

The Relationship between Research Skill and Academic Writing Proficiency at Graduate Level

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ABSTRACT

The main objective of this study was to investigate the relationship between research skills and academic writing proficiency of graduate students at the University of Sargodha. The population of this study was comprised of graduate students studying at the University of Sargodha. The students the Faculty of Social Sciences (Department of Education and Department of Psychology) and the Faculty of Science (Department of Chemistry and Department of Physics) were selected as the target population for this study. For the purposes of this study a sample of 300 BS, B.Ed, MSc and MPhil students was selected using a multi stage convenience sampling technique. The data was collected using an adapted questionnaire on research skills and academic writing proficiency. The data gathered was analyzed using descriptive statistics, Pearson correlation, and multiple regression analysis, using SPSS. The study found that graduate students displayed a moderate level of research skills and academic writing proficiency. Additionally, a strong positive correlation was found between research skills and academic writing proficiency and that specific areas of research skills predicted students' academic writing proficiency.

Keywords: Research Skills, Academic Writing Proficiency

INTRODUCTION

Institutions of higher education are supposed to provide graduates with research skills and knowledge about academic writing. In most cases, graduate students are involved in academic research, and at that, they need to write papers presenting the results of their work. Research skills provide an opportunity to find research problems, study the existing literature, gather and analyze data, and interpret results. In the same way, proficiency in academic writing allows presenting research results. Moreover, both skills are interconnected since research skills contribute to academic writing and insufficient research skills lead to bad writing. Overall, research skills and academic writing competence are essential aspects of postgraduate education (Hyland, 2022; Casanave, 2023; Brew & Mantai, 2017). The concept of research skills covers a set of competencies needed to carry out academic research. Namely, research skills help students identify research problems, study literature, use research methods and designs, gather and analyze data, and interpret results. To sum up, research skills give students a possibility to investigate an academic problem and critically analyze the problem to further human knowledge and develop theories (Creswell & Creswell, 2018; Brew & Mantai, 2023). Additionally, good research skills enable graduate students to critically evaluate the reliability and validity of sources, include different perspectives, and formulate research questions. Moreover,

acquiring research skills is considered an essential component of higher education that promotes autonomy and lifelong learning in graduates (Brew & Mantai, 2017; Levy & Petrulis, 2012).

Academic writing proficiency is a term that refers to students' ability to communicate their ideas clearly and concisely using academic language and rhetorical devices. When academic writing is concerned, students are expected to formulate arguments based on their research, combine and present information in a comprehensive manner, and convey their research results in a precise and organized way. In the same way, writing is an essential skill for graduate students because they need to complete academic assignments in accordance with well-established criteria (Hyland, 2022; Casanave, 2023). On the other hand, academic writing presupposes the application of higher-order cognitive skills, such as critical thinking, analysis of sources, synthesis of information, etc. (Wingate, 2022; Murray, 2021).

There is a close relationship between research skills and academic writing, as indicated in numerous studies. Research and academic writing skills go together as both of them are interdependent and mutually complementary. For example, research skills are important for academic writing because they make it possible for students to do extensive research, compare and contrast different sources, as well as to paraphrase and cite them in their academic papers. To put it differently, students with well-developed research skills are able to organize and present their thoughts with the help of credible information taken from scholarly databases. On the contrary, poor research skills may affect poor academic writing due to a lack of structure and credible information (Casanave, 2023; Wingate, 2022). In fact, research skills often determine writing success because they enable students to analyze literary sources and synthesize information taken from them (Hyland, 2022; Prihandoko, 2024).

