# Model For Research Productivity Among Public School Teachers

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**Abstract**

This study examined the factors influencing the proposed model for research productivity of public-school teachers in the Division of Quezon, focusing on engagement, self-efficacy, positive emotions, and research collaboration. Specifically, it determined the effects of these variables on research productivity and analyzed their direct and mediating relationships. A quantitative descriptive-correlational design was employed, integrating Structural Equation Modeling (SEM) to assess both direct and indirect effects and to validate the proposed model. Data were collected from 150 purposively selected elementary and secondary teacher-researchers using a validated 125-item Likert-scale questionnaire measuring engagement, efficacy, positive emotions, collaboration, and research productivity.

Descriptive statistics (mean and standard deviation) were used to determine the levels of variables, while inferential statistics, including Pearson's correlation and multiple regression analysis, examined relationships and predictive effects. Findings revealed that both engagement and self-efficacy have significant positive effects on research productivity. However, positive emotions and research collaboration did not significantly mediate the relationship between engagement or efficacy and productivity; still, these variables help strengthen the impact of both engagement and efficacy on research productivity. The results suggest that both positive emotions and research productivity contribute to teacher engagement and efficacy, and that positive emotions play a more critical role in enhancing research productivity. Thus, fostering both variables of research practices is essential in strengthening teachers' research output and advancing professional development in public schools. Based on these findings, the model of research productivity indicates that although positive emotions and research collaborations are significant variables for engagement and efficacy among teacher researchers, they are not the primary determinant of research productivity, highlighting this as a vital topic for further advancement in professional practices for educators.

*Keywords:*Engagement; Efficacy; Positive Emotions; Research Collaboration; Research Productivity;

## 1. Introduction

Research has long been recognized as a significant factor in teachers' professional development, especially in public schools, where evidence-based practices are needed to enhance instruction and learner outcomes. However, balancing teaching responsibilities with research remains a major challenge for educators. According to Wang and Dapat (2023), heavy workloads, administrative duties, and lack of time significantly hinder teachers' research productivity, limiting both motivation and opportunities. These limits typically make people less motivated and provide them with fewer opportunities to start or complete a research project.

In the progress of education, teachers are not only expected to deliver knowledge to learners but also

to contribute to the growth of their profession through research. Research is part of an innovative strategy that a teacher in the Department of Education is encouraged to accomplish. The department has the means to measure and ensure that good-quality research is done. As educators in Quezon face unique challenges and opportunities, understanding the dynamics of their research productivity becomes crucial in shaping a more innovative and effective educational system.

In 2001, the Basic Education Governance Act highlighted the importance of research in managing and running basic education. Because of this, the department made efforts to support teachers with training to improve their research skills. They started various projects under the Basic Education System Reform Agenda (BESRA). In 2003, they also established the Research, Innovation, and Policy Evaluation Secretariat (RIPES; DepEd Order No. 39, s. 2016).

In the Philippines, the Department of Education (DepEd) has instructed all school leaders, supervisors, and teachers to follow the "Basic Education Research Agenda." This agenda encourages educational research throughout the country. Its main aim is to identify the problems and concerns faced by teachers and the department. Teachers can suggest effective solutions based on the research findings by identifying these issues. Professional growth and development are key areas in assessing each teacher's performance. As a result, conducting action research has become part of the annual performance appraisal for all teachers.

At the basic education level, Agudo and Garcia (2025) found that DepEd teachers consistently face difficulties across all stages of research, particularly in time management, data analysis, and conclusion writing. These findings point to the urgent need for capacity-building, research guidebooks, and stronger institutional support systems. Similarly, Roman (2021) conducted a study in Bacoor, Cavite, that revealed that competence, institutional support, and research self-efficacy are strong predictors of productivity, but financial and time constraints remain barriers. Arcigal and Briones (2022) also noted the gaps in technical and computational skills, while Camilon, Callo, and Panoy (2024) demonstrated that self-motivation, institutional support, and conducive environments significantly influence research output.

The Philippine Department of Education has worked hard to promote research in recent years, although many elementary and secondary public school teachers still don't perform much action research. Professional development programs aimed at increasing educational research skills are rarely used. Saro and Taray (2024) attribute this lack of interest to teachers' enormous workloads, which prioritize classroom instruction, administrative responsibilities, and extracurricular activities above research. Velasco (2024) also noted that classroom research is a useful teaching method, but many teachers struggle with writing, gathering, and interpreting data. Meng and Gao (2019) also found that teachers are less likely to research if they lack research skills or confidence. Structural factors, including a lack of mentoring, research funding, and institutional support, exacerbate these concerns. This makes it challenging for teachers to value research.

The Department of Education (DepEd) has recognized the need for teachers to have at least one action research project. It is used as a tool for ongoing improvement in education. By encouraging educators to engage in systematic inquiry, DepEd aims to improve teaching methods, address classroom challenges, and enhance student learning outcomes. Implementing action research for DepEd personnel marks a significant step toward creating a more thoughtful and evidence-based education system in the Philippines.

With the implementation of the recent PMES Performance Management and Evaluation System (PMES) for Teachers, the use of research-based knowledge and principles of teaching and learning is included as an indicator in the Classroom Observation Tool. In this instance, it is now part of the encouragement that DepEd employees, from teachers to administrators, conduct action research and integrate research-based knowledge into their teaching.

In this regard, this research aims to determine whether engagement, efficacy, positive emotion, and collaboration are variables in the model of research productivity among teachers in public schools in the Division of Quezon. This study tests whether teachers' engagement and self-efficacy significantly predict their research productivity in public schools in the Division of Quezon. It also examines whether positive

emotions and research collaboration mediate the relationship between engagement and research productivity. Related readings focusing on variables of research productivity could greatly enhance this study and clarify the interrelationships among these variables and constructs among teachers in public schools in Quezon, as these are part of their tasks within the specific school year.

## 2. Methodology

This study utilized a quantitative descriptive-correlational research design to examine the relationships among engagement, self-efficacy, positive emotions, collaboration, and research productivity among public school teachers. The descriptive component was used to determine the levels of these variables, while the correlational approach explored their interrelationships and mediation effects. To further strengthen the analysis, Structural Equation Modeling (SEM) was employed to assess both direct and indirect relationships and to validate the proposed model of research productivity. This overall approach ensured a comprehensive, objective, and data-driven understanding of how multiple factors interact to influence teachers' research productivity.

The study involved 150 purposively selected public school teacher-researchers from both elementary and secondary schools in the Division of Quezon. These participants were chosen for their active involvement in research activities, such as conducting, presenting, or disseminating studies, ensuring they could provide relevant and meaningful insights. The sample represented a diverse range of schools, with participation rates ranging from 0.7% (1 respondent) to 7.3% (11 respondents) across institutions, enabling broader representation within the division. While purposive sampling does not aim for generalization, it enabled the study to focus on teachers with firsthand research experience, thereby enhancing the depth and relevance of the findings.

