OPEN ACCESS
Jurnal Ilmiah Ilmu Terapan Universitas Jambi
Vol. 9 No. 3. September 2025, pp. 1308-1318 DOI. 10.22437/jiituj.v9i3.43152
Research Article

THE ROAD TO RESEARCH PRODUCTIVITY: CAPABILITY, MOTIVATION, AND CHALLENGES IN CONDUCTING RESEARCH AMONG MASTER TEACHERS

Jennewyne V. Pablo[1,2], Leila M. Collantes[2], Jupeth T. Pentang[3], Regidor G. Gaboy[2], Emily T. Astrero[4]

[1] Pitt County Public Schools, North Carolina, United States of America
[2] Department of Education Policy and Practice, Central Luzon State University, Philippines
[3] Department of Science Education, Central Luzon State University, Philippines
[4] Department of Language, Culture and Arts Education, Central Luzon State University, Philippines
Corresponding author email: jupeth.pentang@clsu2.edu.ph

Article Info
Received: Apr 17, 2025
Revised: Jul 12, 2025
Accepted: Aug 10, 2025
OnlineVersion: Aug 29, 2025

Abstract
The evolving educational landscape and the growing concerns in the educational sector prompted master science teachers to conduct, disseminate, and utilize research. This study described the research capabilities, motivations, and challenges master science teachers face and examined the relationships among these variables. Data were gathered from 113 master science teachers in nine participating public schools in the Division of Nueva Ecija, Philippines, through a questionnaire. Results revealed that although they can identify research problems, choose approaches, and analyze data, they are challenged in managing research obligations, particularly regarding time and funds. Motivated to enhance teaching methods and support the educational community, master science teachers overcome these obstacles to show great degrees of professional and personal desire to participate in research. To help master science teachers create a stronger research culture, this study underlines the importance of institutional assistance, including improved access to research funds and professional development opportunities. There is a need to explore more factors to improve the research culture and contributions to education by Philippine master science teachers.

Keywords: Quality Education, Research Culture, Teacher as Researcher

INTRODUCTION

In education, research culture has become vital, motivating master science teachers to take on the role of researchers. In the Philippine context, master science teachers are highly proficient and experienced educators who act as mentors to enhance the quality of teaching and learning within their schools. Research is a worldwide action led by numerous methodologies representing various ideological perspectives on strengthening the teaching-learning process (Cochran-Smith & Villegas, 2015). Aside from being a scholarly effort, educational research currently contributes to the enrichment of teaching practices, the improvement of learning outcomes, and the overall improvement of academic excellence, all of which contribute to the attainment of the fourth Sustainable Development Goal (Quality Education).

Teaching indeed must be inspired not only by art, but also by science or research-based innovations. As the need for master science teachers to participate in research increases, understanding their research capability has become essential for determining the success of these initiatives.

Research capability is the ability to pursue scientific inquiry—that is, to identify problems, collect data, and analyze it using appropriate methodologies (Ismail & Meerah, 2012; Hammad & Al-Ani, 2021; Afriani & Widodo, 2025; Beltran, 2025). Developed gradually by cumulative experience, research capability is shaped by continuous professional development activities, insights from advanced studies, and informal learning opportunities. Caingcoy (2020) and Manongsong and Panopio (2018) emphasize that research capability occurs gradually through constant practice and involvement in events meant to improve one's abilities, including seminars, workshops, and group research projects. Thus, among other things, master science teachers' ability to participate in meaningful research is not innate; instead, it is developed via years of experience, exposure to various research methods and tools, and a constant commitment to enhancing their expertise.

