

Two Paths to Understanding: The Value of Mixed Research Literacy for Graduate Students

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Abstract

Graduate students are expected to navigate complex research problems requiring both statistical precision and contextual understanding. Developing cross-methodological competence fosters “mixed research literacy,” thereby enabling researchers to align methods with research questions rather than disciplinary norms or personal preferences. This study employed critical content analysis as a qualitative systematic approach to code and categorized textual data collected from 104 graduate students. Findings revealed five central influences on methodological orientations. Results indicate that while students value methodological pluralism, confidence and preference are shaped by prior experiences and perceived competence. These findings underscore the importance of instructional and mentoring practices that support methodological flexibility and research literacy among graduate students to better shape their research orientation and mastery research foundation.

Keywords: mixed methods literacy, research design preferences, methodological flexibility, graduate education.

Introduction

In higher education, understanding and adequate exercising the fundamentals of educational research are a key component of graduate students’ academic experience. In continuation from undergrad, many skills are honed to aid scholars and researcher’s abilities to be successful in their respective fields. Starting from their first semester, graduate students are encouraged to become critical consumers of research. This expectation is rooted in obtaining solid knowledge that consists of both reading and consuming different types of research articles. From here, students are prepared to understand how research is designed, implemented, and disseminated.

At the center of student’s preferences, a commonality emerges and that ultimately culminates in a desire to expand one’s knowledge on a given topic. In doing so, students face a series of assignments and expectations stemming from their graduate major (e.g., psychology, nursing, engineering), required curriculum, and professors’ recommendations. While completing these assignments, a common practice known as “discussion boards” becomes prevalent in the matriculation of an individual’s degree. For reference, discussion boards, especially for online courses, are a vital component of a graduate’s education. This assignment fosters student engagement, understanding, critical thinking and is essential to recognizing how they shape the overall graduate learning experience [1].

In the field of education, the rationale for conducting a research study or the methodology the researcher elects to use is heavily weighted. There are three primary sources in which researchers conduct and later review scholarly work. Those methods include quantitative, qualitative, and mixed methods. These research designs differ in their approach to data (collection and analysis) and overall research goals. Broadly, qualitative research uses non-numerical data for deep insights. This includes case studies,

focus groups, ethnography, and phenomenology. Quantitative research uses numerical data for statistical analysis and generalizability. This method commonly employs surveys and utilizes analytical software such as R or Python. Lastly, mixed-methods research combines both, quantitative and qualitative practices, to provide a more comprehensive and holistic understanding of the phenomenon being studied [2].

Given the options for methodological practices, there are many benefits to graduate students from reading both types. Each of these research methods provides a different lens for understanding complex issues. By engaging with both research types, graduate students develop a well-rounded understanding of how research is conducted in their perspective fields. Additional benefits include enhancing critical thinking functions and the ability to design more comprehensive studies that combine both approaches, when appropriate. This paper aimed to determine graduate students’ rationale for believing they need to read both quantitative and qualitative research, as well as their opinions on which research methods they personally prefer.

Literature Review

Graduate education aims to develop scholars capable of critically evaluating and producing research across methodological traditions. This often prepares graduates for employment in higher education and the research sector. However, many students tend to approach research through either narrow disciplinary lenses or under their supervisors’ guidance, leading to prolonged periods of actively engaging in methodological practices not preferred. In most cases, once these preferences develop it becomes difficult to navigate from. While individual methodological preferences are expected, competency in both quantitative and qualitative methods remains a standard of academic rigor. Exposure to multiple methodologies fosters analytical flexibility and demonstrates how methodological pluralism strengthens inquiry [2].

Quantitative research offers statistical generalizability and predictive power. Whereas qualitative research provides insight into contextual meaning and lived experiences. Fluency in both allows graduate students to design studies that address complex, real-world questions rather than constraining research questions to familiar tools [2]. Despite these expectations, the literature provides limited empirical insight into how students develop confidence in or preferences for research methodologies during their academic training (graduate school). The literature on graduate student learning, research socialization, and employability preparation reveals recurring themes related to skill development, confidence, and institutional influence. Bussell et al. (2017) [3] investigated the research needs and learning preferences of graduate students at a large public university using a sequential exploratory mixed-methods design. An initial qualitative phase informed the reader of a subsequent quantitative survey, providing a nuanced understanding of student experiences. The study found significant differences between master's and doctoral students. Also, a primary discrepancy existed among on-campus and online learners, in regards to confidence in various research skills. Students generally preferred asynchronous online learning and in-person workshops over synchronous online sessions and in-class presentations.

Notably, preferences for in-person workshops were associated with a preference for qualitative research methods. Bussell et al. (2017) [3] concluded that sequential exploratory designs offer institution-specific insights and can inform tailored research support strategies for diverse graduate learning contexts. While these findings contribute valuable insight into students' research-learning preferences, much of the existing literature relies on cross-sectional or institution-specific studies. This significantly limits understanding of how methodological preferences evolve over time or across academic contexts. Offering additional literature to expand this knowledge has positive implications for institutions, educators, and future academic scholars, alike.