Data were gathered using a validated, self-administered survey questionnaire consisting of multiple parts that measured engagement, efficacy, positive emotions, collaboration, and research productivity using a four-point Likert scale. The instrument proceeded with expert validation to ensure reliability and accuracy. Data collection followed formal and systematic procedures, including securing approval from the Schools Division Superintendent and coordinating with public school district supervisors and school heads to administer the survey through both physical and online platforms, such as Google Forms and Actual Survey Questionnaire. Ethical standards, including voluntary participation, informed consent, and confidentiality, were strictly observed throughout the process.

For data analysis, both descriptive and inferential statistical techniques were applied. Descriptive statistics, such as frequencies, percentages, means, and standard deviations, were used to summarize respondents' profiles and variable levels. Inferential statistics, including Pearson's correlation and multiple regression analysis, were used to assess the strength and significance of relationships among variables and their predictive effects on research productivity. Additionally, SEM was used to analyze complex interactions among variables and mediation effects, providing a more comprehensive interpretation of the data and strengthening the validity of the study's conclusions.

## 3. Results And Discussion

This research aimed to explore the variables that affect the Model for Research Productivity of Teachers in Public Schools in Quezon.

The data in Table 1 show that teachers' engagement in educational research is generally high. Among the indicators, Conduct of Activity obtained the highest mean of 3.51 (SD = 0.58), interpreted as *very high*, indicating that teachers are actively involved in research-related tasks. This is followed by Reading Habits, with a mean of 3.43 (SD = 0.58), and Participation, with 3.37 (SD = 0.66), both interpreted as *high*.

These results suggest that while teachers are highly engaged in conducting research activities, their participation and reading habits, although strong, may still have room for enhancement. Overall, teacher engagement yielded a mean of 3.43 (SD = 0.60), which was verbally interpreted as high and to a great extent, indicating that research engagement practices are consistently observed among the respondents. This implies that teachers demonstrate a strong commitment to educational research, which may contribute positively to their professional growth and research productivity.

***Table 1.***
Summary Table on the Level of Teachers' Engagement in Educational Research

| Variable | Mean | SD | VI |
|---|---|---|---|
| Conduct of Activity | 3.51 | 0.58 | Very High |
| Participation | 3.37 | 0.66 | High |
| Reading Habits | 3.43 | 0.58 | High |
| **Overall** | 3.43 | 0.60 | High |

*Legend: Very High (to a very great extent) 3.50-4.00, High (to a great extent) 2.50-3.49, Low (to a moderate extent) 1.50-2.49, Very Low (not at all) 1.00-1.49*

Recent studies reinforce the role of these underlying variables in engagement relative to research productivity. Alhasan and Ali (2020) describe teacher research engagement as a multifaceted and often debated concept, encompassing activities such as conducting research, reading or using research, and applying findings to practice. Teacher research is defined as a systematic inquiry, whether qualitative or quantitative, conducted individually or collaboratively within teachers' own contexts to enhance understanding of their work, improve teaching and learning and contribute to institutional development and policy. Supporting this, Mehranirad (2015) assessed teachers' research engagement through interviews that focused on their involvement in conducting or participating in research, the frequency of reading research materials, and the sources consulted. Together, these perspectives emphasize that teacher research engagement plays a significant role in developing teachers' competencies and advancing their professional development.

Overall, the results indicate that teachers demonstrate a consistently high level of engagement in educational research, with particularly strong involvement in conducting research activities and generally positive participation and reading habits. The high overall rating suggests that research practices are well integrated into teachers' professional responsibilities, reflecting a commitment to and awareness of the value of research in improving teaching and learning. In general, the findings point to a solid foundation of research engagement among teachers, which can be further enhanced to support greater research productivity and continuous professional development.

***Table 2.***
Summary Table on the Level of Teachers' Efficacy in Educational Research

| Variable | Mean | SD | VI |
|---|---|---|---|
| Collecting Data and Research Results | 3.42 | 0.60 | High |
| Designing Study; | 3.46 | 0.57 | High |
| Analyzing Data; and | 3.39 | 0.62 | High |
| Disseminating Findings | 3.35 | 0.62 | High |

| | | | |
|---|---|---|---|
| **Overall** | 3.41 | 0.60 | High |

*Legend: Very High (to a very great extent) 3.50-4.00, High (to a great extent) 2.50-3.49, Low (to a moderate extent) 1.50-2.49, Very Low (not at all) 1.00-1.49*

The results in Table 2 indicate that teachers demonstrate a consistently high level of efficacy in educational research across all indicators. Among the variables, designing the study obtained the highest mean of 3.46 (SD = 0.57), followed closely by collecting data and research results with a mean of 3.42 (SD = 0.60), both interpreted as *high*. Meanwhile, analyzing data (3.39, SD = 0.62) and disseminating findings (3.35, SD = 0.62) also fall within the *high* level, although slightly lower compared to other areas. The overall mean of 3.41 (SD = 0.60), verbally interpreted as *high*, suggests that teachers generally possess strong confidence and capability in performing key research tasks. However, the relatively low scores in data analysis and dissemination suggest that these areas may still require further support and improvement. Overall, the findings reflect that while teachers are competent in conducting research, strengthening specific skills could further improve their research productivity and effectiveness.

To support this, Self-efficacy is a construct originally conceptualized by Bandura (1977, 1998) that refers to an individual's belief in their ability to perform specific tasks successfully. Bandura's social cognitive theory situates self-efficacy as a core determinant of behavior, asserting that individuals' judgments about their capability to organize and execute actions significantly affect motivation, resilience, and performance. In teaching, this means that teachers who perceive themselves as capable are more likely to adopt innovative strategies, persist through challenges, and pursue professional growth opportunities, such as research.

Empirical studies consistently support the role of self-efficacy in fostering teacher productivity. Hill et al. (2022) demonstrated that prior exposure to research and mentorship significantly enhances research self-efficacy, which in turn increases both interest and productivity in scholarly work. Their exploratory factor analysis revealed four dimensions of research self-efficacy data analysis, research integration, data collection, and technical writing—underscoring the multifaceted nature of confidence in conducting research.