Research offers educators more than just academic knowledge; it promotes personal and professional growth. This entails improving one's practice by integrating research results into regular classroom activities to address practical issues effectively. Besides, research is a dynamic, evolving process that cultivates critical, creative, and reflective thinking among master science teachers. However, factors such as motivation significantly influence the research capability among master science teachers. The motivation for master science teachers to engage in research primarily stems from motivation, which shapes their initial commitment to the initiative and their perseverance in overcoming the research process (Tamban & Maningas, 2020; Li & Zhang, 2022; Endra & Villaflor, 2024; Somantri, 2024; Ariyani et al., 2025; Yulisman et al., 2025). Master science teachers with a strong sense of professional fulfillment, a passion for knowledge, and a commitment to their field are more likely to engage in and complete research projects. Personal attributes and external factors, such as administrative support, resource availability, and time constraints, play a crucial role in defining motivation. Still, challenges hamper master science teachers from getting motivated.

Challenges that prevent master science teachers from doing research include the pressures of academic obligations, time restrictions, and inadequate support from the school administration. These obstacles highlight the requirement of a caring workplace free from administrative responsibilities that let master science teachers concentrate on their research activities (Bullo, 2021; Hammad & Al-Ani, 2021; Tingabngab & Binayao, 2023; Caabas et al., 2024; Cortés et al., 2025; Dzulfikar et al., 2025; Nou et al., 2025). The lack of time remains a significant obstacle, as teachers often have to balance multiple obligations, leaving them with fewer opportunities to participate in research projects. Moreover, excessive academic pressure and insufficient time for inquiry can lead to burnout, diminishing teachers' drive and passion for intellectual pursuits. Developing research abilities among teachers is closely tied to organizational structures that provide sufficient support, including time, money, and resources for research initiatives.

Given these difficulties, the Philippine Department of Education (DepEd) has made significant efforts to ingrain research as a necessary component of professional growth for master science teachers. Establishing a basic framework for a disciplined development process to improve policy formulation, founded on empirical evidence through research projects, through DepEd Order No. 13 (DepEd, 2015a). Later regulations, notably DepEd Order No. 43 (DepEd, 2015b) and DepEd Order No. 4 (DepEd, 2016a), introduced financial assistance for teachers, defining processes for using the Basic Education Research Fund to help their research efforts. Moreover, DepEd Order No. 39 (DepEd, 2016b) developed a comprehensive research agenda that links teacher research with national educational goals. The policies show the department's commitment to enhancing its research culture. Still, few accounts have established a strong research culture for master science teachers in the Philippines. Many studies explored the research attributes among teachers; however, limited studies focus on master science teachers, while many of them focused only on action research (Morales, 2016; Tindowen et al., 2019; Caabas et al., 2024; Tingabngab & Binayao, 2023; Fernandez et al., 2025; Ikhsan et al., 2025).

To address a significant gap in the current body of research, this study primarily explores the research capabilities, motivations, and challenges faced by master science teachers in the Philippines in the context of basic research. This exploration also clarifies how these mentors and instructional leaders fulfill their mandate to research and apply their research outputs to school issues and classroom instruction, bringing quality, responsive, and relevant education to the Filipino people. Furthermore, the results will provide insights into how these attributes relate to each other to understand the research

productivity of the master teachers. The decision to focus on master science teachers stems from their critical role in defining pedagogical innovations, impacting learning outcomes, and modeling best practices to the school community.

Within the classroom, master science teachers are expected to adopt leadership responsibilities, mentoring their colleagues and significantly contributing to the larger educational community. The study will examine the research capabilities, motivation, and challenges master science teachers face in the Philippines. With the rising need for teacher research to elevate educational quality, comprehending these factors will offer valuable insights into enhancing research productivity and capacity nationwide. This study provides practical recommendations for DepEd and other institutions, particularly in upskilling and training master science teachers to become research-driven professionals. The study answers the following research questions: What are the master science teachers' research capabilities, motivation, and challenges?; Does a significant relationship exist between (a) research capabilities and motivation, (b) research capabilities and challenges, and (c) research motivation and challenges?