Practicing critical thinking skills enables students to evaluate the information they possess, detect what they do not know, and formulate hypotheses. Developing critical analysis and synthesis skills allows students to structure their arguments, review and criticize other scholars' work and formulate evidence-based statements and conclusions. In fact, critical thinking and information literacy are found to be essential components of academic writing (Prihardoko, 2024; Levy & Petrulis, 2012). Teaching research and writing skills becomes a critical part of postgraduate education which is essential to enhancing graduate students' writing skills (Lee, 2021; Wingate, 2012). However, while academic writing is very important, most graduate students experience considerable difficulty with conducting research and writing. The main problems are related to conducting extensive literature review, synthesis of information gathered from various sources, presenting clear argumentation and proper citation according to academic requirements. The lack of training in research skills, help with writing and overall academic writing advice results in the high level of these writing problems among graduate students (Casanave, 2023; Murray, 2021). Last but not least, the vast majority of international students and novice graduate students experience additional difficulty while learning how to write academically (Hyland, 2022; Lee, 2021).

Worldwide, universities start recognizing the growing problem and providing appropriate resources for graduate students to develop research and academic writing skills. Educators emphasize the significance of such interventions in higher education institutions for students' performance and productivity.

Research Objectives

The objectives of the study are:

- To determine the correlation between research skills and academic writing proficiency.
- To identify which components of research skills most strongly predict academic writing proficiency

METHODOLOGY

For this purpose, a quantitative, cross-sectional correlational research design was adopted to explore the link between research skills and academic writing proficiency among graduate students. The population of the current study comprised the students studying in BS (7th and 8th semester), B.Ed., MSc and M.Phil (1st and 2nd semesters) courses of Education, Psychology, Chemistry, and Physics Departments of the University of Sargodha. In order to draw a sample of 300 male and female participants, a multi-stage convenience sampling technique was adopted. For data collection purposes, a structured questionnaire was adopted which contained demographic data, Research Skills Scale with 28 items and an Academic Writing Proficiency Scale comprising 28 items. Items on the Research Skills Scale were concerned with General Framework of the Study, Literature Review, Study Methodology Procedures and Writing Study Outcomes and Recommendations, whereas, items on the Academic Writing Proficiency Scale dealt with Academic Writing Self-Efficacy, Metacognitive Writing Strategies, Citation and Academic Integrity, and Overall Academic Writing Proficiency. All items of the questionnaire were rated on a five-point Likert scale ranging from Strongly Disagree (1) to Strongly Agree (5). The questionnaire was validated by five experts belonging to the Department of Education, University of Sargodha. High reliability was shown by the instrument with Cronbach's alpha being .980 for research skills and .970 for academic writing proficiency. The data was gathered through paper questionnaires and Google forms after securing permission from the institution and from the respondents themselves. The collected data was analyzed with the use of SPSS Version 22. Frequency, percentage, mean, and standard deviation were used for descriptive analysis, whereas Pearson Product-Moment Correlation was used to determine the correlation between the two variables, multiple regression for prediction, and independent-samples t-test for comparison between genders and faculties.

DATA ANALYSIS

Table 1: Correlation Analysis of Components of Research Skills and Academic Writing Proficiency

Correlations		Research skills	Theoretical	Study method	Writing study
Research skill	Pearson Correlation	1	.901	.903	.893
	Sig. (2-tailed)		.000	.000	.000
	N	300	300	300	300
Theoretical	Pearson Correlation	.901**	1	.923**	.913**
	Sig. (2-tailed)	.000		.000	.000
	N	300	300	300	300
Study method	Pearson Correlation	.903**	.923**	1	.916**
	Sig. (2-tailed)	.000	.000		.000
	N	300	300	300	300
Writing study	Pearson Correlation	.893**	.913**	.916**	1
	Sig. (2-tailed)	.000	.000	.000	
	N	300	300	300	300

** . Correlation is significant at the 0.01 level (2-tailed).

Table 1 shows that the Pearson correlation analysis was done to test the correlation between research skill, theoretical knowledge, study methods and writing study in a sample of 300 participants. It was hypothesized that research competence, theoretical learning, study strategies and writing study would have a positive correlation with each other. Findings confirmed this supposition, and the relations between research proficiency and theoretical knowledge ($r = .901$, $p < .001$), research techniques (r