Beyond skill acquisition, methodological and epistemological development are influenced by socialization processes. Cilesiz and Greckhamer (2022) [4] examined doctoral students' reflections on a qualitative methods course introducing alternative research paradigms. Utilizing methodological bridge to include combining thematic, discourse, and narrative analyses, the study highlighted how institutional, disciplinary, and personal factors shape methodological preferences and researcher identity. The authors emphasized reflexivity and identity work as critical components of methodological socialization. Arguing that fostering paradigmatic and methodological plurality is essential in qualitative research training. These findings align with broader concerns that increasing standardization in research approaches may inadvertently constrain methodological diversity. However, relatively few studies examine identity-related or sociocultural factors (family structures, education levels, and language). These factors also include professional aspirations and career trajectories, which help shape students' openness to methodological approaches.

Undergraduate research preparation and employability also intersect with methodological competence. Tandika and Ndijuye (2022) [5] explored students' awareness of employer-valued competencies and perceptions of university preparation

for the labor market. The study revealed that students often overemphasize academic qualifications while undervaluing soft skills such as communication, teamwork, and adaptability. Employers consistently prioritize soft skills, especially in the hiring process. Participants acknowledged the university's role in developing employability. However, they expressed concerns about competitiveness and confidence, highlighting the need for higher education to integrate both cognitive and noncognitive skill development to prepare graduates for diverse professional demands. Although studies such as this emphasize the importance of broader skill development, research on methodological preparation remains concentrated. This concentration relies primarily in the social sciences and education, with comparatively limited attention to disciplinary variation across other academic or professional fields.

Recent literature (2015–2025) identifies several factors influencing methodological preferences and suggests interventions to promote balanced methodological literacy. Five themes emerge across this body of research to include statistics; (1) anxiety and quantitative avoidance; (2) supervisory and disciplinary influences; (3) appreciation for mixed-methods; (4) pragmatic constraints and decision-making; and (5) effective curricular interventions. Statistical anxiety, for example, can limit engagement with quantitative methods, while disciplinary norms and supervisor guidance often shape methodological choices. Students who understand the value of mixed-methods approaches demonstrate greater research flexibility. However, practical constraints such as time, resources, and access to mentorship frequently influence study design decisions. Curricular strategies, including scaffolded exposure to diverse methods, workshops, and experiential learning opportunities, can alleviate methodological anxiety, promote confidence, and strengthen researcher identity. Despite these insights, the literature provides a limited integrative understanding of how cognitive, social, and institutional factors collectively shape students' methodological preferences and confidence.

Statistics Anxiety and Quantitative Avoidance

Numerical data, specifically statistics, has continually been regarded as a source of anxiety among college students. However, one of the strongest predictors of method preference is students' emotional relationships with statistics. The presence of numbers in research not only serves a valuable purpose but also increases a consumer's ability to understand the information. Dani and Al Quraan (2023) [6] surveyed research students across social science programs (e.g., anthropology, history, & sociology) found that many equated quantitative works with complex statistical computation rather than conceptual reasoning. An interesting anecdote is that this study used social sciences rather than hard sciences (e.g. chemistry, physics, biology, etc.) or humanities. This raises the question if students' relationship with statistics is rooted more in their self-efficacy or in their proximity to the matter based on education and career trajectory.

This finding was supported by empirical research (survey & qualitative open responses) examining how graduate students' attitudes and understandings of statistics shape their choice of quantitative versus qualitative approaches. It directly documents avoidance of quantitative methods among many social-science students and links that avoidance to limited statistical confidence, evidence central to the "statistics anxiety - method choice" claim. Similarly, in this study, students who reported

higher statistics anxiety also mentioned they were significantly less likely to select quantitative or mixed methods of designs for their theses and/or dissertations.

Further exploration revealed the department's graduation statistics for master's and doctoral candidates confirmed this. This aversion stemmed from low self-efficacy and inadequate prior training. The authors concluded that negative affect, rather than philosophical opposition, largely drives avoidance of quantitative methods [6].

Zangger (2024) [7] used a discrete-choice experiment to investigate what course features might encourage enrollment in quantitative-methods classes. The utilization of a discrete-choice experimental design was done to quantify what features of quantitative-methods courses students prefer (e.g., hands-on assessment, schedule, credit load). This adds causal evidence on course attributes that increase students' willingness to enroll in quantitative instruction, which is practical for designing interventions to reduce avoidance.

Additional research revealed that this practice is commonly utilized, especially in the United States, to bolster interest and enrollment within quantitative-heavy fields (e.g., engineering and mathematics). Students preferred applied, hands-on instruction with clear assessment criteria and practical data tasks over abstract statistical theory [7]. These findings indicate that anxiety and avoidance can be mitigated through pedagogical design. Specifically, those emphasizing application and relevance rather than formula memorization. Addressing these affective barriers is critical to expanding students' methodological range.

