

**Investigating Impact of Revise-Resubmit Feedback Strategy on Graduate Students' Research Self-Efficacy: A Mixed Methods Intervention Study**

By

Kennedy W. Awuonda (Author)

Research Assistant, College of Education, Doctoral Student, Educational Psychology

Texas Tech University, Lubbock, Texas

Tel: 806 281 2061

Email: [kawuonda@ttu.edu](mailto:kawuonda@ttu.edu)

Amani Zaier, Ph.D.(Co-author-1)

Associate Professor of Practice

Educational Psychology, Leadership, & Counseling

Email: [amani.zaier@ttu.edu](mailto:amani.zaier@ttu.edu)

Phone: 806-834-1533, Office: Education 377

Sharon Atieno (Co-Author-2)

Research Assistant, College of Education,

Master's Student, Educational Psychology, Texas Tech University, Lubbock,

Texas, Tel: 806 702 1964, Email: [satieno@ttu.edu](mailto:satieno@ttu.edu)

**Abstract**

Feedback is one of the most powerful instructional tools that influence learning and achievement. However, the impact of feedback on students' learning outcomes can vary depending on how they perceive and utilize it. While feedback and self-efficacy have been studied extensively in educational research, the specific intersection of revise-resubmit feedback and research efficacy in graduate students is an area that could benefit from further exploration. This study used mixed methods experimental (intervention) research design to collect, analyze, and integrate both quantitative and qualitative data to investigate the impact of revise-resubmit feedback on graduate students' research self-efficacy and to contribute to a deeper understanding of how feedback strategies can support and enhance graduate students' research capabilities. The study used archival data collected between 2020 and 2022 from 12 sections of the Foundations of Educational Research class, where the revise-resubmit, strategy was practiced. The study revealed that (RRF) served as an effective factor in increasing graduate students' research self-efficacy. However, the archival data used in this study did not show causal statements about the effect of revise-resubmit feedback and students' research self-efficacy. To establish a more robust understanding of the causal relationship, the study recommends conducting a true experimental study, where students would be randomly assigned to either resubmit their work or not, enabling the researcher to draw causal conclusions.

**Keywords:** Revise-Resubmit Feedback, Graduate students, Research Self-efficacy, appreciating feedback, making judgement, Managing affect, Intervention

**Investigating Impact of Revise-Resubmit Feedback Strategy on Graduate Students' Research Self-Efficacy: A Mixed Methods Intervention Study**

By

Kennedy W. Awuonda, Amani Zaier and Sharon Atieno

**Introduction**

Written feedback is recognized as a communicative tool for identifying issues and flaws in academic writing (Bitchener, 2018; Wang & Li, 2011; Wei & Cao, 2020; Yu & Lee, 2013). In the context of graduate students, supervisory feedback on scholarly written texts is particularly important for the development of their research and academic writing skills (e.g., Carter & Kumar, 2017; de Kleijn et al., 2013; Wang & Li, 2011). Redd and Kennette (2017) conducted a study exploring the impact of allowing students to revise and resubmit written assignments for full credit. They found that students who chose to submit revised assignments had significantly higher final grades compared to those who did not revise their work. This suggests that providing an opportunity for revisions can incentivize students to read and apply instructor-provided feedback, leading to improved performance and research self-efficacy.

Gallien and Omen-Early (2008) postulate that for feedback to be effective in improving academic performance and satisfaction, it should be personalized (specific to individual students) rather than collective (general feedback for the entire class). Furthermore, feedback should be prompt, helpful, positively framed, and future-oriented, guiding students towards improvement (Chang, 2009; Getzlaf et al., 2009). Feedback can have a positive impact on self-efficacy when it is frequent and immediate (Agricola et al., 2019; Schunk, 1983). Difficult to understand or unclear feedback can lead to low self-efficacy and diminished expectations of success in tasks such as research proposal writing (Wingate, 2010). When students perceive feedback as constructive, it can enhance their self-efficacy in writing skills (Caffarella & Barnett, 2000). Students with higher self-efficacy are more likely to participate, work harder, and persist in the face of challenges (Schunk & Zimmerman, 2007). Therefore, the academic success of graduate students is often evaluated based on their research expertise (Johnstone, 2015).

Overall, feedback, particularly written feedback, plays a significant role in academic writing and research. Providing personalized, prompt, and constructive feedback can enhance students' research self-efficacy, performance, and satisfaction. Creating opportunities for students to revise and resubmit their work based on feedback can further encourage engagement and improvement.

**Statement of the Problem**

Feedback is one of the most powerful instructional tools that influence learning and achievement (Hattie & Timperley, 2007). However, the impact of feedback on students' learning outcomes can vary depending on how they perceive and utilize it. While there have been numerous studies focusing on feedback and research self-efficacy among graduate students (Adekunle & Madukoma, 2022; Petko, 2020; Jiang et al., 2019; Rooij et al., 2019), there is a lack of specific research investigating the impact of revise-resubmit feedback on graduate students' research self-

**Citation:** Awuonda, K. W; Zaier, A & Atieno, S. (2023). Investigating Impact of Revise-Resubmit Feedback Strategy on Graduate Students' Research Self-Efficacy: A Mixed Methods Intervention Study. *Journal of Popular Education in Africa*. 7(10), 74 – 97.

efficacy. Novice graduate students often enter foundations of educational research courses with limited knowledge of research procedures. Through continuous assignment tasks on research development and opportunities for revise-resubmit feedback, students can enhance their foundational research knowledge and become proficient in developing research proposals. This proficiency may eventually lead to research papers for conference presentations, dissertations, and publications.

Previous studies (Saeed et al., 2021; Basturkmen et al., 2014; Li & Seale, 2007; Carter & Kumar, 2017; Inouye & McAlpine, 2017; Yu & Lee, 2013) have emphasized the importance of engaging graduate students to comment on feedback. Revise-resubmit strategies allow students to seek clarifications, address issues in their writing, defend their ideas, and learn how to productively negotiate with critics. However, these studies have only provided a partial view, either using quantitative or qualitative approaches. To gain a more holistic understanding, it is necessary to compare and synthesize quantitative and qualitative data.

Therefore, a mixed methods experimental intervention design study was conducted to investigate the impact of revise-resubmit feedback on graduate students' research self-efficacy and to contribute to a deeper understanding of how feedback strategies can support and enhance graduate students' research capabilities. This study aimed to bridge the existing gap and provide a comprehensive understanding of how revise-resubmit feedback can influence graduate students' research self-efficacy, which is a vital aspect of their development as researchers.

### **Purpose**

This study used a mixed methods experimental (intervention) research design to gather, analyze, and combine both quantitative and qualitative data (Caracelli & Greene, 1997; Green, 2007). Specifically, the qualitative data included two forms of RRF (written and oral feedback) and was used to complement the quantitative data obtained from the experimental intervention. The aim of this design was to enhance the trial by incorporating qualitative data, thereby capturing the participants' personal experiences. This study sought to address the following research questions:

1. How does the revise-resubmit feedback strategy impact graduate students' research self-efficacy?
2. To what extent does the revise-resubmit feedback strategy impact graduate students' research self-efficacy?
3. How does the qualitative revise-resubmit feedback data on the impact of student's research self-efficacy triangulate students' scores on proposal writing assignments, measured quantitatively, to predict students' research self-efficacy?

### **Review of Related Literature**

#### **Theoretical Framework**

Constructivism is an educational philosophy and learning approach that emphasizes the role of learners in constructing their own knowledge and understanding of the world (Elliott et al.,

**Citation:** Awuonda, K. W; Zaier, A & Atieno, S. (2023). Investigating Impact of Revise-Resubmit Feedback Strategy on Graduate Students' Research Self-Efficacy: A Mixed Methods Intervention Study. *Journal of Popular Education in Africa*. 7(10), 74 – 97.