RESEARCH METHOD

This study followed a quantitative research design using descriptive-correlational methods. The descriptive aspect focused on determining the levels of research capabilities, motivation, and challenges among master science teachers, while the correlational aspect determined the significant relationships between the identified variables. This design enabled an in-depth analysis of factors influencing research productivity among master science teachers, which is crucial for understanding the research culture among master science teachers in the Philippines.

The study participants were 113 master science teachers chosen randomly from nine public schools in Nueva Ecija, Philippines. They were selected to provide a comprehensive perspective on the factors influencing research among master science teachers. Master science teachers with more than one year of helm in the position were included, and they must have at least worked on a research proposal in the last year. Voluntary participation and anonymity were ensured by following the utmost ethical standards. Data for this study were gathered online. Detailed instructions were emailed to the participants to ensure clarity and accuracy in completing the questionnaire, and the informed consent form was attached for their approval. The primary instrument for data collection was a survey questionnaire divided into three sections: (1) research capability, (2) research motivation, and (3) research challenges. The survey was administered via Google Forms.

The Research Capability scale assessed the skills and competencies of master science teachers in conducting research, including identifying and formulating the research problem (11 items), delineating the research phenomenon (7 items), selecting research methodology (7 items), interpreting and analyzing data (7 items), writing the research report (5 items), and meeting logistics and financial requirements (10 items). Meanwhile, the Research Motivation scale measured the level of motivation influencing research involvement in both professional (10 items) and personal (10 items) drives. The Research Challenges scale identified the challenges that hinder the research efforts of master science teachers, such as personal (10 items) and professional (9 items) struggles encountered in the research process.

The instrument was crafted based on the instruments, results, and insights of Abarro and Mariño (2016), Basilio and Bueno (2019), Bullo et al. (2021), Caabas et al. (2024), Caingcoy, (2020), Hammad and Al-Ani (2021), Pentang and Domingo (2024), Tamban and Maningas (2020, Tindowen et al. (2019), and Tingabngab and Binayao (2023), who worked on research capabilities, motivation, and challenges among educators, including various topics on research culture and productivity. Each section assessed responses using a Likert scale (1-6: Strongly Disagree to Strongly Agree). Before the full-scale survey, a pilot test was conducted with a small group of master science teachers to assess the reliability and validity of the survey instrument. All five validators rated the tools with a validity index of .95, and the pilot test resulted in greater than .90 for each parameter. These indices reflect the relevance and usability of the items, parameters, and the instrument as a whole. Adjustments were also made based on the feedback of the validators and pilot test participants.

Descriptive statistics—including arithmetic mean, weighted mean, and standard deviation—were used to thoroughly characterize the research capability, motivation, and problems of master science teachers through data analysis to understand the research goals. Using Pearson's r, or Pearson's correlation coefficient, correlational analysis was also used to investigate the significance, strength, and direction of the relationships between the research capability, motivation, and challenges of master

science teachers, enabling a better knowledge of how these variables associate with one another. Data encoding, coding, cleaning, and analysis were performed using Microsoft Excel and jamovi software.

RESULTS AND DISCUSSION

Research Capability of Master Science Teachers

The master science teachers demonstrated their research capabilities (Mean = 4.43, SD = 0.93). Specifically, Table 1 indicates that these teachers excelled in identifying and formulating the research problem (Mean = 4.50, SD = 0.83), delineating the research phenomenon (Mean = 4.60, SD = 0.88), selecting research methodology (Mean = 4.40, SD = 0.97), interpreting and analyzing data (Mean = 4.40, SD = 0.99), and writing the research report (Mean = 4.45, SD = 0.94). However, they were assessed as moderately capable of managing research tasks (Mean = 4.22, SD = 0.98). The master science teachers displayed capability in identifying and formulating the research problem, where they can identify the research problem, prioritize what research topic should be studied first, recognize areas in the workplace that need to be researched, recognize problems that may be solved through research, evaluate a research problem, identifying perspective in a given topic, selecting feasible topics to be studied, discover problem to be studied, state a problem that forms the whole concept, determine the correct theory for a study and at the same time discuss the said theory. In delineating the research phenomenon, the master science teachers exhibited the capability to choose literature that will reinforce the study, define operational terms in research, delimit the scope of the study, specify hypotheses, identify the significance of their study, recognize the importance of the study, and frame the locale of the study. Their capability may be attributed to their Learning Action Cell session tasks. A session that allows them to discuss the problems they encountered during the teaching process. Also, they are encouraged to conduct research in their field of specialization to guarantee in-depth knowledge of the topic they are exploring. Furthermore, most master science teachers were graduates with advanced degrees, which may contribute to their knowledge and skill in identifying and formulating research since they went through the rigors of conducting research. This is similar to Tamban and Maningas (2020), where teachers could introduce the background of the study, write the rationale, and formulate a statement of the problem.