Supervisory and Disciplinary Influences

While a student's personal attitude is a major factor in their preferences and overall self-efficacy, beyond this, supervisory relationships and departmental cultures shape graduate students' methodological orientations. Hewlett and Werbeloff (2023) [8] observed that postgraduate public-management programs often mirror the methodological biases of their teaching staff. Their article reports on a curriculum/intervention in which qualitative and quantitative instructors co-designed courses to help public management postgraduates appreciate mixed methods. Useful evidence on how program and teaching design can change student perceptions and increase willingness to adopt mixed approaches. While this is true for this article, it raises questions for other departments, programs, and institutions.

When faculty primarily identify with qualitative paradigms, students rarely encounter quantitative exemplars and vice versa [8]. One could argue that this strips a student of their autonomy to expand their preferred interest's skill sets. Students exposed to instructors who collaborated across paradigms reported greater appreciation for methodological complementarity. These students were also more willing to employ mixed approaches in capstone projects, later in their academic journey. This information was interesting, given the number of applicable studies that use either qualitative or quantitative methods, rather than a mixed-methods design. A significant reason for this may include the idea held by students, potentially stemming from their advisory staff, that mixed methods are time-consuming and financially costly for both the students and the institution/department.

Disciplinary traditions also reinforce certain preferences. For example, fields such as psychology and economics favor statistical generalization (e.g., quantitative). Whereas education and sociology often emphasize interpretive inquiry (e.g., qualitative). These engraved norms can lead students to equate methodological identity with disciplinary belonging. While furthering one's skills in the preferred methodology of their field or career enhances their viability as a scholar and employee, there are drawbacks. These include discouraging exploration beyond accepted conventions. Encouraging supervisors to discuss methodological "fit" relative to research questions, rather than defending paradigmatic loyalty, can counteract this effect [8].

Appreciation for Mixed Methods

Mixed-methodological design is practical and useful across various disciplines but is often overlooked by graduate students. Evidence suggests that once students encounter mixed-methods research, they value its integrative strengths. McKim (2017) [2] conducted an experimental study comparing graduate students' evaluations of qualitative-only, quantitative-only, and mixed-methods research excerpts. The study experimentally shows that students rate mixed-methods passages as more valuable than single-method passages. It goes in to explain how the use of focus groups, common in qualitative, aids in detailing why a key source supports the increasing appreciation of mixed methods among students. Across cohorts, students rated mixed-methods papers as more informative and credible. Therefore, perceiving them as uniting the strengths of both paradigms. Focus-group discussions revealed that students appreciated how multiple data sources provided richer interpretations and triangulated evidence.

Speer et al. (2022) [9] focused on faculty development. This open-access mixed-methods evaluation shows how experiential learning and integrated instruction (quantitative and qualitative elements) change participants' attitudes and self-efficacy. It is used here as evidence that hands-on, integrated training improves appreciation and uptake of methods (including mixed methods) an analog for graduate training interventions [9]. Hewlett and Werbeloff's (2023) [8] co-taught course and Speer et al.'s (2022) [9] mixed-methods faculty development study both reinforce that active, experiential exposure, rather than theoretical lectures, drives appreciation. Participants who engage in designing or analyzing data through both lenses reported improved confidence and a greater sense of methodological complementarity. These findings align with constructivist learning theory, which holds that understanding deepens through doing rather than merely reading.

Pragmatic Constraints and Decision-Making

Pragmatic constraints shape research-design choices, regardless of whether attitudes are favorable. Graduate projects are bound by time, funding, and access to participants or datasets. Each of these factors contributes immensely to the overall success of the student, as well as the preferred choices they will keep henceforth. For example, qualitative studies may appear more feasible for small-scale dissertations requiring limited resources. Whereas quantitative work often demands larger samples and advanced software. Additionally, qualitative research may be time-consuming and costly, while quantitative research is limited in depth of information but easier to disseminate. Zangger (2024) [7] found that students weigh such logistical factors heavily when selecting methods.

Furthermore, institutional infrastructure can significantly restrict options. This is heavily dependent on the country of practice and its research governance policies. Programs lacking statistical software licenses or transcription support implicitly steer students toward methods compatible with available tools. Often resulting in students becoming familiar or preferencing methods that are not their chosen. Also, institutions that are severely restricted by donor requirements for research or by the limited availability of faculty with expertise in various methodologies are major hindrances. Addressing these material barriers is therefore essential to achieving genuine methodological choice. Providing institutional access to analytic resources and ensuring equitable supervision across paradigms are practical steps toward methodological inclusivity.

Effective Curricular Interventions

The reviewed literature converges on several evidence-based interventions that assist in promoting balanced research literacy. As a result, four interventions have been identified: (1) integrated mixed-methods courses, (2) applied quantitative training, (3) experimental learning and (4) research projects, and mentoring and modeling. As is the case in most research, a key goal is to identify existing problems and address them in ways that advance the field and the scope of study. The following will provide a more detailed account of each intervention.

The first intervention, integrated mixed-methods courses, was derived from Howlett and Werbeloff's (2023) [8] article. Hewlett and Werbeloff (2023) [8] demonstrated that combining quantitative and qualitative instruction within the same course fosters understanding of how methods complement each other. Co-teaching by instructors from different paradigms also models intellectual collaboration needed for future scholars. Dani and Al Quraan (2023) [6] and Zangger (2024) [7] highlight that context-rich, applied statistics teaching reduces anxiety and builds confidence. Embedding data analysis in authentic research scenarios helps students see quantitative tools as meaningful rather than mechanical. This speaks to the second intervention, applied quantitative training.