2000). According to this perspective, learning is not simply the acquisition of information or the transmission of knowledge from a teacher to a student, but rather a process in which individuals actively engage with new information, make sense of it in relation to their prior knowledge, and construct their own unique understanding. (Arends, 1998). The key idea behind constructivism is that learning is a personal and active process.

Learners are not passive recipients of knowledge but rather active participants in the construction of knowledge. They engage with new information, relate it to what they already know, and make meaning out of it based on their own experiences and perspective (Vygotsky, 1978). Constructivism also recognizes the importance of social interactions and the learning environment's influence on the construction of knowledge. According to the sociocultural theory of Lev Vygotsky, learners not only construct knowledge individually but also through interactions with others. Social interactions search for discussions, collaborations, and sharing of ideas, can support and enhance the construction of knowledge (Vygotsky, 1978).

Social constructivist feedback research emphasizes the role of dialogue, meaning creation, and co-construction in development of shared and personal interpretations among participants. Through active engagement and interaction, individuals construct their understanding of feedback and its implications (Price et al., 2011; Rust et al., 2005). For students to fully grasp feedback messages, they must also absorb implicit knowledge, as described by Polanyi (1958). Implicit knowledge refers to the understanding that is difficult to articulate or convey directly. It involves grasping the underlying principles, patterns, and nuances that influence the interpretation and application of feedback. Developing implicit knowledge is crucial for students to appreciate the meaning behind feedback, develop judgmental skills, and effectively adjust their work in response to feedback (Sadler, 1989, 2010).

In the context of revise-resubmit feedback, the active conversation between the student and the instructor is particularly important. This type of feedback involves an ongoing dialogue and iterative process of improvement. Learners' perceptions, attitudes, and knowledge play a significant role in this process. Students need to be receptive to feedback, have a positive attitude toward revision, and process the necessary knowledge and skills to understand and implement the feedback effectively (Sadler, 2010). By fostering an environment that promotes active conversation and collaboration, educators can facilitate the development of feedback knowledge. This includes creating opportunities for students to engage in meaningful discussions about their work, encouraging them to reflect on feedback and make connections to their prior knowledge, and providing guidance and support as they revise and resubmit their work.

Carless and Boud (2018) proposed a comprehensive framework for students' feedback literacy, which encompasses four key features. These features outline the necessary skills and attitudes that students should develop to effectively engage with feedback and utilize it to improve their learning outcomes. The four features are as follows:

(1) Appreciating feedback: students need to understand and value the role of feedback in enhancing their work. They should recognize that feedback can come in various forms and from different sources. Additionally, students should be adept at using technology to access, store, and revisit feedback, enabling them to benefit from feedback over time.

**Citation:** Awuonda, K. W; Zaier, A & Atieno, S. (2023). Investigating Impact of Revise-Resubmit Feedback Strategy on Graduate Students' Research Self-Efficacy: A Mixed Methods Intervention Study. *Journal of Popular Education in Africa*. 7(10), 74 – 97.

(2) Making judgements: Students should develop the ability to make informed and sound academic judgements about their own work and the work of others. This includes actively participating in peer feedback processes and refining their self-evaluative capacities to make robust judgments. By engaging in critical assessment and reflection, students can improve their own work and contribute constructively to the feedback process of others.

(3) Managing affect: This feature focusses on students' emotional responses to feedback. Students need to maintain emotional equilibrium and avoid defensiveness when receiving critical feedback. They should proactively receive suggestions from peers or teachers and continue the dialogue as needed. Developing habits of striving for continuous improvement, based on both internal and external feedback, is crucial for managing affect effectively.

(4) Acting: Students should understand the importance of acting in response to feedback. They need to draw meaningful inferences from a range of feedback experiences to facilitate continuous improvement. Developing a repertoire of strategies for acting on feedback empowers students to implement changes and make progress in their learning journey.

Careless and Boud highlight that these four features are interconnected and reinforce one another. They argue that a combination of the three features at the top of the framework maximizes the potential for students to effectively act on feedback, leading to improved learning outcomes. In summary, the framework proposed by Careless and Boud emphasizes the importance of students' feedback literacy. By appreciating feedback, making informed judgments, managing affect and acting, students can engage with feedback in a constructive and productive manner, leading to continuous improvement in their learning.

**Citation:** Awuonda, K. W; Zaier, A & Atieno, S. (2023). Investigating Impact of Revise-Resubmit Feedback Strategy on Graduate Students' Research Self-Efficacy: A Mixed Methods Intervention Study. *Journal of Popular Education in Africa*. 7(10), 74 – 97.

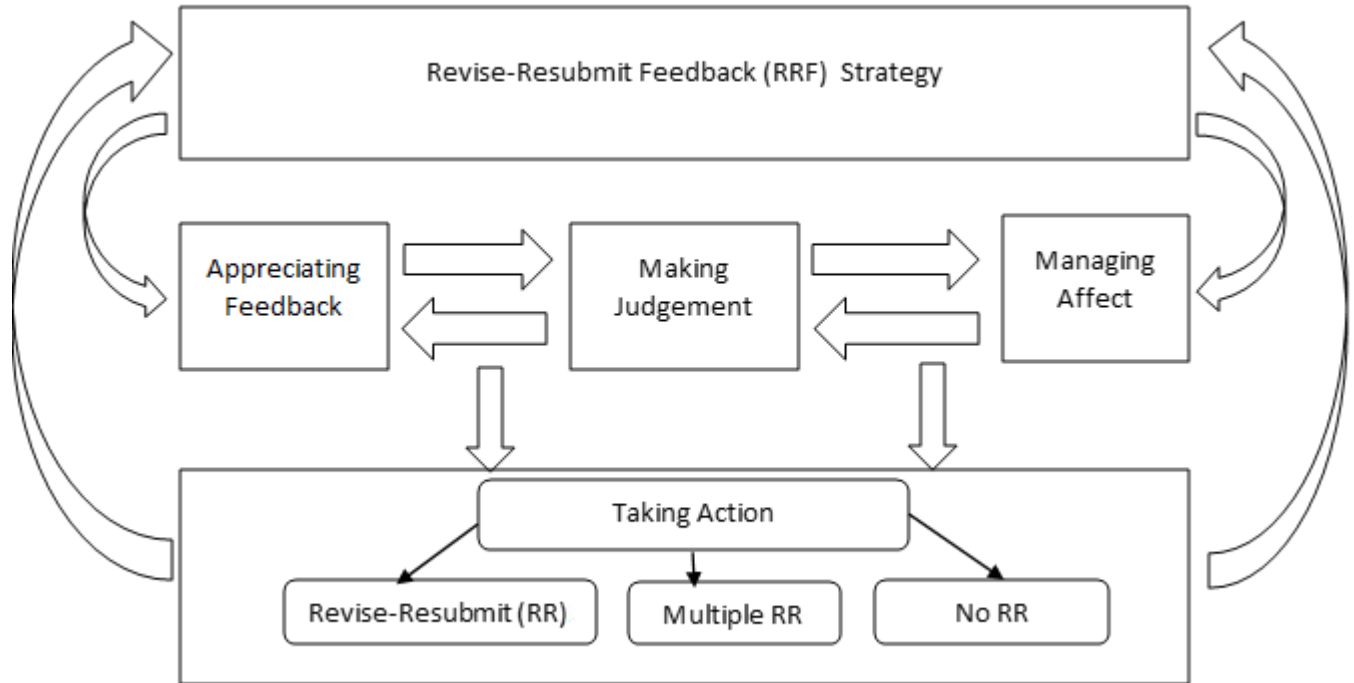


Figure 1. RRF Conceptual Framework

Source: Adopted from Carless and Boud, (2018)

### Feedback

Scholars have put forth various definitions of feedback, each emphasizing various aspects of the concept. Molloy and Boud (2013) and Carless (2015) offer definitions that highlight the active role of learners in feedback process and the diverse sources of information that can contribute to feedback. According to Molloy and Boud (2013), feedback is a process through which learners make sense of information gathered from various sources and utilize it to improve their work or learning strategies. This definition emphasizes the active involvement of learners in sense-making, interpretation, and application of feedback. It recognizes that feedback is not solely about teachers providing information to students regarding their strengths, weaknesses, and areas for improvement. Instead, it emphasizes the centrality of the student's role in making meaning out of feedback and using the feedback comments to enhance subsequent work.