***Table 3.***
Summary Table on the Level of Positive Emotions of Teachers and Their Effect on Doing Research

| Variable | Mean | SD | VI |
|---|---|---|---|
| Curiosity | 3.49 | 0.54 | High |
| Joy; | 3.53 | 0.57 | Very High |
| Hope; | 3.62 | 0.52 | Very High |
| Interest | 3.60 | 0.52 | Very High |
| Gratitude | 3.67 | 0.51 | Very High |
| Resilience | 3.47 | 0.57 | High |
| **Overall** | 3.56 | 0.54 | Very High |

*Legend: Very High (to a very great extent) 3.50-4.00, High (to a great extent) 2.50-3.49, Low (to a moderate extent) 1.50-2.49, Very Low (not at all) 1.00-1.49*

The summary table reveals that teachers exhibit a very high level of positive emotions toward research, with an overall mean of 3.56 (SD = 0.54). Among the indicators, gratitude (M = 3.67) recorded the highest mean, followed closely by hope (M = 3.62) and interest (M = 3.60), all interpreted as *very high*. This suggests that teachers are not only appreciative of opportunities to engage in research but also maintain

optimism and sustained interest in the process. Joy (M = 3.53) likewise falls within the very high range, indicating that teachers generally find satisfaction and enjoyment in research-related tasks. Meanwhile, curiosity (M = 3.49) and resilience (M = 3.47), though slightly lower, are still rated highly, suggesting that teachers have a strong inclination to explore new knowledge and persist despite challenges. Overall, the findings indicate that positive emotional dispositions are strongly present among teachers, which may significantly enhance their engagement, motivation, and productivity in conducting research.

Positive emotions are essential in sustaining teachers' motivation and engagement in research, serving as moderating variables that influence productivity. Grounded in Fredrickson's (2001) broaden-and-build theory and Pekrun's (2006) control-value framework, these emotions broaden attention, strengthen persistence, and build enduring resources for academic work. For instance, curiosity and interest inspire teachers to investigate school challenges and explore innovative research methods, while joy energizes them to complete tasks and meet milestones. Similarly, hope provides a future-oriented perspective, enabling teachers to remain resilient in the face of setbacks and to sustain their long-term goals. Together, these emotions empower teachers to maintain creativity, problem-solving skills, and perseverance in research endeavors.

***Table 4.***
Summary Table on the Level of Research Collaboration of Teachers and Their Effect on Doing Research

| Variable | Mean | SD | VI |
|---|---|---|---|
| Addressing Mutual Expectations; | 3.44 | 0.20 | High |
| Defining Task Responsibilities | 3.51 | 0.56 | Very High |
| Determining Authorship; | 3.52 | 0.55 | Very High |
| Communicating Frequently with Others | 3.52 | 0.57 | Very High |
| Accessing Data | 3.46 | 0.59 | High |
| Sharing Responsibility for the Integrity of the Research | 3.60 | 0.56 | Very High |
| **Overall** | 3.51 | 0.51 | Very High |

*Legend: Very High (to a very great extent) 3.50-4.00, High (to a great extent) 2.50-3.49, Low (to a moderate extent) 1.50-2.49, Very Low (not at all) 1.00-1.49*

Table 4 presents a summary of teachers' levels of research collaboration and their effect on research. The overall mean score of 3.51 with a standard deviation of 0.51 is interpreted as Very High, indicating that teachers generally demonstrate a strong level of collaboration in conducting research. Among the indicators, Sharing Responsibility for the Integrity of the Research obtained the highest mean (3.60, SD = 0.56), followed by Determining Authorship and Communicating Frequently to Others, both with a mean of 3.52 and interpreted as Very High, suggesting that teachers are highly engaged in maintaining ethical standards, clearly assigning authorship, and sustaining consistent communication during the research process. Similarly, Defining Task Responsibilities (M = 3.51, SD = 0.56) also falls under the Very High category, indicating that roles and duties are well established among collaborators. On the other hand, Accessing Data and Information (M = 3.46, SD = 0.59) and Addressing Mutual Expectations (M = 3.44, SD = 0.20) are interpreted as High, suggesting that while these aspects are practiced, they are slightly less emphasized compared to other collaborative behaviors. Overall, the findings suggest that teachers exhibit a strong collaborative culture in research, particularly regarding responsibility, communication, and ethical practices, which positively influences their ability to conduct research effectively.

To support this, Bansal et al. (2019) discuss variables to consider for successful collaboration, including addressing mutual expectations and clearly defining who is responsible for each *task*. *Determine authorship*, *Communicate frequently and Access to data*. Collaboration in research also means a shared responsibility for the integrity of the research.

***Table 5.***
Summary Table on the Level of Research Productivity of Public School Teachers in Quezon

| Variable | Mean | SD | VI |
|---|---|---|---|
| Involvement in research; | 3.30 | 0.63 | High |
| Ongoing research project/s; | | | |
| Completed research/es; | 3.15 | 0.92 | High |
| Presented research/es; | 3.50 | 0.68 | Very High |
| Output Extended to the Community; | 3.37 | 0.76 | High |
| and | | | |
| Output Implemented for | 3.23 | 0.74 | High |
| Instructional Practice? | 3.34 | 0.69 | High |
| **Overall** | 3.31 | 0.74 | High |

*Legend: Very High (to a very great extent) 3.50-4.00, High (to a great extent) 2.50-3.49, Low (to a moderate extent) 1.50-2.49, Very Low (not at all) 1.00-1.49*

Table 5 presents a summary of the level of research productivity of public school teachers in Quezon, revealing an overall mean of 3.31 with a standard deviation of 0.74, which is interpreted as High. This indicates that teachers demonstrate a considerable level of productivity in research-related activities. Among the indicators, the presented research/es obtained the highest mean (3.50, SD = 0.68) and is interpreted as Very High, suggesting that teachers are highly active in disseminating their research outputs. Other indicators, including Output Extended to the Community (M = 3.37, SD = 0.76), Output Implemented for Instructional Practice (M = 3.34, SD = 0.69), Involvement in Research (M = 3.30, SD = 0.63), and On-going Research Projects (M = 3.23, SD = 0.74), are all interpreted as High, indicating consistent engagement in various stages of the research process. Meanwhile, Completed Research/es recorded the lowest mean (3.15, SD = 0.92), though still within the High category, suggesting that while teachers are actively involved and engaged, completing research outputs may still present some challenges. Overall, the findings suggest that teachers maintain a high level of research productivity, particularly in presenting and applying research. However, further support may be needed to improve research project completion rates.

Similarly, Cardona (2019) revealed low research participation among high school teachers but highlighted the strong influence of leadership, mentoring, and incentives in improving output. Meanwhile, Abellanida and Blasé (2024) found that most teachers produce little research due to time constraints and heavy workloads, though collaboration and peer support offer potential for improvement. Collectively, these findings underscore that teacher research productivity depends not only on motivation but also on competence, leadership, institutional support, and collaborative engagement, which must be strengthened to foster a more research-active educational environment.