The third intervention, experiential learning and research projects, is critical to Speer et al.'s (2022) [9] article. Speer et al. (2022) found that participants in experiential courses integrating both numerical and narrative analyses reported higher methodological self-efficacy. Experiential design thus converts abstract methodological concepts into tangible practice. Lastly, the fourth and final intervention, mentorship and modeling, entails supervisors who value methodological pluralism and discuss research-design logic. Rather than their own preference and thereby encourages students to make principled, question-driven choices. Institutional departments can reinforce this through seminars showcasing diverse research exemplars. When combined, these strategies promote "mixed research literacy", the ability to critically interpret and appropriately select among diverse methodological approaches.

In conclusion, graduate and undergraduate education must deliberately cultivate methodological pluralism, reflective practice, and holistic skill development to prepare students for academic and professional challenges. Developing competency across methodological traditions equips students to critically evaluate research, address complex questions, and engage meaningfully with diverse scholarly and professional communities. However, important gaps remain in understanding how students develop methodological confidence, how identity

and institutional contexts influence methodological preferences, and how educational experiences shape these processes. Addressing these gaps is essential for informing instructional practices that better support students' research development and methodological literacy.

Methodology

Research Design

This study employed a qualitative critical content analysis research design [10,11,12] to explore graduate students' perceptions, preferences and confidence levels regarding conducting qualitative, quantitative, and mixed-methods research by answering the following research questions: (1) How do graduate students describe their confidence level with qualitative, quantitative, and mixed-methods research? (2) What themes emerge regarding preferences for one research methodology over another? and (3) How do academic experiences shape students' methodological identities and confidence? A combination of conceptual analysis and relational analysis was employed to analyze the collected data. According to Hsieh & Shannon, (2005), the frequency and existence of concepts, specifically in a text, are determined by a conceptual analysis. However, conceptual analysis is developed by relational analysis and is done so by examining the relationships existing among concepts in a text. Both conceptual and relational analysis possibly lead to different aspect of a research study including results, conclusions, interpretations, and meanings Hsieh & Shannon, (2005) [13].

Critical analysis and interpretive approaches guided the inquiry, recognizing that research method preferences for graduate students are pedagogically constructed through academic experiences, disciplinary exposure, and identity formation as researchers. Content analysis was selected to gain authentic insight into students' methodological self-perceptions as expressed in naturally occurring academic documents, without researcher influence. In this aspect, even though the data collection is part of a graded class assignment, the researcher labeled this assignment as an informal forum, where students were encouraged to freely express their opinions and share their thoughts without judgement for their content. The grade given to this assignment is only for participation in online discussion forums regardless of the shared content. In this study, critical content analysis examined how power, authority, and institutionalized norms shape students' experiences with different research methodology. It involved questioning the following key components. First, which methodological approaches are privileged. Second, how do these preferences reproduce in coursework and mentoring? Lastly, how such structures influence students' sense of competence or legitimacy as emerging researchers.

Complementing this, interpretive approaches focus on understanding the meanings students assign to their methodological choices and the narratives they construct about confidence, difficulty, or preference. Rather than treating these expressions as objective indicators, interpretive inquiry views them as situated, evolving, and shaped through social interaction [11]. Together, these approaches are essential for the study because they allow for an analysis that goes beyond documenting student preferences to uncovering how those preferences are formed, constrained, and negotiated within the cultural and institutional contexts of their academic programs.

Methodological Orientation

For this study, critical analysis and interpretive approaches were informed by critical theory and constructivism [14,15], understanding of how students articulate their confidence and their preference for research methodologies in their academic contexts. These lenses support an examination of how students' methodological preferences and self-assessments of confidence ideally emerge through socially mediated processes rather than as fixed attributes. The approach emphasizes not only what students say about various research methods, but also how their methodological identities are formed, negotiated, and constrained within their chosen academic majors. By highlighting the academic and institutional contexts in which research training occurs, the researcher examined how students enrolled in a graduate introductory research course articulate their confidence, discomfort, and preferences for specific research methodologies that were covered during the course.

Rationale

In this study, the archival data used were collected over recent years (2021-2025). The data obtained is derived from different sections of a graduate research course taught by the same professor, at a large university in the Southwestern, United States. Specifically, this data was collected as part of a classroom assignment, discussion board, in a very informal setting. Archival documents offer authentic, naturally occurring expressions of students' methodological perceptions without researcher influence, allowing thematic interpretation of meaning. This encourages students to share their opinions and discuss with their peers. The discussion board feature included an option to allow students to comment on each other's initial posts (responses to the instructor's prompt), explaining why they feel that way, and to freely share their opinions without any judgment from the instructor or their peers. This is a common practice implemented at the graduate level, especially in classes where research orientation is the focal point. This will help the instructor gain an initial idea of students' preferences regarding research design, and it will help the instructor direct them in the right direction when it comes to designing their own research papers and future dissertations.

