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The Impact of Gender on Postgraduate Students' Research Course Satisfaction, Knowledge and Self-Efficacy

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A B S T R A C T

Males and females have been reported to differ in various competencies. However, little is known about how such gender-based differences manifest in students' research competencies. This study therefore employed a survey to examine the research competencies of Ghanaian postgraduate students from a gender perspective. A sample of sixty-one postgraduates was selected using a census frame. Data were collected through a structured questionnaire and analyzed using mean, standard deviation, and independent sample t-tests. The findings revealed that, in general, male postgraduates demonstrated higher levels of research competencies in terms of their perceived knowledge and self-efficacy. In contrast, females reported a higher level of competence only in their satisfaction with research methodology courses taken. However, there was no statistically significant difference between male and female postgraduates regarding these aspects of research competency. Based on the findings, departments and the UEW Graduate Students' Association of Ghana should continue fostering an inclusive research environment that supports the diverse needs and backgrounds of postgraduate students.

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INTRODUCTION

Countries all over the world are making discoveries, inventions, and creating new knowledge through their research findings. Research has been recognized as crucial for shaping educational policies, improving teaching practices, and enhancing student outcomes (Elliot, 2020). Like many other countries, Ghana places strong emphasis on research because higher education is mostly research-driven. It is for this reason that Baidoo and Tetteh (2024) argue that no country can experience major development by undermining the efficacy of high-quality research endeavors.

Research methodology courses have therefore been integrated into the curricula of most tertiary levels of education. According to Gupta (2017), incorporating research-based learning in higher education ensures that students transition from being knowledge consumers to becoming knowledge producers through active engagement in learning and research. Additionally, these programs teach transferable skills and competencies (Limon & Durnalı, 2018).

It is therefore surprising that a field as essential as research has now become the bane of many students. Azmi and Daud (2019) found that many students had extended study periods due to their poor knowledge of research. Daniel (2023) similarly reported challenges students faced with their research methodology courses, impacting their overall competencies to apply this knowledge to conduct high-quality research (Smith & Rallis, 2019). Similarly, Okwilagwe (2022) found that many young academic members and teachers still struggle with key aspects of scientific research skills, such as the selection of research methods, field data collection, and analyzing statistics, as well as synthesizing findings and reports. Kaur et al. (2021), as well as Mohamed et al. (2017), attribute these challenges to factors such as unpreparedness, poor institutional support and supervision quality, financial constraints, and lack of resources and services.

Studies have also reported gender-based variations in postgraduate students' knowledge and self-efficacy (Huang, 2013; Okwilagwe, 2022; Azeta & Van-der-Merwe, 2018). While Huang (2013) and Okwilagwe (2022) found significant gender differences, Azeta and Van-der-Merwe (2018) reported no such variations.

Within the scope of this study, the researchers took note of concerns voiced by both male and female postgraduate students during faculty-level town hall meetings. The students expressed feelings of dissatisfaction and a lack of adequate preparation for their final-year research projects. These discussions revealed that such challenges were not isolated but rather widespread, especially in the two departments under consideration. This situation called for a closer investigation, as most of the students are practicing teachers whose ability to conduct research is essential for generating new knowledge and developing intervention programs to improve teaching and learning in their classrooms.

Although several studies have examined this problem, most have been conducted outside the Ghanaian context, focusing on areas such as research knowledge, confidence, skills, attitudes, and related challenges (e.g., Chow & Birdwell, 2022). In Ghana, existing research has largely emphasized postgraduates' digital and information literacy skills, as well as program

effectiveness (e.g., Nudzor & Ansah, 2020). Within the specific public university under consideration, previous studies have mainly addressed issues related to learning management systems, technology use, and postgraduate research knowledge and skills, particularly in the context of normality testing (e.g., Dampson, 2020).

In a related study, Baidoo and Tetteh (2024) found that postgraduate students in Ghana generally had low self-efficacy in conducting educational research, although their satisfaction with the research methodology course taken, as well as their perceived knowledge of research, was moderate. However, none of the previous studies, including that of Baidoo and Tetteh, from the accessible literature and to the best of the researcher's knowledge, examined the problem based on gender variations in relation to research methodology course satisfaction, knowledge, and self-efficacy of postgraduates within the context of this particular university.

The scarcity of related research in Ghana, together with the absence of any such investigation within this leading institution known for training outstanding researchers, and the recurring concerns voiced by postgraduate students in certain departments, created the basis for this investigation. The study therefore focused on exploring the influence of gender on postgraduate students' satisfaction with research methodology courses, as well as their perceived knowledge and self-efficacy in undertaking field research.