***Test of Correlations Between Variables***

***Table 6***

*Correlations between Engagement and Positive Emotion*

| Engagement | Positive Emotion | | | | | |
|---|---|---|---|---|---|---|
| | **Curiosity** | **JOY** | **Hope** | **Interest** | **Gratitude** | **Resilience** |
| Conduct of Activity | .591** | .581** | .589** | .485** | .587** | .555** |
| Participation | .604** | .567** | .589** | .479** | .584** | .576** |
| Reading Habits | .625** | .623** | .613** | .561** | .596** | .608** |

The results of the correlation analysis were interpreted using established guidelines for the strength and direction of relationships. Correlation coefficients (r-values) were classified as follows: ±1.0 indicates a perfect association, ±0.80 to ±1.0 very strong, ±0.60 to ±0.80 strong, ±0.40 to ±0.60 moderate, ±0.20 to ±0.40 weak, and 0.00 to ±0.20 very weak or no association. Moreover, statistical significance was assessed using a two-tailed test; correlations marked with double asterisks (**) are significant at the 0.01 level, indicating a strong relationship. In comparison, those marked with a single asterisk (*) are significant at the 0.05 level, indicating a significant relationship. These criteria were used to assess both the strength and significance of the relationships among the variables, providing a basis for determining whether the observed correlations are meaningful and not due to chance.

Table 6 shows that, in terms of engagement and positive emotion (6.1), the engagement dimensions exhibit moderate-to-strong correlations with all positive emotion indicators. Correlation coefficients range from r = .479 to r = .625, suggesting that higher engagement is associated with greater curiosity/confidence, joy, hope, interest, gratitude, and resilience.

Notably, the strongest relationships appear between engagement and curiosity/confidence, joy, hope, and resilience (e.g., values reaching r ≥ .60 in several pairings), indicating that teachers who are more cognitively and behaviorally involved in research are also more likely to experience stronger positive emotional dispositions toward the research process.

Table 6 shows how different aspects of teacher engagement relate to various positive emotion indicators. The engagement dimensions encompass Conduct of Activity Average, Participation Average, and Reading Habits Average, whereas the positive emotions assessed include Curiosity, Joy, Hope, Interest, Gratitude, and Resilience. The correlation coefficients, ranging from 0.479 to 0.625, indicate a moderate-to-strong association between higher engagement and greater positive emotion. The more engaged teachers are, the more likely they are to experience stronger emotions such as curiosity, joy, hope, interest, gratitude, and resilience.

In summary, it shows how important engagement is for teachers to have good emotional experiences. Teachers who are actively engaged in their work, whether through research, collaboration, or learning new things, tend to experience more positive emotions. These results indicate that fostering an engaging environment for educators is essential not only for improving their research productivity but also for enhancing their emotional well-being. The positive relationship between engagement and positive emotions indicates that feelings such as curiosity, joy, and hope are important for maintaining engagement and supporting professional growth**.**

Positive emotions play a significant role in motivation, cognitive function, and professional growth. In educational settings, emotions such as enthusiasm, joy, and pride influence teachers' willingness to engage in research and professional development. Teachers with high emotional well-being are more likely to demonstrate resilience and commitment to academic research (Hagenauer et al., 2023).

***Table 7.***
*Engagement and Research Collaboration*

| Engagement | Research Collaboration | | | | | |
|---|---|---|---|---|---|---|
| | Address Mutual Expectations | Define Task Responsibilities | Determine Authorship | Communicate Frequently with Others | Access to Data | Shared Responsibility for the Integrity of the Research |
| Conduct of Activity | .254** | .580** | .622** | .632** | .608** | .530** |
| Participation | .197* | .572** | .569** | .544** | .567** | .485** |
| Reading Habits | .244** | .585** | .540** | .548** | .564** | .491** |

Table 7 shows that, regarding research collaboration (6.2), engagement is also significantly related to collaborative practices, with correlations largely in the moderate-to-strong range (r = .485 to .632 for most indicators). This suggests that engaged teachers tend to communicate more effectively, define responsibilities, align roles, and contribute to shared goals within research teams. However, the relationship between engagement and AME is comparatively weak yet significant (r = .197 to .254), indicating that this specific aspect of collaboration is related to engagement, though not as strongly as the other collaboration components.

The correlation between teacher engagement and research collaboration is examined, with a focus on the five key collaborative practices: Address Mutual Expectations, Define Task Responsibilities, Determine Authorship, Communicate Frequently to Others, Access Data and Information, and Shared Responsibility for the Integrity of the Research. The correlations between engagement and these collaboration practices largely fall within the moderate-to-strong range (r = 0.485 to 0.632 for most indicators), indicating that engaged teachers are more likely to participate in effective collaborative research activities.

Overall, these findings demonstrate that engagement in research is positively associated with key collaborative practices. Teachers who are actively engaged in research activities tend to be more effective in defining roles, communicating frequently, sharing responsibility for the research process, and ensuring the integrity of their work. Moreover, the moderate-to-weak correlation between engagement and Address Mutual Expectations suggests that, while engaged teachers are more likely to collaborate effectively across most aspects, additional support may be needed to foster a stronger understanding and agreement on mutual expectations within research teams.

Working together on research projects provides teachers with valuable experience and exposure, and it can also help them grow professionally and conduct more research. To support this, Ulla, Barrera, and Acompanado (2017) found that collaborative research projects increased instructors' motivation and involvement in research in the Philippines, especially when supported by professional development programs.

Abelardo et al. (2019) also found that instructors who worked together on research projects felt more confident and improved their skills more than those who worked alone. However, they still had problems with their workload and lack of support from their schools. Oestar and Marzo (2020) also stressed that working together can help teachers improve their research skills, noting that planned opportunities for collaboration can help fill skill gaps.

***Table 8.***
*Engagement and Research Productivity*

| Engagement | Research productivity | | | | | |
|---|---|---|---|---|---|---|
| | Involvement in Research | Ongoing Research Projects | Completed Research | Presented Research/es | Output Extended to the Community | Output Implemented for Instructional Practice |
| Conduct of Activity | .654** | .491** | .673** | .663** | .568** | .646** |
| Participation | .654** | .455** | .684** | .718** | .575** | .676** |
| Reading Habits | .579** | .455** | .537** | .596** | .475** | .546** |

Table 8 presents the correlation between teacher engagement and various aspects of research productivity. The table includes five dimensions of research productivity: Involvement in Research, Ongoing Research Projects, Completed Research Projects, Presented Research, Output Extended to the Community, and Output Implemented for Instructional Practice. The correlations between engagement and these productivity indicators largely fall within the moderate-to-strong range, indicating a significant relationship between engagement and research outcomes, with r values ranging from approximately .455 to .684 for most indicators.

In summary, Table 8 demonstrates that teacher engagement is positively associated with various aspects of research productivity. Teachers who are actively engaged in research activities, whether through direct involvement, participation in collaborative projects, or continuous learning through reading, are more likely to complete research projects, present their findings, and extend their research to the broader community. The findings suggest that engagement not only enhances research productivity but also contributes to the practical application of research findings in teaching and community development.

Teachers' research productivity increases when they actively participate in research-related activities beyond direct research, such as attending seminars, workshops, research forums, and conferences. Torres and Reyes (2020) examined how Filipino high school teachers were involved in research-related activities and found that attending research seminars was strongly associated with conducting more research. Teachers said they learned a lot and made connections that helped them work together on research projects.