Data Source

Archival Materials

The use of archival materials was instrumental in conducting this research. These materials are produced by an instructor, teaching various sections of the same online research course at the graduate level, within the College of Education. The data spanned various semesters, including Fall, Spring, and Summer, from academic years 2021-2025. All participant responses are from enrolled graduate students. The materials are reflections on a prompt given during a discussion post assignment, and the assignment was graded. However, it is imperative to note that students were strongly encouraged to freely share their opinions, explain why they hold this perception of the research, and be respectful in their responses to peers to may hold a differing viewpoint. Also, the students were instructed to comment on at least one of their peers and share their opinions with each other. Sampling Strategy

Trustworthiness and Rigor

The study ensured research trustworthiness and rigor through multiple strategies embedded in the data analysis process. Collaborative analytic procedures, including peer debriefing and analyst triangulation, allowed multiple researchers to review

coded data and emerging themes, compare interpretations, and address discrepancies [16]. This process strengthened the reliability and consistency of the findings while reducing the influence of individual researcher bias. In addition, the use of reflective analytic memos provided a systematic way to document evolving insights and coding decisions, helping ensure that interpretations remained closely grounded in the data throughout the analysis.

Further rigor was supported through reflexive practices, stable data sources, and careful data management [16]. The use of a reflexive journal allowed the researcher to monitor personal assumptions and maintain awareness of potential biases during the study. Analysis of de-identified archival discussion board data collected across multiple course iterations also provided a consistent dataset within a stable instructional context, strengthening the dependability of the findings. Ethical safeguards, including Institutional Review Board approval, removal of personally identifiable information, anonymized coding, and secure data storage, ensure responsible data handling and protected participant confidentiality, contributing to the overall integrity of the research process.

Results

A combination of conceptual and relational analyses was employed to examine participants' narratives regarding their preferences for academic research designs and their self-confidence in using that design in future research [17]. Conceptual analysis was first used to identify recurring constructs in the dataset. Relational analysis was then conducted to examine how these constructs worked together within and across examined cases.

Conceptual and Relational Analysis

Conceptual analysis involves iterative open and axial coding procedures [18]. Codes were developed inductively and later refined using sensitizing constructs drawn from Albert Bandura's theory of self-efficacy [19]. Four major conceptual categories emerged: Relational analysis examined co-occurrence patterns among the identified conceptual categories. Analysis of the discussion posts revealed several recurring patterns regarding graduate students' perceptions of qualitative, quantitative, and mixed-methods research [13]. Through iterative reading and coding of the text, five primary themes emerged: (a) recognition of the complementary nature of qualitative and quantitative research, (b) preference for mixed-methods approaches, (c) personal methodological preferences shaped by experience and comfort, (d) the perceived importance of methodological literacy for graduate students, and (e) the application of research methodologies in professional practice. These themes reflect how students conceptualize research methodologies and their relevance to academic and professional contexts.

Theme 1: Complementary Nature of Qualitative and Quantitative Research

Participants frequently described qualitative and quantitative research as providing different yet complementary forms of knowledge. Often, participants' responses indicated their direct preference for one method while acknowledging the importance of the other. Quantitative research was commonly associated with measurable data, statistical analysis, and the identification of patterns across larger populations. In contrast, qualitative research was described as offering insight into lived experiences, perspectives, and the contextual meaning behind

phenomena. For example, Student 45 states, “Quantitative research provides measurable outcomes and patterns, while qualitative research offers a deeper understanding of experiences and perspectives.”

Several students emphasized that quantitative research helps explain relationships between variables, whereas qualitative research helps explore the underlying reasons and experiences associated with those relationships. Participants often framed the two approaches as addressing different research questions rather than competing methodological paradigms. Participant 22 noted, “Quantitative research prioritizes statistical analysis and generalizability, whereas qualitative research prioritizes personal experience and description. Both have unique properties that contribute to their value and utility.” This perspective reflects an understanding that complex social and educational issues often require multiple forms of inquiry. By employing multiple forms of inquiry, the researcher is able to generate comprehensive knowledge and a more well-rounded understanding.

Theme 2: Preference for Mixed-Methods Research

A prominent theme across the dataset was a preference for mixed-methods research. Many participants described mixed methods as providing a more complete understanding of research problems by integrating statistical evidence with contextual and experiential insight. Students frequently characterized this approach as offering “the best of both worlds,” as it combines measurable outcomes with narrative explanations. Participant 9 explicitly expresses, “Mixed methods provide the best of both worlds because you can have numerical data as well as personal data, such as interviews.” This expression outlines the nuanced way in which participants view the methodology. For example, students who are interested in the participants lived experiences but struggle with numerical data, are able to conduct meaningful research.

Participants noted that mixed methods design allow researchers to both measure outcomes and understand the experiences that underlie those outcomes. For example, quantitative data might reveal patterns or trends, while qualitative data can provide context and meaning for those patterns. This is confirmed by Participant 32, who revealed, “Combining quantitative data with observations gives a fuller picture of what students need and how we can support them.” This integration was viewed as particularly valuable in fields such as education and counseling, where understanding both outcomes and experiences is essential.