Building upon this perspective, Carless (2015) argues that the definition of feedback should go beyond the idea that it is primarily a one-way communication from teachers to students. Careless proposes an ideological definition that recognizes the importance of student engagement and sense making in the feedback process. This definition highlights that feedback can come from diverse sources, including peers, teachers, friends, family members, or even automated computer-based systems. It acknowledges the potential for students to engage in self-evaluation and utilize feedback from various sources to assess their progress.

**Citation:** Awuonda, K. W; Zaier, A & Atieno, S. (2023). Investigating Impact of Revise-Resubmit Feedback Strategy on Graduate Students' Research Self-Efficacy: A Mixed Methods Intervention Study. *Journal of Popular Education in Africa*. 7(10), 74 – 97.

The studies conducted by Kaur and Arora (2018) and Burgermeister (2021) shed light on the perceptions and effects of feedback from both students' and teachers' perspectives. The study conducted by Kaur and Arora (2018) revealed that students appreciated receiving feedback on various aspects, including mistakes with actions, content, organization of content, and handwriting. Most students wanted the feedback process to continue and suggested that teachers dedicate more time to providing individualized feedback. This highlights the importance students place on feedback and their desire for personalized guidance and support.

In addition, Saeed et al. (2021) conducted a case study exploring supervisory feedback formulation and postgraduates' response to feedback in the context of academic writing of research proposals. The study highlighted the importance of encouraging postgraduates to comment on the feedback they receive. By commenting on feedback, students can seek clarifications, address issues in their writing, defend their ideas, and learn how to productively negotiate with critics. Commenting on feedback enables students to engage in a collaborative and communicative process, value challenging feedback, and gain deeper understanding of feedback provided. Encouraging students to actively engage in feedback, seek clarifications, and participate in a collaborative feedback process can contribute to their growth, development, and ability to effectively utilize feedback for improvement.

### **Research Self-efficacy**

A study by Adekunle and Madukoma (2022) found a significant positive relationship between research self-efficacy and research productivity of doctoral students at the University of Ogun state in Nigeria. They observed that low research productivity, including prolonged doctoral education, high attrition rates, and difficulties in completing a doctoral thesis, was associated with low research self-efficacy. This suggests that higher levels of research self-efficacy are conducive to increased research productivity and successful completion of doctoral programs. Similarly, Lambie et al. (2014) conducted study on doctoral students and found that higher levels of research self-efficacy were predictive of great interest in research and research knowledge. They also discovered that students who engage in research and research activities, such as publishing manuscripts, had higher research self-efficacy scores compared to those who were not involved in the publication process. This indicates that the active engagement in research-related tasks contributes to higher research self-efficacy and interest in research.

Jiang et al. (2019) explored self-efficacy and research capacity among clinical nurses in China. They found a positive correlation between self-efficacy and research capacity, indicating that higher levels of self-efficacy are associated with greater research capacity. Factors such as education levels, support levels, and position were identified as predictors of research capacity. The study also highlighted the importance of factors such as the supervisor-doctoral candidate relationship, sense of belonging, and project relevance in determining research productivity and completion rates as additional predictors. Furthermore, Anekstein and Vereen (2018) identified key measures of doctoral students' research productivity, including writing or co-writing for grants presentations at conferences, authoring and co-authoring publications, and the academic rank of the research mentor. These factors contributed to the research output and productivity of doctoral students. These were similar to the findings of Petko (2020) that higher research self-efficacy scores were associated with increased scholarly activities such as refereed publications

**Citation:** Awuonda, K. W; Zaier, A & Atieno, S. (2023). Investigating Impact of Revise-Resubmit Feedback Strategy on Graduate Students' Research Self-Efficacy: A Mixed Methods Intervention Study. *Journal of Popular Education in Africa*. 7(10), 74 – 97.

and presentations at conferences. The study also revealed that doctoral students with higher research self-efficacy demonstrated a stronger interest in researching as part of their educational programs.

In contrast, the study by Burgermeister (2021) focused on the effects of self-efficacy and feedback qualities. It found out that students' teachers perceived higher self-efficacy in assessing learning strategies and giving feedback after engaging in repeat feedback exchanges. Additionally, the quality of feedback was higher when students received support in writing their feedback. This suggests that actively participating in the feedback process and receiving guidance can enhance self-efficacy and improve the quality of feedback provided. Teachers are identified as playing important roles in promoting student feedback literacy through curriculum design, guidance, and coaching (Carless & Boud, 2018). Their role is crucial in creating an environment that supports effective feedback practices and empowers students to engage meaningfully with feedback.

### **Modes of Feedback**

A study conducted by Gallien and Oomen-Early (2008) compared personalized versus collective instructor feedback in the online classroom. The finding revealed that students who received personalized feedback were more satisfied and performed academically better than those students who received only collective feedback. Furthermore, prior online experience was found to moderately predict student satisfaction and performance. In addition, most students enjoyed the writing experience and regarded the use of digital tools effective for feedback (Zou et al., 2022), The study suggested that teachers implement more technology enhanced peer and self-feedback assisted collaborative writing.

On the other hand, Ferdian and Subang (2020) in a study which aimed to explore the students' preferences on face-to-face corrective feedback vs online corrective feedback in English for Specific Purpose (ESP) class revealed that students preferred their teachers to use face-to-face corrective feedback in learning effectiveness, accuracies, and experiences. The focus group discussions revealed that students believe in their corrective feedback preferences, thus the study suggests that students' preferences should be considered to help students increase their confidence in learning.

In terms of teaching skills, a study by Burgess et al. (2023) highlighted the value students placed on online reading, discussion board, videos, and opportunity for practicing teaching skills with feedback. However, the face-to-face component was associated with benefits such as a more positive attitude towards interprofessional learning and intention to teach. This suggests that a combination of online and face-to-face modalities can provide a comprehensive learning experience.



**Citation:** Awuonda, K. W; Zaier, A & Atieno, S. (2023). Investigating Impact of Revise-Resubmit Feedback Strategy on Graduate Students' Research Self-Efficacy: A Mixed Methods Intervention Study. *Journal of Popular Education in Africa*. 7(10), 74 – 97.

## **Method**

### **Design**

This study used a mixed-method experimental research design (Creswell & Plano, 2018) to answer the three research questions; (1) how does the revise-resubmit feedback strategy impact graduate students' research self-efficacy? (2) to what extent does the revise-resubmit feedback strategy impact graduate students' research self-efficacy? (3) how does the qualitative revise-resubmit feedback data on the impact of student's research self-efficacy triangulate students' scores on proposal writing assignments, measured quantitatively, to predict students' research self-efficacy?

An experimental design is a quantitative research design in which investigators control the conditions experienced by participants, administer an intervention, and then test whether the intervention affects the outcome (Shadish et al., 2002). This MMR intervention study will adopt a quasi-experiment that uses non-randomized assignments (Creswell & Creswell, 2018). The one-group pretest-posttest design is a type of quasi-experiment in which the outcome of interest is measured twice: once before and once after exposing a non-random group of participants to a certain intervention/treatment (Keppel, 1990).