In selecting research methodology, the master science teachers know how to determine the research design and sampling procedures, identify and construct the instrument for the study, and devise ways to collect data. This may mean they are unfamiliar with using different statistical tools or software to analyze their data in research. On the other hand, master science teachers' capability when it comes to interpreting and analyzing data indicates that they can present data gathered in various forms, analyze qualitative data, interpret the result from the data analysis, draw implications and practical applications of the study, arrive at valid conclusions based on the data presented, and give recommendations in light of the study's conclusion. However, they were Moderately Capable of performing descriptive and inferential analysis. This may mean that master science teachers are struggling to interpret the outputs/results of their data. In the Philippines, it has become a practice for a researcher to rely on the outputs prepared by statisticians, who are tasked to run and interpret the data.

Regarding writing the research report, the master science teachers have language proficiency, can write adequately, and are well-versed in the standard format. This may show that master science teachers have mastered writing a scientific/technical report. Meanwhile, in logistics or financial requirements, the Master science teachers were described as moderately capable, indicating that they needed financial support to conduct and publish their research articles and attend conferences related to research. The data suggests that the respondents face difficulty soliciting financial support for their research. The Basic Education Research Fund funds teachers who can submit research proposals in the Philippines. However, teachers must follow rigorous steps before receiving the budget intended for research.

Table 1. Descriptives of the master science teacher's research capability (details in Appendix Table A).

Indicators	Mean	Standard Deviation	Qualitative Description
Identifying and Formulating the Research Problem	4.50	0.83	Capable
Delineating the Research Phenomenon	4.60	0.88	Capable
Selecting Research Methodology	4.40	0.97	Capable
Interpreting and Analyzing Data	4.40	0.99	Capable
Writing the Research Report	4.45	0.94	Capable

Indicators	Mean	Standard Deviation	Qualitative Description
Logistics and Financial Requirements	4.22	0.98	Moderately Capable
Pooled Mean	4.43	0.93	Capable

Note: 5.20-6.00 = Highly Capable, 4.36-5.19 = Capable, 3.52-4.35 = Moderately Capable, 2.68-3.51 = Moderately Incapable, 1.84-2.67 = Barely Capable, 1.00-1.83 = Not Capable

Master Science Teachers' Motivation in Conducting Research

A balanced degree of motivation (Mean = 4.30, SD = 0.96) was found among the master science teachers conducting research (Table 2). They have moderate personal motivation (Mean = 4.17, SD = 1.01), indicating that they find fulfillment in research, broaden their horizons, and contribute to the research community. Professionally, their motivation is notably higher (Mean of 4.43, SD = 0.90), indicating they are motivated to grow professionally, solve classroom issues, validate teaching practices, and advance in their specialization. These results, somewhat related to Caingcoy (2020), underscore their commitment to acquiring and applying new knowledge to enhance their educational practice and career development.