Theme 3: Methodological Preferences Shaped by Experience

Although participants generally recognized the value of multiple research approaches, as expected, many expressed personal preferences for specific methodologies. Prior experiences, disciplinary training, or comfort with particular analytic processes (e.g., thematic coding or Python), often influenced these preferences. For example, Participant 18 states, “I personally am a quantitative person ... I really like the analysis of data and how different variables affect the outcomes.” Whereas Participant 44, reports “I like qualitative because it allows you to view an experience through someone else’s eyes.” These preferences are deeply rooted in an individual’s self-efficacy and can be both beneficial and a hindrance, dependent on the individual’s goals and trajectories. Students who favored qualitative research frequently described an interest in understanding human experiences and

perspectives. Particularly through interviews, observations, or narrative accounts when conducting their studies. These individuals also revealed in their discussion that their chosen fields are counseling, social work, education, etc. The above fields often align with personal relationships with clients and are more easily aligned with qualitative research methods. Others reported a preference for quantitative research due to familiarity with statistical analysis or reliance on data-driven decision-making in professional settings. For example, Participant 67 expresses, “I gravitate more toward quantitative research because statistics and numbers have always been easy to understand for me.” These reflections illustrate how individual academic backgrounds and professional contexts shape methodological orientation.

Theme 4: Importance of Methodological Literacy for Graduate Students

Another recurring theme involved the perceived importance of understanding both qualitative and quantitative research methods as part of graduate education. Participants frequently emphasized that exposure to multiple research approaches helps graduate students become more informed consumers of research and better prepared scholars. With this exposure comes the rudimentary understanding of the rationale and process for conducting both sets of research, as well as a deeper appreciation for both. The following statement was repeatedly made by multiple participants throughout the dataset: “As graduate students, it is important to have exposure to a multitude of information sources.”

Students suggested that engaging with diverse methodological approaches enables them to evaluate research findings critically, understand different forms of evidence, and develop a more comprehensive understanding of issues in their field. For example, Participant 15 reports, “Reading both types of research allow graduate students to become more aware of the different kinds of work done in their field.” While Participant 51 remarks, “Becoming aware of both quantitative and qualitative research practices helps expand grad student’s knowledge and helps them be more employable after graduation.” Many participants framed methodological literacy as an essential component of professional competence, particularly for those who may eventually conduct or apply research in their careers. Here, Participant 30 confirms this ideology by stating, “It is important to read both quantitative and qualitative studies so that we can be more well-rounded researchers.” Overall, the richness of the information derived from the students reflects an intentional understanding of the benefits of being knowledgeable and implementing the use of both quantitative and qualitative methodologies.

Theme 5: Application of Research Methods in Professional Practice

Participants often connect research methodologies to their professional roles, particularly within educational, counseling, and behavioral fields (e.g., clinical/counseling psychology, behavioral neuroscience etc.). Quantitative research was frequently described as useful for measuring outcomes, tracking progress, and identifying patterns that inform decision-making. Regarding education, Participant 22 states, “As a teacher, I rely a lot on quantitative data from students daily to ensure they are understanding the content.”

Qualitative research, in contrast, was seen as valuable for understanding individual experiences, contextual factors, and the perspectives of students, clients, or families. From here,

Participant 74 expresses, “Qualitative research helps explain what is happening in the classroom when numbers alone cannot.” Again, this method specifically has significant potential for fields such as education where the data obtained assists the individual in real time. These statements show how participants viewed research methods not only as academic tools but also as practical resources for professional decision-making. Students noted that relying exclusively on numerical data may overlook important contextual factors, while qualitative insights alone may not provide sufficient evidence for broader conclusions. Consequently, many participants highlighted the importance of integrating both forms of data when addressing complex issues in practice. This perspective underscores the practical relevance of methodological pluralism in professional settings.

Overall, the themes identified in this analysis suggest that graduate students perceive qualitative, quantitative, and mixed-methods research as interconnected approaches. These approaches collectively contribute to a more comprehensive understanding of educational and social phenomena. Participants consistently emphasized the importance of methodological flexibility, recognizing that different research questions may call for distinct strategies.

Discussions

The purpose of this study was to examine graduate students’ perceptions, confidence, and preferences regarding the use of qualitative, quantitative, and mixed-methods research. The findings provide important insight into how methodological understanding is constructed. This construction is obtained through academic experiences, disciplinary norms, and individual self-efficacy beliefs. Overall, the results suggest that while graduate students recognize the value of methodological pluralism, their preferences and confidence levels remain shaped by prior experiences, perceived competence, and institutional influences.

This study contributes to the existing literature by addressing a gap in understanding how graduate students develop methodological confidence and preferences within their academic environments. A large emphasis was placed on those in the initial stages of their graduate programs (e.g., first year). Prior research has heavily relied on cross-sectional approaches that measure attitudes toward research methods. Often, this overlooks the broader social, psychological, and disciplinary factors that influence methodological decision-making. By foregrounding these dimensions, the present study offers a more nuanced account of how graduate students construct methodological orientations through their lived academic experiences.