=.903, $p < .001$) and writing study ($r = .893$, $p < .001$) were found to be strong, and positive. There were also strong correlations between theoretical knowledge and methods of study ($r = .923$, $p < .001$) and writing study ($r = .913$, $p < .001$). Also, the method of study was closely related to writing ($r = .916$, $p < .001$). The correlation between all the academic skills was significant at the 0.01 level which implied that participants who had a higher score in one academic skill also had a high score in the other academic skills. Such results show that the research skill, theoretical knowledge, study methods, and writing study have a strong inter-relationship in this sample.

Table 2: Correlation Analysis of Academic Writing Components and Overall Academic Writing Proficiency

Correlations					
		Academic self-efficiency	metacognitive	Citation academic	Academic proficiency
Academic self-efficiency	Pearson Correlation	1	.867**	.847**	.860**
	Sig. (2-tailed)		.000	.000	.000
	N	300	300	300	300
Metacognitive	Pearson Correlation	.867**	1	.863**	.875**
	Sig. (2-tailed)	.000		.000	.000
	N	300	300	300	300
Citation academic	Pearson Correlation	.847**	.863**	1	.865**
	Sig. (2-tailed)	.000	.000		.000
	N	300	300	300	300
Academic proficiency	Pearson Correlation	.860**	.875**	.865**	1
	Sig. (2-tailed)	.000	.000	.000	
	N	300	300	300	300

** . Correlation is significant at the 0.01 level (2-tailed).

Table 2 illustrates that a Pearson correlation analysis was conducted to determine the correlations among academic writing self-efficacy, metacognitive skills, citation skills, and academic writing proficiency based on a sample of 300 individuals. Null hypothesis (H_0) in this study was formulated in the following way: It was supposed that there would be no significant relationships among these variables. Nevertheless, H_0 was rejected because there is a positive significant correlation between academic writing self-efficacy and metacognitive skills of participants ($r = .867$, $p < .001$), as well as between citation skills ($r = .847$, $p < .001$) and academic writing proficiency ($r = .860$, $p < .001$). Besides, it was discovered that citation skills ($r = .863$, $p < .001$) and academic writing proficiency ($r = .875$, $p < .001$) correlate positively and significantly with metacognitive skills. Furthermore, a positive correlation was identified between citation skills of participants and their academic writing proficiency ($r = .865$, $p < .001$). Every correlation was significant at the level of 0.01, which means that the greater the level of one academic-related skill, the greater the level of the others. These results indicate that there is a strong interdependence between academic writing self-efficacy, metacognitive skills, citation skills, and general academic writing proficiency on this sample.

Regression analysis

Effect of Research Skills (Research Skill, Theoretical Background and Literature Review, Study Methodology Procedures, and Writing Study Outcomes and Recommendations) on Overall Academic Proficiency

Model Summary of Multiple Regression Analysis

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.668	.446	.439	21.32191

Table 4 below presents the model summary of the multiple regression analysis, which investigated the impact of research skills on academic writing proficiency. According to the results, there was a significant positive correlation between the research skill dimension and academic writing proficiency ($R = .668$). The determination coefficient (R^2) was .446, which indicates that 44.6% of variance in academic writing proficiency is explained by four independent variables, including Research Skill, Theoretical Background and Literature Review, Study Methodology Procedures, and Writing Study Outcomes and Recommendations. At the same time, the adjusted determination coefficient (Adjusted R^2) was .439, which suggests that 43.9% of variance in academic writing proficiency is explained by the multiple regression model. Finally, the standard error of the estimate was 21.32, which implies that the average difference between the actual scores on academic writing proficiency and predicted scores is 21.32. Overall, it is possible to conclude that the multiple regression analysis has a satisfactory fit because of the combination of moderate to high R and the reasonable value of standard error. In addition, the analysis revealed that the research skill dimension significantly contributed to academic writing proficiency.

