethical Statement: Participants in this study were volunteers and verbal consent was obtained individually before the study. We ensured that strict adherence to ethical principles, safeguarding participant rights, autonomy, and dignity throughout the research process.

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