The MMR experimental (intervention) design is a mixed-method approach in which the researcher embeds (See Figure 2) the collection, analysis, and integration of both quantitative and qualitative data within an experimental quantitative research design (Caracelli & Greene, 1997; Green, 2007). In the current study, the supplemental qualitative strand occurs during a convergent core design. To be precise, the researcher embedded the qualitative strand with quantitative quasi-experiments for triangulation purposes (Creswell & Plano, 2018). Integration of both quantitative and qualitative data allowed for embedding a convergent design in an experimental intervention design {QUAN + qual}, where data collection and analysis recurrently link at multiple points. (Fetters et al, 2013). This design augments the trial by embedding qualitative data so that the intervention can incorporate the participants' personal experiences. Therefore, the rationale for MMR Intervention design is twofold; (1) triangulation of qualitative data (Awuonda, Jung & Lee, 2023) and (2) to provide personal, contextual, and qualitative experiences drawn from the settings of participants along with the quantitative outcome measures (Creswell & Plano, 2018).

**Citation:** Awuonda, K. W; Zaier, A & Atieno, S. (2023). Investigating Impact of Revise-Resubmit Feedback Strategy on Graduate Students' Research Self-Efficacy: A Mixed Methods Intervention Study. *Journal of Popular Education in Africa*. 7(10), 74 – 97.

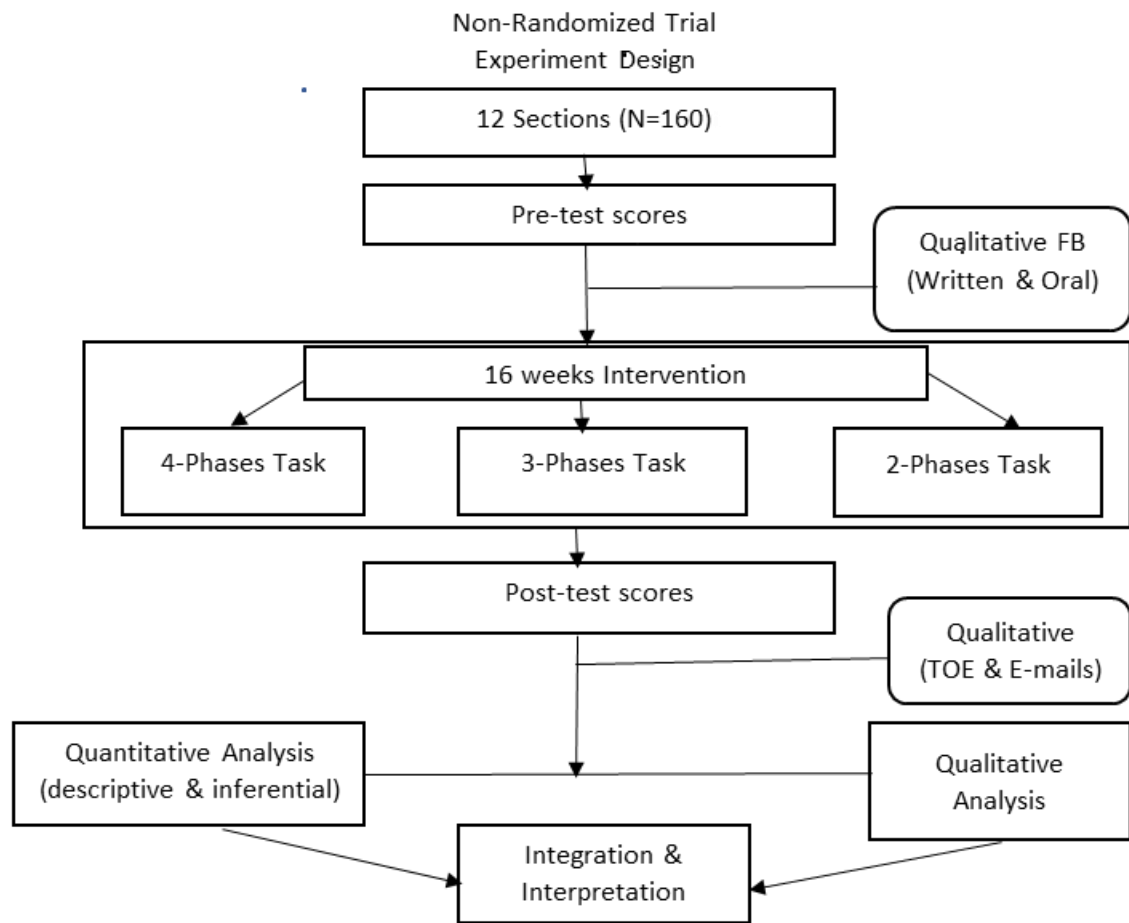


Figure 2. MMR Intervention Design Visual Diagram

Source: Diagram based on Creswell & Plano (2018).

Notation: {QUAN + qual}

Note: TOE-Teacher Official Evaluation

### Participants

The study used archival data collected from 12 sections of one graduate research class: Foundations of Educational Research. This course is designed to assist students in learning how to design and implement a research study that uses quantitative, qualitative, and/or mixed research methods. The number of students enrolled in each semester course between Spring 2020 to Fall 2022 ranged from 10 to 25. Since the study used deidentified data, demographic characteristics were limited to graduate level, program major and delivery method (Online or Face to Face). Participants in this study were 160 graduate students, mainly doctoral students who are required to take this foundational course in educational research to help them develop the core competencies in developing a research proposal.

**Citation:** Awuonda, K. W; Zaier, A & Atieno, S. (2023). Investigating Impact of Revise-Resubmit Feedback Strategy on Graduate Students' Research Self-Efficacy: A Mixed Methods Intervention Study. *Journal of Popular Education in Africa*. 7(10), 74 – 97.

## **Materials and Procedure**

This study analyzed the process graduate students followed to develop a research proposal assignment and how they used the RRF strategy. This research proposal had three different formats (4 phase, 3 phase and 2 phases format). Graduate students were assigned to three distinct groups. Group one (N=76) followed the 4-phase format consisting of (1) Introduction, (2) Literature Review, (3) methodology, and (4) data analysis. The second group (N=62) followed the 3-phase tasks (1) Introduction + Literature Review, (2) Data Collection, (3) Data analysis. The third group (N=22) used the 2-phase format consisting of only 2 combined assignments (1) Introduction and Literature Review, and (2) Data collection and Data Analysis. The three different formats cover the same research competencies.

For each proposal development stage, the instructor gave detailed feedback and options to revise and resubmit. The highest scores added up in the overall course end-semester grade. Students were given unlimited opportunities to revise and resubmit the assignment to improve their grades after receiving and applying the feedback given by the instructor. The two modes of feedback delivery were written feedback inserted into the assignment, and oral consisting of online discussion forums with the instructor, face-to-face discussions with the instructor, and zoom meetings with the instructor per request.

The assignments were procedural in each semester, and the instructor used the same grading and feedback protocol for each assignment phase. In each phase of the RFF processes the instructor provided scaffolding comments for guidance. The frequency of revise-resubmit feedback varied among students; however, students were given a time limit of two weeks to resubmit to avoid a last-minute rush when the semester is winding. Qualitative data capturing teacher's feedback of the end semester professor's evaluation reports were also used to triangulate the qualitative data.

## **Results**

### **Quantitative Data analysis**

Deidentified raw data was transferred from the official learning platform to excel for initial cleaning. Students' scores in all the 12 sections were computed and organized based on the semester (fall, spring, summer), method of delivery (face-to-face or online), and research proposal format (4 phases-3 phases, or 2 phases), for each section we computed the number of Revise-Resubmit (RR) attempts per each phase. In addition, we compared the initial score for each phase with the latest score.

Overall performance was examined across the fourfold, threefold, and twofold assignment phases, specifically comparing initial and final scores for students submitting revised assignments (submitters) and for students who did not re-submit revisions (non-submitters). Table 1 shows the sample summary for each phase.