LITERATURE REVIEW

The study was guided by Albert Bandura's Social Cognitive Theory (1977). Bandura's Self-Efficacy Theory helps to explain how students' beliefs in their own abilities influence their research competencies. For Research Question 1, the theory suggests that students' satisfaction with research methodology courses can affect their confidence in applying research skills, as positive learning experiences strengthen self-efficacy. For Research Question 2, self-efficacy theory indicates that differences in perceived research knowledge between male and female students may reflect variations in their beliefs about their capabilities, influencing how they approach research tasks. For Research Question 3, the theory directly informs the examination of research self-efficacy, helping to explain how confidence in one's research abilities impacts motivation, engagement, and performance in field research activities.

METHODOLOGY

This study followed a quantitative approach. Accordingly, a descriptive survey was used. Through this, questionnaires were distributed to an intact class of 61 postgraduate students in two selected departments. Due to the relatively small number of postgraduate students in these departments, census sampling was employed, which involves collecting data from every member of a population rather than selecting a sample. A structured questionnaire consisting of four sections was used as the data collection instrument. The first section captured three background variables: department, age, and gender. The second section included eight items that sought respondents' views on their level of

satisfaction with the research methodology course they had taken. The third section assessed their perceived research knowledge using 20 items, while the final section measured their self-efficacy in conducting educational research through 25 items. Responses were rated on a four-point Likert scale ranging from 1 (strongly disagree) to 4 (strongly agree). The instrument's validity was ensured through expert review by a senior lecturer in research methodology from the Department of Basic Education, University of Education, Winneba. This process involved examining the clarity, relevance, and alignment of the items with the study's objectives. Additionally, the items for each construct were adapted from established empirical studies (Van-der-Westhuizen, 2014; Al-Yaseen, 2013), which further strengthened content validity. Reliability was assessed using Cronbach's alpha, and the results indicated acceptable levels of internal consistency for all constructs: Course Satisfaction (α = .762), Perceived Knowledge (α = .805), and Self-Efficacy (α = .797). These coefficients exceed the recommended minimum threshold of .70 (Cohen et al., 2018), demonstrating that the instrument was both valid and reliable for measuring the intended constructs. To measure the three constructs, the scales shown in Table 1 were used.

Table 1: Data Analysis and interpretation

Scales	**Level of Course satisfaction**	**Level of Perceived knowledge**	**Level of Self-efficacy**
1.0 – 2.4	Unsatisfied	low	low
2.5 – 3.4	Moderately Satisfied	Moderate	Moderate
3.5 – 4.0	Very Satisfied	High	High

Source: Baidoo and Tetteh (2024)

RESEARCH RESULT

Demographic Data

The demographic characteristics of the respondents included their department, age, and gender, as shown in Table 2.

Table 2: Respondents' Demographic Profile

Variables		**Frequency**	**Percentage (%)**
Department	Department A	37	61
	Department B	24	39
	Total	**61**	**100**
Age Group	20-30 Years	30	49

	31-40 Years	22	36
	41-50 Years	9	15
	Total	**61**	**100**
Gender	Male	25	41
	Female	36	59
	Total	**61**	**100**

Source: Field data (2023)

As shown in Table 2, the study involved 61 postgraduates, with most students (61%) coming from Department A and the remaining 39% from Department B. In terms of age distribution, the largest group was 20–30 years (49%), followed by 31–40 years (36%), while the smallest category was 41–50 years (15%). Regarding gender, females (59%) outnumbered males (41%). These findings suggest that the study mainly reflects the perspectives of younger postgraduate students, making issues of research methodology course satisfaction, knowledge, and self-efficacy particularly relevant to this age group. Furthermore, the results seem to suggest that more females than males are pursuing postgraduate education in the departments studied. This trend indicates a growing interest among females in advancing their education at this level.

Test of Assumptions

Before conducting the t-test, four fundamental assumptions were examined and confirmed. Outliers were identified using stem-and-leaf plots in combination with box-and-whisker plots, while the Shapiro–Wilk test was employed to assess the normality of the data. Levene's test was further conducted to verify the assumption of homogeneity of variances. Since the dependent variable was derived from Likert-scale items, it was treated as a continuous measure at the scale level. These conditions were therefore satisfied, providing justification for the use of the t-test as a parametric procedure. The results of the normality test are presented in Table 3.

Table 3: Tests of Normality and Homogeneity of variance

	Kolmogorov-Smirnov[a]			**Shapiro-Wilk**		
	Statistic	df	Sig.	Statistic	df	Sig.
Course Satisfaction	0.109	61	0.071	0.958	61	0.054
Perceived Knowledge	0.121	61	0.056	0.973	61	0.193
Self-efficacy	0.139	61	0.075	0.971	61	0.160

Homogeneity of Variance Levene's Test of Equality of Variance			
	F	**df**	**Sig.**
Course Satisfaction	3.528	59	0.065
Perceived Knowledge	3.888	59	0.053
Self-efficacy	4.223	59	0.074

Source: Field data (2023)

Research Question 1: What differences, if any, exist in the level of research methodology course satisfaction among male and female postgraduate students?