Table 5: ANOVA of Multiple Regression Analysis

Model	Sum of Squares	df	Mean Square	F	Sig.
Regression	107976.652	4	26994.163	59.377	.000
Residual	134114.078	295	454.624		
Total	242090.730	299			

Table 5 demonstrates that the overall academic writing proficiency is significantly predicted by the regression, $F(4, 295) = 59.377$, $p < .001$. The comparison of the regression and residual sum of squares, 107976.652 and 134114.078 respectively, reveals that the significant portion of the variance in overall academic writing proficiency is explained by the regression model. The high value of F -statistic suggests that the regression model is significant. Thus, the regression model of Research Skill, Theoretical Background and Literature Review, Study Methodology Procedures, and Writing Study Outcomes and Recommendations is a good fit for the data.

Table 6: Coefficients of Multiple Regression Analysis

Predictor	B	Std. Error	Beta (β)	t	Sig.
Constant	32.791	3.811	—	8.604	< .001
Research Skill	0.329	0.452	.083	0.729	.466
Theoretical Background and Literature Review	0.784	0.454	.226	1.728	.085
Study Methodology Procedures	0.889	0.468	.253	1.902	.058
Writing Study Outcomes and Recommendations	0.444	0.431	.127	1.030	.304

Dependent Variable: Overall Academic Writing Proficiency.

Table 6 below provides the coefficients of the multiple regression analysis for predicting overall academic writing proficiency using the four categories of research skills as independent variables. Generally, it can be seen that Research Skill ($\beta = .083$, $t = 0.729$, $p = .466$), Theoretical Background and

Literature Review ($\beta=.226$, $t = 1.728$, $p=.085$), Study Methodology Procedures ($\beta=.253$, $t = 1.902$, $p=.058$), and Writing Study Outcomes and Recommendations ($\beta=.127$, $t = 1.030$, $p=.304$) were not significant predictors of participants' overall proficiency in academic writing. The p-values of all the variables were greater than .05. Study Methodology Procedures had the highest standardized regression coefficient ($\beta=.253$), followed by Theoretical Background and Literature Review ($\beta=.226$). Nonetheless, none of the individual components of research skills significantly predicted academic writing proficiency.

FINDINGS

- Total number of students included in this study was 300 and they belonged to the departments of education, psychology, chemistry and physics.
- There were some students of BS, MPhil/ MSc and B.Ed programs which indicated a varied level of learning of the students.
- The sample included those learners who were enrolled in different Semesters starting from 1st up to 8th
- The total proportion of females was higher as compared to males (54.3% males and 45.7% females).
- The proportion of respondents from the Science Faculty was slightly greater (51.7%) than those respondents from Social Sciences Faculty (48.3%).
- Maximum students (47%) had CGPA 2.51 to 3.00, which showed the average level of academic success of the learners.
- The general research skills were moderate ($M \approx 2.99$).
- Learners showed moderate skills in research fields such as structure, literature review and methodology.

RECOMMENDATIONS

1. Improvement of research and writing skills

It is important for universities to organize workshops, trainings and mentoring in order to help students improve their skills in conducting research and to develop research design, literature review, methodology and conclusions. Teaching academic writing requires similar attention in such areas as structure, inclusion of sources and writing anxiety.

2. Increased academic self-efficacy and metacognition

Educational programs should be aimed at increasing academic self-efficacy and developing such metacognitive skills as planning, monitoring and evaluation. These techniques will assist in improving research and writing skills.

3. Improvement of citation skills and prevention of plagiarism

It is important for academic institutions to have certain techniques to improve students' citation skills and avoid plagiarism. It is possible to teach students to avoid plagiarism by conducting regular seminars and practice in this area.

4. Support for selected students

Despite the fact that there were no differences in gender and discipline, it is important to give some additional support to students who lack confidence in conducting research and writing. It will help to overcome the existing gap between these students and their peers.