The first analysis used one-way ANOVA (analysis of variance) to analyze the difference between the means of the three groups. One-way ANOVA was performed to compare the impact of the RFF strategy on students' RSE (grades; percentage) and showed that there is no significant effect  $F(2,157) = .196, p < 0.822, \eta^2 = 0.0025$  (see Table 4). Table 2 shows the means (4 phases  $M = 91.33$ , 3 phases,  $M = 92.35$ , 2 phases,  $M = 93.32$ ) of the three groups of graduate students are somewhat similar, and approximately close, suggesting that there is no evidence to support the

**Citation:** Awuonda, K. W; Zaier, A & Atieno, S. (2023). Investigating Impact of Revise-Resubmit Feedback Strategy on Graduate Students' Research Self-Efficacy: A Mixed Methods Intervention Study. *Journal of Popular Education in Africa*. 7(10), 74 – 97.

notion that using the 3 different assignment formats have significant different impacts on the outcome variable measured (RSE). The ANOVA results indicate that the impact of the three types of assignment format on the outcome variable is comparably equal. This implies that regardless of which group a student belongs to (4 phases, 3 phases, or 2 phases), the outcome variable (RSE) is affected similarly across all groups. The findings support the null hypothesis, which typically states that there is no significant difference between the means of the groups being compared. In this case, failing to reject the null hypothesis suggests that the three groups have comparable impacts on the outcome variable of RSE. Lavenes' test showed that the variances for the three RFF phases based on mean were not equal  $F(2, 159) = 0.005$  (see table 3).

Based on the findings of the initial analysis, we decided to perform further analysis to compare the average impact or Mean Improvement (MI) of the separate phases on the final score. We did a comparison on how participants' outcomes changed between the pretest and posttest after the RRF strategy. Table 5 shows overall RRF intervention improved students' Research Self-Efficacy (RSF) by 28.19% points. 3 phases RFF strategy improved students' knowledge by 37.31%. This was the highest, followed by 2 phases 30.95% and the least was 4 phases 19.96%.

ANOVA was again conducted on the hypothesis that there is no difference in mean improvement between the RFF groups. One-way ANOVA was performed to compare the mean improvement on students' RSE (average change) and showed that there is a significant effect  $F(2,157) = .45.629$ ,  $p < 0.001$ ,  $\eta^2 = 0.368$  (see Table 6). We, therefore, reject the null hypothesis and conclude that there is a significant difference in the mean improvement between the RFF groups. Levene's test showed that the variances for the 3 RFF phases based on mean improvement were not equal  $F(2,157) = .001$  (see Table 8). Table 7 shows the post hoc analysis using the Bonferroni test shows that the 3-Phases MI ( $M = 37.31$ ) and 2-Phases MI ( $M = 30.95$ ) have a significantly larger mean fitness level than the 4- Phases MI ( $M = 19.96$ ), ( $p < .001$ ).

### **Qualitative Data Analysis**

We analyzed 15 formal end of semester written evaluations collected from 12 sections of the same graduate research course. Only relevant students' comments related to feedback were included in this analysis. In addition, 8 emails related to feedback sent to the teacher were analyzed. Students notes attached to their RR attempts were also included in this analysis. We used the constructivist model of feedback proposed by Carless & Boud (2018) to analyze the gathered qualitative data. Since this model is perceived as a practice of seeking, providing, receiving, and acting on feedback, we followed this pattern to clean and organize the data prior to analysis. First, we collected all evidence of teacher feedback including the formal end of the semester teacher evaluations, emails sent by students, comments attached to revise and resubmit assignments, in addition to the informal feedback received during online one-to-one feedback sessions.

The qualitative data analysis revealed three main themes (1) appreciation of feedback, (2) making judgments, and (3) managing the affect to act on the teacher's feedback. Most students 93% appreciated feedback, and therefore, they revised and resubmitted their feedback

**Citation:** Awuonda, K. W; Zaier, A & Atieno, S. (2023). Investigating Impact of Revise-Resubmit Feedback Strategy on Graduate Students' Research Self-Efficacy: A Mixed Methods Intervention Study. *Journal of Popular Education in Africa*. 7(10), 74 – 97.

using the instructor's scaffolding statements or comments. This was evident from the appreciative email communications from the student to the instructor.

One student (Student 1) wrote:

I have enjoyed this class, honestly more than I thought I would at the beginning. This class fully met its purpose and learning objectives. I have a much greater understanding of research studies, particularly quantitative studies, and continue to prefer reading qualitative studies. I feel more versed in looking at quantitative and qualitative research studies with a critical eye (Student 1).

Another student (Student 2) wrote:

Thank you so much for your quick feedback! I made the changes you mentioned... Thank you so much for your instruction and feedback this semester! I enjoyed your class and found it very helpful for understanding and writing research (Student 2).

These were the active learners; they appreciated the RFF strategy and revised their work more than once and resubmitted it for re-grading. However, a minority 6.88% did not appreciate the feedback and were resentful, they felt it was busy work, and thus they did not bother to revise and resubmit their work. The second theme focused on making judgments. Some students lacked the capacity to make sound academic judgments about their own work. Therefore, they were procrastinating on revising and resubmitting their work considering the instructor's feedback. They were content with their initial submissions' scores, due to a lack of self-evaluation of their own work to make more robust judgments of the instructor's scaffolding feedback. However, the majority (93%) made the right judgment, evaluated their work, improved on it using scaffolding statements from teacher feedback, and resubmitted. They even followed up by email acknowledging the professor for the opportunity for the RRF approach.

Some students even resubmitted more than twice (16.25%) One student (student 3) wrote:

Thank you for your wonderful course this semester. Your course is the best course in research design that I have taken. And I totally agree that my proposal needs to be revised as per your comments on the final assignment. May I visit your office sometime on Wednesday to get advice?

Another student (student 4) wrote:

I have made the changes you suggested and updated the assignment. Thank you for the opportunity to do it early and fix our mistakes because at least for me this helps my learning experience so much.

**Citation:** Awuonda, K. W; Zaier, A & Atieno, S. (2023). Investigating Impact of Revise-Resubmit Feedback Strategy on Graduate Students' Research Self-Efficacy: A Mixed Methods Intervention Study. *Journal of Popular Education in Africa*. 7(10), 74 – 97.

The third theme was managing affect or maintaining emotional equilibrium and avoiding defensiveness when receiving critical feedback. Some students felt that the instructors' feedback was biased or negative consequently, they were resentful of feedback and declined the opportunities to making any corrections. The majority, however, took the feedback positively and drew inferences from a range of feedback experiences for continuous improvement. This was equally evident in the follow-up emails the students sent to the professor, acknowledging the benefits of professor's scaffolding feedback, and being ready to make changes accordingly.

The student's actions based on the three themes led to either making the decision to revise and resubmit once; do multiple submissions, or no resubmission at all. We concluded that both groups who resubmitted at least once or did multiple resubmissions provided straightforward evidence supporting Carless and Boud's model of appreciating feedback, making judgment and managing affect. These three facets of feedback served as supportive evidence to assess the positive impact the RRF strategy on graduate students' research self-efficacy. The appreciation of learning was evidenced through continuous improvement in search development skills and research self-efficacy or no learning taking place thus no change in research self-efficacy of the learners.

The qualitative analysis also revealed that there were variations among the students' final scores based on the number of attempts made by each student. The students who made several revise-resubmit attempts scored higher than those who did not attempt at all or those who attempted once or twice 16.25% Since every teacher's feedback had scaffolding information, learners who made several RRF attempts benefitted from the learning process and demonstrated a much-improved research self-efficacy in their final assignment submission compared to their Peers who declined teacher feedback.