Similarly, in these findings, Saro et al. (2024) reported a strong correlation between teachers' engagement in action research and their understanding of research methodologies and problem-solving abilities. Recommendations included providing ongoing professional development opportunities, enhancing institutional support, establishing mentorship programs, improving access to research resources, and creating recognition systems for research achievements. These measures aimed to bolster teachers' research skills, overcome barriers, and foster a supportive environment for action research. The study emphasized the importance of further professional development and institutional support to enhance teachers' competencies and address significant challenges in action research.

The table below shows that efficacy is significantly related to positive emotion, as indicated by the statistically significant correlation coefficients (marked with * and **). Table 9 illustrates the correlation between teacher efficacy and various positive emotion indicators. The efficacy dimensions explored in the table are Collecting Data and Results, Designing Study, Analyzing Data, and Disseminating Research. The findings highlight significant positive correlations between these efficacy dimensions and positive emotions, including Curiosity, JOY, Hope, Interest, Gratitude, and Resilience. These correlations indicate that teachers

who feel more efficacious in their research activities tend to experience stronger positive emotions, which, in turn, may enhance their motivation and engagement in research.

***Table 9.***
*Efficacy and Positive Emotion*

| Efficacy | Positive Emotion | | | | | |
|---|---|---|---|---|---|---|
| | **Curiosity** | **JOY** | **Hope** | **Interest** | **Gratitude** | **Resilience** |
| Collecting Data and Results | .685** | .677** | .692** | .649** | .689** | .681** |
| Designing Study | .711** | .711** | .698** | .683** | .698** | .670** |
| Analyzing Data | .667** | .721** | .663** | .659** | .633** | .636** |
| Disseminating | .731** | .736** | .686** | .660** | .672** | .685** |

The dimension of Collecting Data and Results showed the strongest correlations with Curiosity (r = 0.685) and JOY (r = 0.677). This suggests that teachers who perceive themselves as more capable in collecting and analyzing research data tend to experience higher levels of curiosity and joy. The ability to collect data effectively seems to foster greater exploration and excitement in the research process, leading teachers to feel more engaged and satisfied with their work. The significant association between data-collection efficacy and positive emotion underscores the importance of building teachers' confidence in this crucial research task.

In general, the correlations presented in Table 41 show that teacher efficacy across various research activities is closely linked to positive emotional experiences. Teachers who perceive themselves as capable in tasks such as data collection, study design, data analysis, and research dissemination are more likely to experience positive emotions, including curiosity, joy, hope, gratitude, and resilience. These positive emotional outcomes, in turn, enhance teachers' overall engagement in research and contribute to their long-term professional development.

The findings from this table suggest that fostering teacher efficacy in these critical areas of research can significantly affect their emotional experiences, making them more motivated and confident in pursuing research. By enhancing teachers' efficacy in these key areas, educational institutions can not only improve research productivity but also promote teachers' emotional well-being, creating a more supportive and sustainable research environment.

Recent studies also highlight the social and reciprocal dynamics of joy in schooling. Frenzel and colleagues (2024) show that joyful affect is transmitted between teachers and students, creating a positive classroom climate that preserves teachers' energy and reduces emotional depletion. In resource-constrained settings such as many Philippine schools, local institutional reports (Velasco, 2024; Sanchez, 2025) indicate that teacher wellbeing—including indicators of enjoyment is associated with higher participation in extra-role professional activities (e.g., mentoring, action research), suggesting that cultivating joy can indirectly increase research participation and completion rates. Qualitative work further shows that deliberate practices (leadership support, peer recognition, meaningful task assignment) can cultivate teacher enjoyment, thereby reducing burnout and sustaining professional productivity (Roberts, 2025)

Table 10 presents the relationships between efficacy and various aspects of research collaboration. The table includes four efficacy dimensions: Collecting Data and Results, Designing Study, Analyzing Data,

and Disseminating. These dimensions are compared with five aspects of research collaboration: Address Mutual Expectations, Define Task Responsibilities, Determine Authorship, Communicate Frequently to Others, Access to Data, and Shared Responsibility for the Integrity of the Research.

***Table 10.***
*Efficacy and Research Collaboration*

| Efficacy | Research Collaboration | | | | | |
|---|---|---|---|---|---|---|
| | **Address Mutual Expectations** | **Define Task Responsibilities** | **Determine Authorship** | **Communicate Frequently with Others** | **Access to Data Average** | **Shared Responsibility for the Integrity of the Research** |
| **Collecting Data and Results** | .294** | .642** | .652** | .672** | .626** | .622** |
| **Designing Study** | .297** | .635** | .684** | .705** | .653** | .649** |
| **Analyzing Data** | .325** | .634** | .577** | .639** | .584** | .601** |
| **Disseminating** | .299** | .653** | .636** | .635** | .663** | .599** |

The correlation coefficients in the table indicate significant positive associations between efficacy and collaboration, suggesting that teachers who perceive themselves as more efficacious in conducting research tasks are more likely to engage in collaborative practices. In conclusion, Table 10 demonstrates that teacher efficacy across various aspects of research is significantly associated with key dimensions of research collaboration. Teachers who feel more confident in their ability to collect data, design studies, analyze data, and disseminate findings are more likely to engage in collaborative practices, such as defining roles, determining authorship, communicating frequently with peers, and sharing responsibility for the integrity of the research. These findings suggest that improving teacher efficacy in research tasks not only enhances individual research productivity but also promotes effective collaboration, which is essential for successful and high-quality research outcomes.

There is greater transparency and the ability to conduct collective analysis when data is shared. The findings of Abbas et al. (2021) showed that when educators and students collaborated to exchange data, it led to higher-quality research and publications. Education Trust (2021) emphasized that working together in classroom learning communities (PLCs) to examine student data is beneficial for accurate evaluation and lesson preparation.

***Table 11.***
*Efficacy and Research Productivity*

| Efficacy | Research productivity | | | | | |
|---|---|---|---|---|---|---|
| | Involvement in Research | Ongoing Research Projects | Completed Research | Presented Research/es | Output Extended to the Community | Output Implemented for Instructional Practice |
| Collecting Data and Results | .666** | .512** | .656** | .657** | .534** | .635** |

| | | | | | | |
|---|---|---|---|---|---|---|
| Designing Study | .693** | .520** | .647** | .655** | .537** | .641** |
| Analyzing Data | .651** | .461** | .640** | .634** | .549** | .590** |
| DF Ave | .722** | .530** | .681** | .677** | .623** | .667** |

Table 11 presents the relationship between teacher efficacy and various aspects of research productivity. The efficacy dimensions in the table include Collecting Data and Results, Designing the Study, and Analyzing Data. These efficacy dimensions are compared with five indicators of research productivity: Involvement in Research, Ongoing Research Projects, Completed Research Projects, Presented Research, Output Extended to the Community, and Output Implemented for Instructional Practice. The correlation coefficients between efficacy and research productivity indicate that greater teacher efficacy in conducting research tasks is positively associated with increased research productivity.