The findings further underscore the importance of pedagogical and mentoring practices in fostering methodological literacy among emerging scholars. This provides context and future implications for how institutions model future graduate programs. A graduate curriculum that normalizes engagement with both quantitative and qualitative research promotes intellectual flexibility. The promotion of intellectual flexibility is a hallmark of advanced scholarship among academics. By embracing both numbers and narratives, graduate programs can better prepare researchers to align methods with research questions. While maintaining sensitivity to the human contexts from which data emerge.

Interpretation of Key Findings

A central finding of this study is that participants overwhelmingly viewed qualitative and quantitative research as complementary rather than competing approaches. This aligns with prior literature suggesting that students, when exposed to multiple methodologies, develop a more integrative understanding of research [2]. Similarly, Hewlett and Werbeloff (2023) [8] found that students exposed to integrated methodological instruction were more likely to appreciate the complementary nature of qualitative and quantitative approaches. Importantly, this perception reflects a shift away from rigid methodological dichotomies toward a more pragmatic, question-driven orientation. From a constructivist perspective, this suggests that students are actively constructing knowledge about research through exposure and experience. As opposed to adopting fixed epistemological positions that potentially have negative associations in future research employment.

Closely related, the strong preference for mixed-methods research indicates that students value comprehensive approaches. This approach is appreciated for its integration of numerical and experiential data. This finding reinforces existing research demonstrating that exposure to mixed-methods designs enhances perceptions of credibility and usefulness [2,9]. However, while students expressed appreciation for mixed methods, the literature and present findings suggest that this preference may not always translate into practice. This is due to perceived complexity, time constraints, and limited training associated. This contrasts somewhat with intervention-based studies [8,9], which suggest that structured exposure can increase methodological confidence. The present study refines this understanding by demonstrating that appreciation for mixed methods may coexist with uneven methodological self-efficacy, highlighting a gap between conceptual endorsement and practical application.

An additional important finding is that methodological preferences are deeply shaped by experience and comfort, which supports Bandura’s (1997) [19] concept of self-efficacy. Students who reported confidence in statistics gravitated toward quantitative approaches. A stark departure from those who are more comfortable with narrative and human-centered inquiry preferred qualitative methods. This finding is consistent with Dani and Al Quraan (2023) [6], who found that negative perceptions of statistics often lead students to avoid quantitative research. Similarly, Zangger (2024) demonstrated that students’ willingness to engage in quantitative coursework is influenced by how accessible and applied the instruction is perceived to be. Together, these findings underscore that methodological preference is not solely philosophical but is strongly influenced by perceived competence and affective responses to research training.

The central theme emphasizing the importance of methodological literacy further highlights that students understand the expectations of graduate-level scholarship. Participants recognized that engaging with both qualitative and quantitative research enhances their ability to critically evaluate literature. The emergence of this skillset provides a unique opportunity for future scholars to design, evaluate, and execute future literary works. Also, there exists an increased chance of functioning effectively as scholars and professionals. This aligns with Bussell et al. (2017) [3], who found that graduate students

benefit from diverse research learning formats and exposure to multiple methodological approaches. Additionally, this finding extends prior work by suggesting that students not only value methodological breadth academically. Also, they perceive it as essential for professional competence in their respective, chosen fields. A sentiment echoing broader calls for integrating both cognitive and applied skills in higher education [5].

Finally, the findings demonstrate that students situate research methods within professional practice. Particularly in fields such as education, counseling, and humanities. This applied perspective reflects a pragmatic orientation, where methodological choices are tied to real-world decision-making rather than abstract academic debates. While prior literature has emphasized methodological training within academic contexts [4], the present study expands this perspective by showing how students connect research literacy to professional identity and practice-based decision-making. From a critical perspective, this also suggests that students' methodological identities are shaped not only by academic training but by anticipated professional roles and responsibilities.

Connection to Theoretical Framework

The findings of this study can be understood through both constructivist and critical theoretical lenses. From a constructivist standpoint, students' methodological preferences emerge through ongoing interaction with coursework, instructors, and peers [15]. Their understanding of research is not static but evolves through engagement. Specifically, with different forms of knowledge. From a critical perspective, the findings highlight how institutional and disciplinary structures influence methodological identity. Students' preferences are not formed in isolation but are shaped by what is emphasized, valued, and modeled within their academic environments. This aligns with prior research demonstrating that methodological socialization is influenced by disciplinary norms and faculty guidance [4]. However, the present study extends this work by illustrating how these dynamics are reflected in naturally occurring academic discourse. Rather than solely in structured interviews or course evaluations disseminated by the institution. This reflects broader issues of power, authority, and legitimacy within academic knowledge production [14]. Additionally, Bandura's (1997) [19] concept of self-efficacy is evident throughout the findings. Students' confidence in their ability to understand and apply specific methods directly influenced their preferences. This suggests that increasing methodological competence, as well as confidence, may be key to promoting methodological diversity within the graduate student population.