In addition to the students who appreciated the RRF strategy demonstrating improved research self-efficacy in their final assignment submission, they positively rated their professor's approach of teaching research development skills at the official end-semester. In her evaluation (student 5) wrote:

I loved this approachable teacher and her quality feedback. Thank you for your thoughtful feedback on our research proposal work and our discussion post. I really appreciated the ability to submit and resubmit an assignment for better grades. I learned so much from this process and very much valued Dr. X's feedback (Student 5).

Conversely, (student 6) wrote:

I enjoyed the feedback provided on discussion assignments and the instructor's promptness to questions about the coursework. I enjoyed this class and diving into applying the concepts of research.

**Citation:** Awuonda, K. W; Zaier, A & Atieno, S. (2023). Investigating Impact of Revise-Resubmit Feedback Strategy on Graduate Students' Research Self-Efficacy: A Mixed Methods Intervention Study. *Journal of Popular Education in Africa*. 7(10), 74 – 97.

Finally, (student 7) in his evaluation report wrote:

She always gave us feedback on our work, which is one of the best things you can ask for in a professor. I would 10/10 recommend her course to any master's level student...“the instructor gave clear instructions and excellent feedback. Loved this class. I wish I had taken it earlier in my program. The instructor was always available, and it was great to have feedback on major assignments before the final submission (Student 7).

To answer the third research question “How does the qualitative revise-resubmit feedback data on the impact of student’s research self-efficacy triangulate students’ scores on proposal writing assignments, measured quantitatively, to predict students' research self-efficacy? We initially analyzed the qualitative and quantitative data separately to identify patterns, themes, and trends. In a second step we conducted triangulation. We compared and integrated qualitative and quantitative data to identify convergence or divergence between the two sources of information. We looked for consistency, discrepancies, or complementary insights between the two sets of data. In a second step, we interpreted the findings from the triangulation process to draw conclusions about the relationship between the qualitative revise-resubmit feedback and the quantitative scores on proposal writing assignments with its 3 formats (4-phase, 3 phases and 2 phases) in predicting students' research self-efficacy. Results revealed that both data sets provided a more comprehensive understanding of the construct of graduate students' research self-efficacy.

### **Significance of the Study**

According to Wang and Wu (2008), students with high self-efficacy applied advanced learning strategies, such as elaborative strategy and critical thinking. As self-efficacy increases, the positive effect of feedback on performance also tends to increase. When students receive feedback on their performance, they often experience greater increases in self-efficacy compared to those who do not receive feedback. The current study used archival data from a graduate educational research class: Foundations of Educational Research, where RRF has been often used to help students develop skills and knowledge in understanding and conducting research. It should be noted that the RRF approach is not a required condition but rather an option provided to students who decide to improve their grades. Qualitative data consisting of RRF helps explain the quantitative data from students’ initial and final scores on proposal development assignments leading to the creation of a research proposal, considering the attempts and the frequency of feedback. Therefore, the implications of this study on research courses can be replicated in other graduate research school courses.

### **Limitation**

The absence of a true experimental design with random assignment limits the ability to make definitive causal statements about the effect of revise-resubmit feedback on graduate students’ research self-efficacy. Also, using the triangulated data helped provide a superficial understanding of the research self-efficacy construct. To overcome this limitation and for an in-

**Citation:** Awuonda, K. W; Zaier, A & Atieno, S. (2023). Investigating Impact of Revise-Resubmit Feedback Strategy on Graduate Students' Research Self-Efficacy: A Mixed Methods Intervention Study. *Journal of Popular Education in Africa*. 7(10), 74 – 97.

depth exploration of research self-efficacy a follow-up study using a self-efficacy reliable instrument is needed to better assess graduate students research self-efficacy prior and post the RRF intervention. In addition, more rigorous qualitative data can be collected. For example, qualitative feedback may offer insights into the specific areas where students struggle or excel, while the quantitative scores may reveal overall trends and patterns in performance. By triangulating qualitative and quantitative data, we can strengthen the reliability and validity of the findings, providing a more robust understanding of the relationship between revise-resubmit feedback and students' scores on proposal writing assignments in predicting research self-efficacy.

### **Conclusion**

The study revealed that RRF served as an effective factor in increasing graduate research self-efficacy. Most graduate students recognized the benefits of receiving teacher's feedback and acknowledged the gains they experienced through the revise-resubmit practice. This improvement was evident in both their overall research competencies and their self-efficacy as research producers. It was observed that students' performance showed significant improvement between the original submission and the resubmitted scores. This finding suggests that students were able to learn from effective instructors' feedback, highlighting the importance of not only being receptive to feedback but also acting by revising and resubmitting their work. This iterative process created a win-win situation for both students and instructors. Students' engagement with and implementation of constructive feedback led to better understanding of the material, as evidenced by their improved scores. Moreover, the study emphasizes the significance of appreciating feedback through the revise resubmit process. By actively revising and resubmitting their work, students demonstrate their understanding and appreciation of time and effort invested by the instructors in providing valuable feedback. This acknowledgement reinforces the importance of feedback in the learning process and fosters a positive feedback culture between students and instructors. Overall, the findings highlight the benefits of revise-resubmit feedback in enhancing students' research competencies first and consequently their overall research self-efficacy, improving their understanding of the subject matter, and acknowledging the valuable input of instructors. Therefore, encouraging students to actively engage with feedback through revise-resubmit process can lead to positive outcomes for both their learning and the teaching process.

### **Recommendations**

The archival data used in this study did not show causal statements about the effect of revise-resubmit feedback and students' research self-efficacy. To establish a more robust understanding of the causal relationship, the study recommends conducting a true experimental study, where students would be randomly assigned to either resubmit their work or not, enabling the researcher to draw causal conclusions of the study.



**Citation:** Awuonda, K. W; Zaier, A & Atieno, S. (2023). Investigating Impact of Revise-Resubmit Feedback Strategy on Graduate Students' Research Self-Efficacy: A Mixed Methods Intervention Study. *Journal of Popular Education in Africa*. 7(10), 74 – 97.

## References

- Abraham, R. M., Singaram, V. S. Using deliberate practice framework to assess the quality of feedback in undergraduate clinical skills training. *BMC Med Educ* **19**, 105 (2019).
- Adekunle, Paul & Madukoma, Ezinwanyi. (2022). Research Self-Efficacy and Research Productivity of Doctoral Students in Universities in Ogun State. *International Journal of Doctoral Studies*. 17. DOI:10.28945/5030
- Ajjawi, R., & Boud, D. (2017). Researching Feedback Dialogue: An Interactional Analysis Approach *Assessment & Evaluation in Higher Education*, v42 n2 p252-265 <https://eric.ed.gov/?id=EJ1120348>
- Anekstein, A. M., & Vereen, L. G. (2018). Research Mentoring: A Study of Doctoral Student Experiences and Research Productivity. *Journal of Counselor Preparation and Supervision*, 11(1). Retrieved from <https://digitalcommons.sacredheart.edu/jcps/vol11/iss1/5>
- Awuonda, K. W., Jung, K., & Lee, J. (2023) Teachers' Perceptions of Competency-Based Curriculum Implementation, and Government Support: A Mixed Methods Study on Grade 1-5 Teachers in Homabay County, Kenya, *Journal of Education and Practice* 14(9), 56-60. <https://iiste.org/Journals/index.php/JEP/article/view/60675>
- Bajaj, Jagminder & Kaur, Kulbir & Arora, Rajiv & Singh, Satinder. (2018). Introduction of Feedback for Better Learning. *Journal of Clinical and Diagnostic Research*. 12. FC11-FC16. 10.7860/JCDR/2018/36744.12402.
- Bandura, A. (1994). Social cognitive theory of mass communication. In J. Bryant & D. Zillmann (Eds.), *Media effects: Advances in theory and research* (pp. 61–90). Lawrence Erlbaum Associates, Inc <https://psycnet.apa.org/record/1994-97177-004>
- Beatson, Nicola & Berg, David & Smith, Jeffrey. (2019). The influence of self-efficacy beliefs and prior learning on performance. *Accounting & Finance*. 60. 10.1111/acfi.12440.
- Burgess, A., van Diggele, C., Schneider, C., Haq, I., Leadbeater, D., Karunaratne, S., McKenzie, S., Clark, T., Henry, J., & Bloomfield, J. (2023). An Interprofessional Peer Teacher Training program for health professional students: 'face to face' versus 'online only'.. *Journal of University Teaching & Learning Practice*, 20(1), 71-89.
- Burgess, A., Roberts, C., Lane, A.S. *et al*. Peer review in team-based learning: influencing feedback literacy. *BMC Med Educ* **21**, 426 (2021). <https://doi.org/10.1186/s12909-021-02821-6>
- Burgess, A.W., Roberts, C., Black, K.I. *et al*. Senior medical student perceived ability and experience in giving peer feedback in formative long case examinations. *BMC Med Educ* 13, 79 (2013). <https://doi.org/10.1186/1472-6920-13-79>
- Bürgermeister, A., Glogger-Frey, I., & Saalbach, H. (2021). Supporting Peer Feedback on Learning Strategies: Effects on Self-Efficacy and Feedback Quality. *Psychology Learning & Teaching*, 20(3), 383–404. <https://doi.org/10.1177/14757257211016604>
- Carless, D. (2015) Exploring Learning Oriented Assessment Processes. *Higher Education*, 69, 963-976. <https://doi.org/10.1007/s10734-014-9816-z>
- Carless, David & Salter, Diane & Yang, Min & Lam, Joy. (2011). Developing Sustainable Feedback Practices. *Studies in Higher Education - STUD HIGH EDUC*. 36. 395-407. 10.1080/03075071003642449.