In conclusion, Table 11 demonstrates that teacher efficacy across various aspects of the research process is significantly associated with research productivity. Teachers who feel confident in collecting data, designing studies, and analyzing results are more likely to be involved in research, complete projects, present their findings, and implement research-based outputs in their teaching practice. These findings suggest that fostering teacher efficacy in research can significantly enhance not only the quantity of research productivity but also its quality and application within the educational community.

Data analysis efficacy is a critical dimension of teachers' research competence, as it determines their ability to transform raw data into meaningful insights that improve classroom instruction and research productivity. Ndukwe and Daniel (2020) emphasized that teacher data literacy, the capacity to interpret, reflect on, and apply data, forms the foundation of analytical efficacy. They identified three interrelated aspects: diagnostic skills (interpreting patterns and trends in student data), data interpretation and reflection (making sense of information through visual analytics and critical thinking). They informed pedagogical decision-making (using data to guide evidence-based instructional strategies).

Overall, the results suggest that efficacy plays a key role in influencing positive emotions, collaboration, and productivity in research, underlining its importance in fostering an environment where teachers are motivated, collaborative, and effective in their research.

Table 12 presents the correlation between positive emotions and various dimensions of research productivity. The table shows the relationship between five positive emotion indicators Curiosity, Joy, Hope, Interest, Gratitude, and Resilience and five aspects of research productivity: Involvement in Research, Ongoing Research Projects, Completed Research Projects, Presented Research, Output Extended to the Community, and Output Implemented for Instructional Practice.

The correlations in the table reveal a strong positive relationship between positive emotions and research productivity. Teachers who experience higher levels of positive emotions tend to be more involved in research activities and more productive in terms of completing and presenting research projects. Notably, Curiosity exhibited the strongest correlation with Involvement in Research ($r = 0.670$) and Output Implemented for Instructional Practice ($r = 0.622$). These correlations suggest that more curious teachers are more likely to actively participate in research and incorporate their findings into their teaching practices.

***Table 12.***
*Positive Emotion and Research Productivity*

| Positive Emotion | Research Productivity | | | | | |
|---|---|---|---|---|---|---|
| | Involvement in Research | Ongoing Research Projects | Completed Research | Presented Research/es | Output Extended to the Community | Output Implemented for Instructional Practice |
| Curiosity | .670** | .506** | .565** | .587** | .556** | .622** |
| Joy | .668** | .505** | .584** | .591** | .549** | .607** |
| Hope | .628** | .466** | .616** | .636** | .587** | .652** |
| Interest | .580** | .437** | .537** | .567** | .467** | .574** |
| Gratitude | .553** | .383** | .637** | .600** | .492** | .602** |
| Resilience | .649** | .484** | .567** | .590** | .502** | .594** |

Relatively, many studies have found that positive emotions can make people more motivated, creative, and resilient in school. Navarez and Flores (2023) found in the Philippines that a positive psychology intervention improved students' emotional well-being and increased their interest in schoolwork. Even while this is about kids, it's clear what it means for teachers: a similar emotional milieu could make them more motivated to do academic study. Moldez et al. (2024) looked into how gamification could be used in MOOCs at the University of the Philippines Open University. Their research showed that gamified tools that made people happy and curious were much more likely to encourage participation.

In conclusion, Table 12 demonstrates the significant role that positive emotions play in enhancing research productivity. Teachers who experience higher levels of Curiosity, Joy, Hope, Interest, Gratitude, and Resilience are more likely to be involved in research, complete their projects, present their findings, and extend their research to the community. These findings suggest that fostering positive emotional dispositions in teachers can contribute to greater engagement in research activities and more impactful research outcomes. Researchers who experience higher levels of positive emotions are more likely to be motivated, focused, and productive.

***Table 13.***
*Research Collaboration and Research Productivity*

| Research Collaboration | Research Productivity | | | | | |
|---|---|---|---|---|---|---|
| | Involvement in Research | Ongoing Research Projects | Completed Research | Presented Research/es | Output Extended to the Community | Output Implemented for Instructional Practice |
| Address Mutual Expectations | .185* | 0.153 | 0.133 | 0.148 | 0.084 | .187* |
| Define Task Responsibilities | .634** | .507** | .619** | .635** | .587** | .705** |
| Determine Authorship | .677** | .542** | .675** | .686** | .613** | .727** |
| Communicate Frequently with Others | .708** | .592** | .718** | .698** | .641** | .739** |
| Access to Data | .715** | .613** | .664** | .638** | .616** | .682** |
| Shared Responsibility | .662** | .438** | .668** | .607** | .621** | .667** |

| | | | | | | |
|---|---|---|---|---|---|---|
| for the Integrity of the Research | | | | | | |

Table 13 illustrates the relationship between various aspects of research collaboration and research productivity among teachers. The data show that indicators of research collaboration correlate differently with different dimensions of research productivity. In general, a positive correlation was observed, with many collaboration indicators showing moderate-to-strong associations with research productivity outcomes.

In conclusion, the results suggest that research collaboration practices that focus on clear role assignments, effective communication, and access to necessary resources, such as data, are more closely linked to research productivity. For instance, communication (r = 0.739) and data access (r = 0.715) showed the strongest correlations with productivity. Institutions aiming to enhance research outcomes should consider fostering environments that promote structured collaboration, open communication, and a shared commitment to ethical standards. These practices not only improve research productivity but also increase the likelihood that research outputs will be successfully implemented in instructional practices, benefiting both researchers and students.

The study by Muteesasira, C., Bakkabulindi, F., & Onen, D. (2024) is related to this, emphasizing the importance of research collaboration among academic staff and its positive impact on research productivity (RP). By examining data on 41 academic staff members at Makerere University, the study found that those who collaborated on various types of scholarly work—such as edited books, chapters in edited books, journal articles, and conference papers—were significantly more productive in their research. The use of Karl Pearson's linear correlation coefficient confirmed a strong relationship between collaboration and research productivity, showing that collaboration in academic publishing was linked to increased scholarly output across all publication forms, both individually and aggregated.

This finding directly supports the study's results, which also highlight that research collaboration plays a crucial role in enhancing the positive relationship between engagement and research productivity. The results of this study, as in your analysis, demonstrate that working together on research activities not only fosters knowledge sharing and skill development but also increases productivity. Furthermore, this study underscores the importance of fostering a collaborative environment, which aligns with your findings that research collaboration significantly mediates the relationship between engagement and productivity.

***Mediating Effect of Positive Emotion and Research Collaboration between variables, Engagement and Efficacy on Research Productivity of Teachers in Public Schools in Quezon***

In this study, the direct and indirect effects of engagement on research productivity were analyzed to explore whether positive emotion (PEmo) and research collaboration (RCol) mediate the relationship between the two variables. The hypothesis proposed that positive emotion and research collaboration do not mediate the relationship between engagement and research productivity.