To determine differences in the level of research methodology course satisfaction among male and female postgraduate students, an independent sample t-test was used and the effect size was interpreted using Cohen's d as follows: 0–0.19 (negligible) 0.20–0.49 (small), 0.50–0.79 (medium), and 0.80 and above (large, Cohen, 2013). The results are displayed in Table 4.

Table 4: Gender difference based on research methodology course satisfaction

Gender	**N**	**Mean**	**S. D**	**t**	**df**	**Sig. (2-tailed)**	**Effect Size (Cohen's d)**
Males	25	2.13	0.44	-0.468	59	0.641	0.432
Females	36	2.19	0.43				

Source: Field data (2023)

The data in Table 4 show that males (M = 2.13, SD = 0.44) did not differ significantly from their counterparts, females (M = 2.19, SD = 0.43), in terms of how satisfied they were with the contents and quality of the research methodology course taken as part of their postgraduate studies. The critical p-value (0.641, 2-tailed) was higher than the standard alpha level (0.05, 95% level of confidence), confirming no statistically significant difference. The effect size, Cohen's d = 0.432, suggests a small difference between males and females, although this difference is not statistically significant. This suggests that both males and females felt unsatisfied (M < 2.5) with the research methodology courses taken. It further implies that the research methodology courses did not meet the expectations or needs of the students, regardless of gender. Hence, the researcher once again failed to reject the null hypothesis and concluded that there

is no statistically significant difference in the level of research methodology course satisfaction among male and female postgraduate students.

Research Question 2: What gender-based differences, if any, exist in the level of perceived knowledge of research among postgraduate students?

An independent samples t-test was used for this research question, and the results are summarized in Table 5.

Table 5: Gender difference based on perceived research knowledge

Gender	N	Mean	S. D	t	df	Sig. (2-tailed	Effect Size (Cohen's d)
Males	25	2.63	0.62	1.172	59	0.246	.600
Females	36	2.45	0.59				

Source: Field data (2023)

The t-test results revealed, based on Table 5, that the perceived knowledge of males (M = 2.63, SD = 0.62) was not statistically different from that of females (M = 2.45, SD = 0.59) at t(59) = 1.17, p = .246 (two-tailed). The attained p-value (0.246) was higher than the acceptable value of 0.05 at the 95% level of confidence. This implies that the perceived knowledge gap between male and female postgraduates regarding their readiness for field research is minimal. Though the different mean scores suggest that males perceived their knowledge as moderate (2.5 < M < 3.5) and females perceived theirs as low (M < 2.5), the statistical analysis indicates that this difference is not enough to be considered meaningful. The effect size, Cohen's d = 0.60, suggests a medium difference, with males reporting somewhat higher perceived research knowledge, although this difference was not statistically significant. On this note, the null hypothesis of no gender-based difference is upheld, and a conclusion is drawn that there is no statistically significant gender-based difference in the level of perceived knowledge of research among postgraduate students in the two departments.

Research Question 3: Do male and female postgraduate students differ in terms of their research self-efficacy?

To respond to this research question, an independent samples t-test was used. The results are displayed in Table 6.

Table 6: Gender difference based on research self-efficacy

Gender	N	Mean	S. D	t	df	Sig. (2-tailed	Effect Size (Cohen's d)
Males	25	2.50	0.69	1.048	59	0.299	.599
Females	36	2.34	0.53				

Source: Field data (2023)

In testing for differences between male and female postgraduate students' self-efficacy in research, the t-test results reported no such difference, as shown in Table 6. The self-efficacy of males (M=2.50, SD=0.69) was not statistically different from that of females (M=2.34, SD=0.53) at t(59) = 1.05, p=0.299 (2-tailed, 95% level of confidence). The effect size, Cohen's d = 0.599, indicates a medium difference, suggesting that males reported slightly higher self-efficacy than females, although this difference was not statistically significant. This means that, although the mean scores suggest that male postgraduates had a moderate level of research self-efficacy (2.5<M<3.4) while that of females was low (M<2.5), this difference might be due to random chance rather than a genuine disparity. This further implies that both male and female postgraduates have similar levels of confidence in their ability to apply the knowledge acquired in their research lectures to field research activities.

DISCUSSION

The discussion is presented based on the findings for each of these research questions:

1. What differences, if any, exist in the level of research methodology course satisfaction among male and female postgraduate students?
2. What gender-based differences, if any, exist in the level of perceived knowledge of research among postgraduate students?
3. Do male and female postgraduate students differ in terms of their research self-efficacy?