**Citation:** Awuonda, K. W; Zaier, A & Atieno, S. (2023). Investigating Impact of Revise-Resubmit Feedback Strategy on Graduate Students' Research Self-Efficacy: A Mixed Methods Intervention Study. *Journal of Popular Education in Africa*. 7(10), 74 – 97.

- Chang, M. L. (2009). An appraisal perspective of teacher burnout: Examining the emotional work of teachers. *Educational psychology review*, 21, 193-218. <https://link.springer.com/article/10.1007/s10648-009-9106-y>
- David Boud & Elizabeth Molloy (2013) Rethinking models of feedback for learning: the challenge of design, *Assessment & Evaluation in Higher Education*, 38:6, 698-712, DOI: 10.1080/02602938.2012.691462
- David Carless & David Boud (2018) The development of student feedback literacy: enabling uptake of feedback, *Assessment & Evaluation in Higher Education*, 43:8, 1315-1325, DOI: 10.1080/02602938.2018.1463354
- Duncanson, Kerith & Schmidt, David & Webster, Emma. (2020). Giving and receiving written feedback on research reports: A narrative review and guidance for supervisors and students. *Health Education in Practice: Journal of Research for Professional Learning*. 3. 7. DOI:10.33966/hepj.3.2.14767
- Ferdian, R. N. & Subang N., P. (2020). EPS Students' Preferences in Learning English: Face to Face Corrective Feedback vs Online Corrective Feedback. *Journal of English Teaching and Applied Linguistics*. 1(2)04-30.
- Gallien, T., & Oomen-Early, J. (2008). Personalized versus collective instructor feedback in the online course room: Does type of feedback affect student satisfaction, academic performance and perceived connectedness with the instructor? *International Journal on E-learning*, 7(3), 463-476. <https://www.learntechlib.org/p/23582/>
- Getzlaf, B., Perry, B., Toffner, G., Lamarche, K., & Edwards, M. (2009). Effective instructor feedback: Perceptions of online Graduate students. *Journal of Educators Online*, 6(2), n2. <https://eric.ed.gov/?id=ej904070>
- Goel, Kalpana & Ellis, Bronwyn. (2013). Students' and Academics' perceptions of receiving and giving feedback: Where are the gaps? *The International Journal of Assessment and Evaluation*. 19. 29-43. 10.18848/2327-7920/CGP/v19i01/58945.
- Hattie, J., & Timperley, H. (2007). The Power of Feedback. *Review of Educational Research*, 77(1), 81–112. <https://doi.org/10.3102/003465430298487>
- Inouye, K. S., & McAlpine, L. (2017). Developing Scholarly Identity: Variation in Agentive Responses to Supervisor Feedback. *Journal of University Teaching and Learning Practice*, v14 n2 Article 3 2017. <https://eric.ed.gov/?id=EJ1152016>
- Jiang, Wenhui & Yuan, Yuan & Zhang, Lanfang. (2019). Self-Efficacy and Research Capacity of Clinical Nurses in China. *Journal of continuing education in nursing*. 50. 509-516. 10.3928/00220124-20191015-07.
- Khan, R., Chahine, S., Macaluso, S. *et al*. Impressions on Reliability and Students' Perceptions of Learning in a Peer-Based OSCE. *Med.Sci.Educ.* 30, 429–437 (2020). <https://doi.org/10.1007/s40670-020-00923-2>
- Lambie, Glenn & Hayes, B. & Griffith, Catherine & Limberg, Dodie & Mullen, Patrick. (2013). An Exploratory Investigation of Research Self-Efficacy, Interest in Research, and Research Knowledge of Ph.D. in Education Students. *Innovative Higher Education*. 39.
- Mellati, M., Alavi, S., & Dashtestani, R. (2021). Reduction of Errors in Writing Assignments: A Comparison of the Impact of Peer, Teacher, and Mixed Feedback. *Iranian Journal of English for academic Purposes*. 10 (4), 152-166.

**Citation:** Awuonda, K. W; Zaier, A & Atieno, S. (2023). Investigating Impact of Revise-Resubmit Feedback Strategy on Graduate Students' Research Self-Efficacy: A Mixed Methods Intervention Study. *Journal of Popular Education in Africa*. 7(10), 74 – 97.

<https://doi.org/10.24763/187.2021.10.4.10.0>

- Orsmond, Paul & Maw, Stephen & Park, Julian & Gomez, Stephen & Crook, Anne. (2013). Moving feedback forward: Theory to practice. *Assessment & Evaluation in Higher Education*. 38. 10.1080/02602938.2011.625472.
- Petko, J. T., Sivo, S. A., & Lambie, G. W. (2020). The Research Self-Efficacy, Interest in Research, and Research Mentoring Experiences of Doctoral Students in Counselor Education. *The Journal of Counselor Preparation and Supervision*, 13(1). <http://dx.doi.org/10.7729/131.1310>
- Reuse-Durham, N. (2005). Peer Evaluation as an Active Learning Technique. *Journal of Instructional Psychology*, 32(4). <https://d1wqtxts1xzle7.cloudfront.net/70363052>
- Rosemary S. Caffarella & Bruce G. Barnett (2000) Teaching Doctoral Students to Become Scholarly Writers: The importance of giving and receiving critiques, *Studies in Higher Education*, 25:1, 39-52, DOI: 10.1080/030750700116000
- Ruegg, R. (2015). Differences in the Uptake of Peer and Teacher Feedback. *RELC Journal*, 46(2), 131–145.
- Saeed, B. Q., Al-Shahrabi, R., Alhaj, S. S., Alkokhardi, Z. M., & Adrees, A. O. (2021). Side effects and perceptions following Sinopharm COVID-19 vaccination. *International Journal of Infectious Diseases*, 111, 219–226. <https://doi.org/10.1016/j.ijid.2021.08.013>
- Saeed, M. A., Al Qunayeer, H. S., & AL-Jaberi, M. A. (2021). Exploring Supervisory Feedback Formulation on Academic Writing of Research Proposals and Postgraduates' Responses to Feedback: A Case Study. *SAGE Open*, 11(2). <https://doi.org/10.1177/21582440211007125>
- Schunk, D. H. (1983). Progress self-monitoring: Effects on children's self-efficacy and achievement. *Journal of Experimental Education*, 51, 89-93. <http://www.tandf.co.uk/journals/>
- Schunk, D. H., & Zimmerman, B. J. (2007). Influencing children's self-efficacy and self-regulation of reading and writing through modeling. *Reading & Writing Quarterly: Overcoming Learning Difficulties*, 23(1), 7–25. <https://doi.org/10.1080/10573560600837578>
- Ursula Wingate (2010) The impact of formative feedback on the development of academic writing, *Assessment & Evaluation in Higher Education*, 35:5, 519-533, DOI: 10.1080/02602930903512909
- Wagner, C., Kawulich, B., & Garner, M. (2019). A Mixed Research Synthesis of Literature on Teaching Qualitative Research Methods. *SAGE Open*, 9(3). <https://doi.org/10.1177/2158244019861488>
- Wang, S-L. and Wu, P.-Y. (2008) The Role of Feedback and Self-Efficacy on Web-Based Learning: The Social Cognitive Perspective. *Computers and Education*, 51, 1589-1598. <https://doi.org/10.1016/j.compedu.2008.03.004>
- Wisniewski, Benedikt & Zierer, Klaus & Hattie, John. (2020). The Power of Feedback Revisited: A Meta-Analysis of Educational Feedback Research. *Frontiers in Psychology*. 10. 3087. 10.3389/fpsyg.2019.03087. DOI:10.3389/fpsyg.2019.03087