5. Future research directions

Qualitative or mixed methodologies could be taken into account when planning further investigations of the issue. The reason is that such approaches will enable one to understand deeply the factors influencing the emergence of disparities in research and writing skills. Moreover, it is important to conduct similar studies in other settings. Longitudinal research could be performed in order to investigate the impact of various strategies on self-efficacy and metacognitive skills development.

DISCUSSION

According to the findings of the present study, the research skills and academic writing ability of graduate students were moderate. The same findings have been found by Assaff & Aburezeq (2018) who found that post-graduate students possessed satisfactory research skills which needed consistent institutional help and research experience in order to achieve appropriate research ability. Similarly, the present findings align with the findings of Teng & Wang (2023) who found that the self-efficacy in academic writing determines the performance of the students which is reflected by their planning, monitoring, and revision strategies. Hence, the findings of the present study align with the findings of Assaff & Aburezeq (2018) and Teng & Wang (2023) in that research ability and academic writing skill are developed through practice and training.

The results achieved in the current study are similar to the findings of Brew and Mantai (2023) and Hyland (2022). In the current study, the results indicate that the graduate students' research skills were moderately developed ($M = 2.99$), meaning that their research performance was moderately developed than satisfactory. The result is similar to the findings of Brew and Mantai (2023) that claim that research competence is developed gradually through active research involvement, academic supervision, and practice rather than by taking courses on it. Likewise, the findings of the current study also showed that academic writing competence of students was moderately developed, which is similar to the findings of Hyland (2022) that state that academic writing involves practice, critical thinking, and discipline-based help for writing proficiency development. Thus, the current findings are similar to the findings of Brew and Mantai (2023) and Hyland (2022) to show that although the graduate students' research and academic writing skills are moderately developed, further practice is necessary.

Results of the current study relate to those of Prihandoko (2024) and Arellano Meléndez et al. (2024). According to the current study, research skills are positively related to academic writing proficiency because having appropriate research skills means that students will perform well in academic writing. Results of the current study are similar to the result of Prihandoko (2024) according to whom research competence of students helps them to synthesize literature and to make appropriate research arguments. Similarly, results of the current study are the same as the results of Arellano Meléndez et al. (2024) according to whom research skills are necessary for developing academic reading and writing among students in higher education. Thus, results of the current study relate to those of Prihandoko (2024) and Arellano Meléndez et al. (2024).

The results of the present study are similar to those obtained by Bråten et al. (2023). As stated by the results of the current study, the level of students' academic writing skills is moderate, which means that students have some basic academic writing skills but need extra assistance for the development of higher-level skills. The results of the current study are similar to the results obtained by Bråten et al. (2023) because the authors found out that self-efficacy in academic writing predicts the quality of

writing outcomes and perseverance when facing obstacles. Namely, Bråten et al. (2023) found out that self-confidence helps students develop self-regulated learning and engage in the use of planning, revision, and evaluation techniques for academic writing and research. Thus, the results of the current study are similar to the results obtained by Bråten et al. (2023).

The results of the current study when compared to those of Brew and Mantai (2023), Wingate (2022), and Arellano Meléndez et al. (2024) are similar because the acquisition of research skills and academic writing proficiency requires purposeful practice, proper learning experience, and institutional efforts. The results of the current study suggest that research competencies and academic writing are complementary skills that can be developed together through purposeful learning and practice. Such results correspond to those of Brew and Mantai (2023), who claim that in order to gain research competencies, graduate students need proper research experience, supervision, and practice of research skills. In the same way, the results of the current study correspond to the finding of Wingate (2022), who emphasizes the importance of the integration of disciplinary literacy and academic learning in order to attain writing proficiency. Thus, the three studies mentioned above, when compared to the one conducted by Brew and Mantai (2023), show that higher education institutions should invest more in the development of research methodology and academic writing among their graduate students.

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