Based on research question one, the study found that both male and female postgraduate students reported low satisfaction (M<2.5) with the research methodology courses. This indicates that students did not consider these courses, a core component of their postgraduate studies, as fully meeting their research needs. Such findings align with Daniel (2023), who documented widespread dissatisfaction among postgraduate students regarding the relevance and adequacy of research methodology courses. One possible explanation is a lack of alignment between course content and the specific research challenges students encounter in their fields, as students often struggle to apply abstract research methods to practical problems. Drawing on Bandura's Self-Efficacy Theory

(1997), one possible explanation is that students' low confidence in applying research methods may stem from a lack of alignment between course content and the specific challenges they encounter in their respective fields, as students often struggle to translate abstract methods into practical research tasks. Similarly, Rule et al. (2021) observed that research methodology courses are frequently generic and fail to consider the diverse academic disciplines and professional contexts of postgraduate students. According to the theory, low self-efficacy can reduce motivation, persistence, and engagement in learning activities; in this context, the misalignment may hinder students' preparedness for research and contribute to disengagement and feelings of inadequacy. Therefore, it is essential for universities to implement measures that enhance students' mastery experiences, provide guidance through mentoring, and offer opportunities to apply theoretical knowledge in practical research scenarios, thereby improving both competence and confidence in conducting research.

In response to research question two, the perceived knowledge gap between male and female postgraduates regarding their readiness for field research was found to be insignificant, even though males perceived their research knowledge as moderate and females as low. From the perspective of Bandura's Self-Efficacy Theory (1977), this suggests that students' confidence in their ability to conduct research, rather than gender alone, plays a crucial role in shaping their perceived readiness. The finding challenges the traditional view of gender-based disparities in research skills, indicating that both genders are relatively equally prepared despite differences in self-perception. This aligns with recent studies emphasizing that factors such as prior experience, institutional support, and access to research resources significantly influence students' confidence and readiness for research. However, Okwilagwe (2022) reported that male postgraduates exhibited superior knowledge in interpreting research data compared to females, suggesting that gender differences may still exist in specific aspects of research skills, such as data analysis. According to the theory, such discrepancies could arise from differences in students' engagement with various components of the research process, which in turn affects their self-efficacy and perceived competence.

To answer the last research question, the insight gained was that male postgraduate students demonstrated moderate confidence in their research abilities, while females showed low confidence; however, this difference was not statistically significant. From the perspective of Bandura's Self-Efficacy Theory (1997), this suggests that students' belief in their capability to perform research tasks may be influenced more by experience and support than by gender alone. While previous research, such as Huang (2013), identified clear gender differences in self-efficacy across disciplines, with males higher in STEM and females higher in language arts, the current study indicates that such differences may not consistently appear in postgraduate research contexts. This may reflect evolving educational practices and postgraduate training environments where both genders have similar access to resources and opportunities. Nevertheless, the lower confidence observed among female postgraduates aligns with Okwilagwe (2022), who found that males performed better in interpreting

research data. Such disparities may result from systemic challenges, including limited mentorship, biases in supervision, or underrepresentation of women in research-intensive roles, which can undermine confidence. While no statistically significant difference was found, the persistent lower confidence among female students suggests a perception gap that warrants attention. Furthermore, Azeta and Van-der-Merwe (2018) found no significant gender differences in ICT use among students, highlighting the increasing democratization of technological resources. This supports the idea that gender gaps in research confidence may be narrowing as institutional reforms and digital tools become more widely accessible. Yet, the enduring lower confidence among female postgraduates underscores the need for targeted strategies to translate access and opportunity into self-efficacy in research.

CONCLUSIONS AND RECOMMENDATIONS

The study concludes on these notes: First, the findings indicated that both male and female postgraduate students felt unsatisfied ($M<2.5$) with the research methodology courses taken. It is recommended for heads of these Departments to consider a thorough review and enhancement of the research methodology courses and its teaching to better align with students' expectations and academic requirements. The University's GRASAG should also provide additional research seminars as support to help students gain a higher level of satisfaction and perceived value from these courses

Also, the study found no significant difference in the perceived knowledge gap between male and female postgraduates regarding their readiness for field research. Hence, recommendation is made for both gender needs to be given similar levels of research support, training and exposure by their departments to enhance their research knowledge, given that their self-assessed knowledge levels are between low and moderate.

Lastly, it was found that both males and females did not differ significantly in terms of their levels of confidence in their research abilities. This could imply that there is no need for gender-specific strategies aimed at improving research self-efficacy of postgraduate students. As such, it is recommended that any research-based intervention put up by the Departments and the University's GRASAG should be uniformly applied to both genders.

ADVANCED RESEARCH

Since this study used only Master of Philosophy (M.Phil) students, future researchers should consider including Doctor of Philosophy (Ph.D) students to gain a comprehensive understanding of the role of gender in the research competencies of postgraduate students. Similar, this study could be replicated in other Universities in Ghana to see if the same trend of findings manifests in these contexts.

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