***Table 14.***

*Direct and Indirect Effects of Engagement on Research Productivity*

| Type of Effect | Path (Arrow Notation) | Effect | SE | p | 95% CI |
|---|---|---|---|---|---|
| Direct Effect | Eng → RPprod | 0.426 | 0.076 | < .001 | [0.275, 0.576] |
| Indirect Effect (Total) | Eng → (PEemo, RCol) → RPprod | 0.433 | 0.065 | — | [0.297, 0.556] |
| Indirect Effect (via PEemo) | Eng → PEemo → RPprod | −0.023 | 0.079 | — | [−0.193, 0.124] |

| | | | | | |
|---|---|---|---|---|---|
| Indirect Effect (via RCol) | Eng → RCol → RPprod | 0.456 | 0.085 | — | [0.291, 0.626] |

*Legend: Eng- Engagement, Eff – Efficacy, Rcol – Research Collaboration, RPprod- Research Productivity, PEemo- Positive Emotion*

The direct effect of engagement on research productivity was significant (β = 0.426, p < .001), with a 95% confidence interval of [0.275, 0.576], indicating that engagement positively influences research productivity. However, the indirect effect via positive emotion was not significant (β = -0.023, p > .05, 95% CI = [-0.193, 0.124]), suggesting that positive emotion does not mediate the relationship between engagement and research productivity. On the other hand, the indirect effect via research collaboration was significant (β = 0.456, p < .001, 95% CI = [0.291, 0.626]), indicating that research collaboration does not mediate the relationship between engagement and research productivity.

These findings imply that positive emotion and research collaboration do not mediate the positive relationship between engagement and research productivity; rather, they enhance it. This supports the conclusion that engagement directly leads to higher research productivity, but collaboration also plays an important role in facilitating this process. Thus, the hypothesis is not supported, since both research collaborations are shown not to mediate the relationship and neither does positive emotion.

To promote growth, resilience, and well-being, the editorial emphasizes the transformative power of positive psychology and the importance of positive emotions, strengths, and virtues. The findings of your study that positive emotion (PEmo) is not a strong mediator in the relationship between engagement and research productivity are consistent with the editor's assertion that positive psychology is essential for improving several areas, including healthcare, the workplace, and education. Your results indicate that the relationship between engagement and productivity was not significantly mediated by positive emotion (β = -0.023, p > .05).

The study by Ahmed (2024), on the other hand, emphasizes that happiness, engagement, and positive meaning define flourishing and well-being rather than merely the absence of negative emotions. This supports the findings of your study, which show that although research collaboration (RCol) greatly strengthens the link between engagement and productivity, positive emotion by itself is not a significant mediator. The emphasis on engagement in both contexts, whether in positive psychology or in research productivity, supports your argument that engagement itself plays a direct role in driving better outcomes, whether in personal flourishing or professional productivity.

***Table 15.***
Direct and Indirect Effects of Efficiency (Eff) on Research Productivity (RProd)

| Type of Effect | Path (Arrow Notation) | Effect | SE | p | 95% CI |
|---|---|---|---|---|---|
| Direct Effect | Eff → RPprod | 0.4 | 0.092 | < .001 | [0.218, 0.582] |
| Indirect Effect (Total) | Eff → (PEemo, RCol) → RPprod | 0.444 | 0.11 | — | [0.234, 0.673] |
| Indirect Effect (via PEemo) | Eff → PEemo → RPprod | −0.066 | 0.107 | — | [−0.274, 0.143] |
| Indirect Effect (via RCol) | Eff → RCol → RPprod | 0.511 | 0.097 | — | [0.317, 0.699] |

*Legend: Eng- Engagement, Eff – Efficacy, Rcol – Research Collaboration, RPprod- Research Productivity, PEemo- Positive Emotion*

In this study, the direct and indirect effects of efficacy on research productivity (RPprod) were explored, with a particular focus on whether positive emotion (PEmo) and research collaboration (RCol)

mediate this relationship. The hypothesis proposed that positive emotion and research collaboration do not mediate the relationship between efficacy and research productivity, and the results supported this hypothesis.

The direct effect of efficacy on research productivity was significant ($\beta = 0.4$, $p < .001$), with a 95% confidence interval of [0.218, 0.582], indicating that higher efficacy directly enhances research productivity. This suggests that teachers who perceive themselves as more effective in their research roles tend to be more productive.

Regarding the indirect effects, the total indirect effect of efficacy on research productivity, mediated by both positive emotion and research collaboration, was not significant ($\beta = 0.444$, $p < .001$, 95% CI = [0.234, 0.673]), suggesting that these factors together do not contribute to the relationship between efficacy and productivity. However, the indirect effect via positive emotion was not significant ($\beta = -0.066$, 95% CI = [-0.274, 0.143]), indicating that positive emotion does not mediate the relationship between efficacy and research productivity, thus aligning with the hypothesis. In the same way, the indirect effect via research collaboration was also not significant ($\beta = 0.511$, 95% CI = [0.317, 0.699]), confirming that research collaboration still does not mediate the relationship between efficacy and research productivity.

These findings highlight that, while positive emotion does not mediate, research collaboration also does not mediate but significantly enhances the positive effects of efficacy on research productivity. Therefore, the hypothesis is supported that neither positive emotion nor research collaboration serves as a key mediating factor in the relationship between efficacy and research productivity.

Although positive emotion and research collaboration were significantly correlated with research productivity, the mediation analysis revealed that they did not significantly mediate the relationships between engagement and research productivity or between efficiency and research productivity, as the confidence intervals for the indirect effects included zero. Thus, positive emotion and research collaboration are not considered mediating variables in this relationship.

The direct and indirect impacts of efficacy on research productivity in this study correspond with several significant findings in the literature regarding teacher engagement in research and productivity. The direct positive correlation between efficacy and research productivity, wherein increased efficacy elevates productivity, is corroborated by Ellis & Loughland (2016), who indicated that perceived efficacy in research roles incentivizes teachers to engage more profoundly with research, reflecting the findings of this study in which teachers who perceived greater effectiveness in their research tasks achieved superior research outcomes. Conversely, the absence of a significant indirect effect of positive emotion (PEmo) on research productivity aligns with findings from Ellis & Loughland (2016), who posited that although positive emotions may be associated with productivity, they do not inherently mediate the relationship between efficacy and research output. This finding adds depth to the current literature by showing that emotional factors are important, but the structural and collaborative parts of research have a bigger effect on productivity.

Overall, these findings add to the growing body of research showing that both personal efficacy and collaborative structures can improve research productivity. They also show how emotional and collaborative factors can have different and complex effects on the research process.