Contribution to the Literature

This study contributes to the existing literature by providing a qualitative, context-rich examination of how graduate students develop methodological preferences and confidence. While prior research has largely relied on cross-sectional surveys or structured interventions [3,6,9], this study captures the nuanced ways in which students articulate their understanding of research within authentic academic contexts. These nuances, often overlooked, provided significant insights into the inner workings of graduate students thought processes, that have credible implications for their advancement within higher education.

Importantly, the findings extend current knowledge by demonstrating that methodological preference is influenced by self-efficacy and experience. This deviates from the general understanding that epistemological beliefs play a central role. Students can simultaneously value methodological pluralism while still feeling constrained in practice. This confinement often results from their perceived self-efficacy or their mentoring relationship with faculty. Students often absorb their faculty members' preferences and ideologies behind these beliefs when repeatedly working under their supervision and training. This refines existing literature that often assumes that exposure to multiple methods leads directly to methodological integration. Instead, the present findings suggest that structural, affective, and experiential factors continue to mediate this process.

Additionally, the study expands the literature by highlighting the role of professional identity in shaping methodological understanding. While previous studies have focused primarily on academic training, the present findings suggest that students' anticipated professional roles influence how they evaluate and apply research methods. Sometimes students enter a graduate program to advance their current role (e.g., teacher to administrator) or individuals enter a program to start a new career (e.g., education to social work). These fields often employ and maintained a standard of academic rigor [in research] that enables one's skillsets while not honing others. By integrating cognitive, social, and institutional factors, this study offers a more comprehensive and contextually grounded understanding of methodological development in graduate education.

Implications

The findings of this study have several important implications for graduate education and research training. First, institutions should prioritize instructional strategies that promote methodological pluralism while actively addressing barriers associated with methodological anxiety. Specifically, statistics anxiety continues to discourage engagement with quantitative research, as students often associate it with difficulty and low self-efficacy [6]. Instructional approaches that emphasize applied learning, scaffolded support, and real-world data applications have been shown to increase student engagement and confidence in quantitative methods [7]. Incorporating these strategies into graduate curricula may help reduce avoidance and foster greater methodological balance.

Second, faculty mentorship and disciplinary norms play a critical role in shaping students' methodological preferences. Prior research demonstrates that students are often socialized into specific methodological traditions through faculty modeling and program structures [4]. Similarly, exposure to integrated and collaboratively taught methodological coursework has been shown to increase students' appreciation for methodological complementarity and mixed-methods approaches [8,9]. These findings suggest that intentional mentoring practices and cross-paradigmatic instruction can help students move beyond narrow methodological orientations and make more informed, question-driven research decisions.

Third, integrating opportunities for reflexivity and identity development into research. The impact of training may support the development of more adaptable and inclusive researcher identities for future scholars. Methodological preferences are not formed solely through skill acquisition but are shaped

through ongoing identity work, disciplinary expectations, and academic experiences [4]. Encouraging students to critically reflect on their methodological assumptions and experiences may promote greater openness to diverse research approaches.

Finally, institutions should consider how program structures, resource availability, and research training opportunities influence students' methodological learning experiences. Access to methodological resources, including statistical software (e.g., R & Python), qualitative analysis tools (NVivo & MAXQDA), and interdisciplinary coursework, can either expand or constrain students' methodological choices. Prior research highlights the importance of diverse learning formats and research exposure in building methodological competence [3]. Addressing these structural factors may strengthen students' research literacy, enhance their ability to engage with multiple methodologies, and better prepare them for both academic and professional research environments.

Conclusion

Graduate students' research-design preferences arise from the interaction of psychological, social, and structural factors. The findings of this study demonstrate that while statistical anxiety and disciplinary traditions can constrain methodological diversity, targeted instructional and mentoring interventions can broaden students' methodological repertoires. These findings are consistent with prior research indicating that affective responses to statistics [6] and curricular design [7] significantly influence methodological engagement. This study contributes to the literature by extending prior work that has largely relied on cross-sectional surveys and structured interventions [3,9] and offering a context-rich examination of how graduate students articulate their methodological preferences within authentic academic environments. In doing so, it provides a more nuanced understanding of how methodological confidence and identity are shaped through the interplay of experience, self-efficacy, and institutional context.

Importantly, the findings refine existing literature by demonstrating that graduate students can value methodological pluralism while still experiencing uneven confidence across research approaches. This distinction highlights a gap between conceptual appreciation and practical application that has received limited attention in prior research. Additionally, this study expands current understanding by illustrating how methodological literacy is connected not only to academic competence but also to professional identity and practice-based decision-making.

Ultimately, fostering "mixed research literacy" requires more than exposure to multiple methodologies; it requires intentional pedagogical design, supportive mentorship, and institutional structures that promote methodological flexibility. A graduate curriculum that normalizes engagement with both quantitative and qualitative research can cultivate scholars who are equipped to align methods with research questions, integrate diverse forms of evidence, and contribute meaningfully to interdisciplinary and practice-oriented fields.

Conflict of Interest Statement

The authors declare no conflicts of interest.

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