**Citation:** Awuonda, K. W; Zaier, A & Atieno, S. (2023). Investigating Impact of Revise-Resubmit Feedback Strategy on Graduate Students' Research Self-Efficacy: A Mixed Methods Intervention Study. *Journal of Popular Education in Africa*. 7(10), 74 – 97.

Ye Han & Yueting Xu (2020) The development of student feedback literacy: the influences of teacher feedback on peer feedback, *Assessment & Evaluation in Higher Education*, 45:5, 680-696.

Yu, S., & Lee, I. (2016). Peer feedback in second language writing (2005–2014). *Language Teaching*, 49(4), 461-493. DOI: <https://doi.org/10.1017/S0261444816000161>

Zou, D., Xie, H. & Wang, F. Effects of technology enhanced peer, teacher and self-feedback on students' collaborative writing, critical thinking tendency and engagement in learning. *J Comput High Educ* **35**, 166–185 (2023). <https://doi.org/10.1007/s12528-022-09337-y>

**Citation:** Awuonda, K. W; Zaier, A & Atieno, S. (2023). Investigating Impact of Revise-Resubmit Feedback Strategy on Graduate Students' Research Self-Efficacy: A Mixed Methods Intervention Study. *Journal of Popular Education in Africa*. 7(10), 74 – 97.

**Appendices**

Table 1. Summary of data

4 Phases	3 Phases	2 Phases
6 sections	4 sections	2 sections
N= 76 (37+9+23+7)	N= 62 (36+26)	N = 22 (11+11)

Table 2. Descriptive analysis

<b>Descriptives</b>								
Final scores for each phase								
	N	Mean	Std. Deviation	Std. Error	95% Confidence Interval for Mean		Minimum	Maximum
					Lower Bound	Upper Bound		
4Phases	76	91.33	17.479	2.005	87.33	95.32	0	100
3 Phase	62	92.35	11.838	1.503	89.35	95.36	25	100
2 Phase	22	93.32	5.366	1.144	90.94	95.70	80	100
Total	160	92.00	14.219	1.124	89.78	94.22	0	100

Table 3. Homogeneity of Variances

<b>Tests of Homogeneity of Variances</b>					
		Levene Statistic	df1	df2	Sig.
Final scores for each phase	Based on Mean	3.055	2	157	.050
	Based on Median	.857	2	157	.426
	Based on Median and with adjusted df	.857	2	117.081	.427
	Based on trimmed mean	1.507	2	157	.225

Table 4. ANOVA

<b>ANOVA</b>					
Final scores for each phase					
	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	80.257	2	40.129	.196	.822
Within Groups	32065.743	157	204.240		
Total	32146.000	159			

***Journal of Popular Education in Africa: ISSN 2523-2800 (online)***

**October, November & December 2023, Volume 7, Number 10, 11 & 12**

**Citation:** Awuonda, K. W; Zaier, A & Atieno, S. (2023). Investigating Impact of Revise-Resubmit Feedback Strategy on Graduate Students' Research Self-Efficacy: A Mixed Methods Intervention Study. *Journal of Popular Education in Africa*. 7(10), 74 – 97.

**Citation:** Awuonda, K. W; Zaier, A & Atieno, S. (2023). Investigating Impact of Revise-Resubmit Feedback Strategy on Graduate Students’ Research Self-Efficacy: A Mixed Methods Intervention Study. *Journal of Popular Education in Africa*. 7(10), 74 – 97.

Table 5 Descriptive analysis for mean improvement

<b>Descriptives</b>								
Mean Improvement								
	N	Mean	Std. Deviation	Std. Error	95% Confidence Interval for Mean		Minimum	Maximum
					Lower Bound	Upper Bound		
4-P MI	76	19.96	12.581	1.443	17.09	22.84	0	60
3-P MI	62	37.31	9.988	1.268	34.77	39.84	8	50
2-P MI	22	30.95	1.588	.339	30.25	31.66	27	33
Total	160	28.19	13.383	1.058	26.10	30.28	0	60

Table 6. ANOVA

<b>ANOVA</b>						
Mean Improvement						
	Sum of Squares	df	Mean Square	F	Sig.	
Between Groups	10467.980	2	5233.990	45.629	<.001	
Within Groups	18009.014	157	114.707			
Total	28476.994	159				

Table 7. Tests of Homogeneity of Variance

<b>Tests of Homogeneity of Variances</b>					
		Levene Statistic	df1	df2	Sig.
Mean Improvement	Based on Mean	19.422	2	157	<.001
	Based on Median	13.224	2	157	<.001
	Based on Median and with adjusted df	13.224	2	135.435	<.001
	Based on trimmed mean	19.199	2	157	<.001

**Citation:** Awuonda, K. W; Zaier, A & Atieno, S. (2023). Investigating Impact of Revise-Resubmit Feedback Strategy on Graduate Students’ Research Self-Efficacy: A Mixed Methods Intervention Study. *Journal of Popular Education in Africa*. 7(10), 74 – 97.

Table 8. Post hoc analysis

<b>Multiple Comparisons</b>							
Dependent Variable: Mean Improvement							
	(I) RRF Phases	(J) RRF Phases	Mean Difference (I-J)	Std. Error	Sig.	95% Confidence Interval	
						Lower Bound	Upper Bound
Bonferroni	4-P MI	3-P MI	-17.346*	1.833	<.001	-21.78	-12.91
		2-P MI	-10.994*	2.593	<.001	-17.27	-4.72
	3-P MI	4-P MI	17.346*	1.833	<.001	12.91	21.78
		2-P MI	6.352	2.658	.054	-.08	12.78
	2-P MI	4-P MI	10.994*	2.593	<.001	4.72	17.27
		3-P MI	-6.352	2.658	.054	-12.78	.08
Games-Howell	4-P MI	3-P MI	-17.346*	1.921	<.001	-21.90	-12.79
		2-P MI	-10.994*	1.482	<.001	-14.53	-7.46
	3-P MI	4-P MI	17.346*	1.921	<.001	12.79	21.90
		2-P MI	6.352*	1.313	<.001	3.21	9.50
	2-P MI	4-P MI	10.994*	1.482	<.001	7.46	14.53
		3-P MI	-6.352*	1.313	<.001	-9.50	-3.21

\*. The mean difference is significant at the 0.05 level.