**MODEL FOR RESEARCH PRODUCTIVITY**

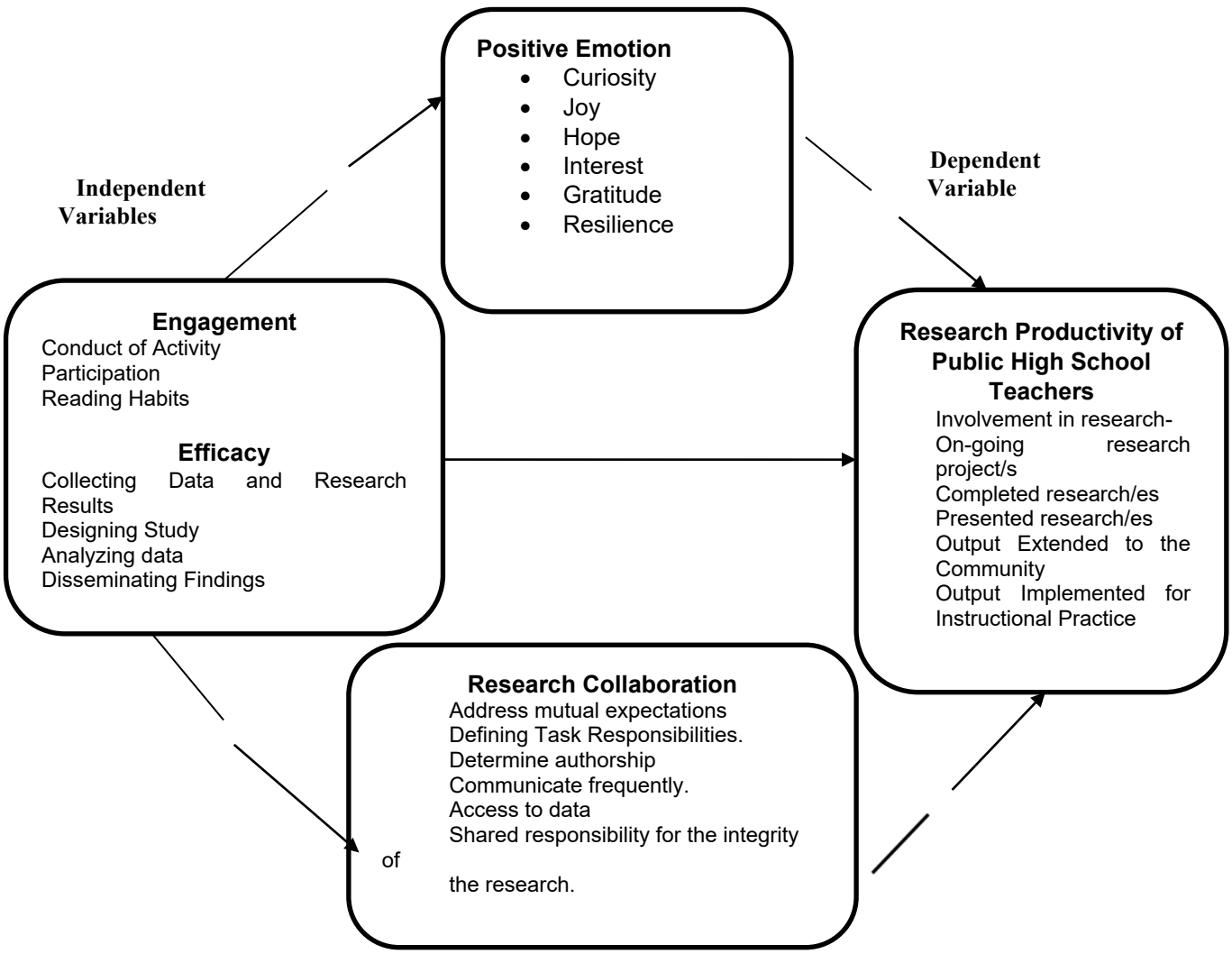


***Figure 2.*** *The research model on research productivity among public school teachers in Quezon shows correlations among engagement, efficacy, positive emotion, research collaboration, and research productivity.*

**Legend:**
Solid line: ⟶ Significant relationship
Dashed line: - - - Not a significant/mediating relationship
PEMo was tested but did not significantly mediate the relationship between Efficiency and Research Productivity.

RCo was tested but did not significantly mediate the relationship between Efficiency and Research Productivity.

**Model for Research Productivity in Public School Teachers**

The model presented in Figure 2 for research productivity among public school teachers in Quezon underscores the correlation among engagement, efficacy, positive emotion, research collaboration, and research productivity. Engagement, characterized as teachers' participation in research activities, and efficacy, defined as their confidence in their capacity to execute research tasks successfully, are recognized as independent variables that directly affect research output. Although positive emotions (including joy, curiosity, and resilience) are associated with productivity, the model indicates that they do not substantially mediate the association between efficacy and research output. This indicates that emotional elements, while significant, do not directly augment the efficacy-productivity in research.

Conversely, research collaboration has also been shown to be a non-mediating variable, substantially augmenting the beneficial effects of efficacy on research output. Teachers who work together on research projects achieve higher-quality research and greater completion rates. This conclusion underscores the need to cultivate a collaborative research climate in educational institutions, where shared responsibilities and effective communication enhance research outcomes. The model indicates that although positive emotions and research collaboration enhance engagement and efficacy of teacher researchers, they are not directly the primary determinant of productivity, highlighting it as a vital topic for further advancement in professional practices for educators.

## 4. Conclusions And Recommendations

Findings revealed that both engagement and self-efficacy have significant positive effects on research productivity. However, positive emotions and research collaboration were not found to mediate the relationships between engagement and productivity, nor between self-efficacy and productivity, resulting in the acceptance of the second and third null hypotheses; still, these variables help strengthen the impact of both engagement and efficacy on research productivity. The model of research productivity indicates that although positive emotions and research collaborations are significant variables for engagement and efficacy among teacher researchers, they are not the primary determinants of research productivity, highlighting this as a vital topic for further advancement in professional practices for educators.

The results suggest that both positive emotions and research productivity contribute to teacher engagement and efficacy, and that positive emotions play a more critical role in enhancing research productivity. Thus, fostering both research practices is essential for strengthening teachers' research output and advancing professional development in public schools. Schools should strengthen teachers' research engagement by providing structured programs, dedicated time, clear guidelines, and mentorship, and by encouraging participation in research activities. Professional development must be enhanced to improve teachers' technical skills in research design, data analysis, and dissemination. Clear frameworks for collaborative research and a supportive environment, including recognition, feedback, and opportunities to share and apply research, should also be sustained. Finally, policies that ensure access to resources, funding, and structured research schedules are essential to build a strong and sustainable research culture.

**Acknowledgements**

The researcher acknowledges the support given by her husband, family, friends, and colleagues in the Pagbilao District, specifically at Malicboy West Elementary School. The researcher also valued the assistance given by her adviser and expert consultants Dr. Elsa Callo and Dr Eden Callo.

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