The data show that the master science teachers seem driven in conducting research; they found it to broaden their horizons, serve as a venue for joining the research world/community, and become a source of satisfaction. Conducting research is indeed a source of accomplishment among master science teachers since research is one of their mandates. They are also considered frontliners when conducting research. Moreover, they also acknowledge that engaging in research would open up fresh ideas they can use in their daily activities as instructional leaders. This is expected since master science teachers are doing action research focusing on classroom-based problems to resolve the problems they encountered as practitioners of education. They also find opportunities to collaborate with other professionals when doing research. Lastly, they were fulfilled in sharing their research output since the research results may resolve the problems of fellow faculty with the same experience.

Table 2. Descriptives of the master science teacher's motivation in conducting research (details in Appendix Table B).

Indicators	Mean	Standard Deviation	Qualitative Description
Personal Motivation	4.17	1.01	Moderately Motivated
Professional Motivation	4.43	0.90	Very Motivated
Pooled Mean	4.30	0.96	Moderately Motivated

Note: 5.20-6.00 = Extremely Motivated, 4.36-5.19 = Very Motivated, 3.52-4.35 = Moderately Motivated, 2.68-3.51 = Slightly Motivated, 1.84-2.67 = Barely Motivated, 1.00 -1.83 = Not Motivated

Besides, the master science teachers' main reasons for engaging themselves in research are to grow professionally, find solutions to their day-to-day classroom situations, prove the effectiveness of their teaching practices, and find a way to refine their specialization. The results seem to show that master science teachers are committed to acquiring new knowledge and skills they could use to pursue higher goals in their careers. There is a popular saying in education that one cannot share what he/she does not have. Occurrences of classroom problems are regular and considered part of the daily experience of every teacher since a classroom is filled with diverse personalities. Moreover, in the Philippines, one of the tasks of master science teachers is to discover solutions to classroom problems encountered daily by all teachers (Mansyuarna et al., 2023; Nwune et al., 2023; Caabas et al., 2024; Julianti et al., 2025). They were also tasked with displaying innovative teaching methods, which in turn polished or deepened their specialization. Although most view their research activities as a support for their teaching practices, they do not consider themselves researchers but describe themselves as 'master science teachers'.

Relationship between the Master Science Teacher's Research Capability and Motivation in Conducting Research

The correlational analysis shows highly significant relationships between the master science teachers' research capability and motivation (Table 3). The Pearson correlation values (r) for both professional and personal motivations range from .601 to .729, all statistically significant ($p < .01$). This suggests a strong and positive association between the research capabilities of master science teachers—such as identifying and formulating the research problem, selecting research methodology, and analyzing

data—and their professional and personal motivation to conduct research. Results affirm that higher research capability is closely linked to higher professional growth or personal satisfaction motivation.

Master science teachers acquire the capability to identify and formulate research problems, and their motivation to conduct research tends to increase, too. This implies that having the knowledge or capability to recognize and conceptualize research problems pushes master science teachers to engage more in conducting research. The master science teachers acquire the capability to delineate the research problem, and their motivation in conducting research tends to increase. The results suggest that master science teachers who have developed their skills in defining research phenomena are motivated to conduct and write their research. The master science teachers acquire the capability to select appropriate research methodology, and their motivation in doing research tends to increase. This implies that master science teachers adept at the various research designs and their utilization are more inclined to engage in research. The master teachers can interpret and analyze their research data, and their motivation to do research tends to increase. This further explains that master science teachers who know how to interpret and analyze the data results in their research are more engrossed in conducting research.

Table 3. Correlational analysis between the master science teacher's research capability and motivation in conducting research.

Research Capability	Motivation in Conducting Research			
	Professional		Personal	
	Pearson's *r*	*p*-value	Pearson's *r*	*p*-value
Identifying and Formulating the Research Problem	.679	.001	.654	.001
Delineating the Research Phenomenon	.675	.001	.601	.001
Selecting Research Methodology	.694	.001	.636	.001
Interpreting and Analyzing Data	.707	.001	.674	.001
Writing the Research Report	.668	.001	.632	.001
Logistics/Financial Requirements	.729	.001	.717	.001

As master science teachers acquire or become highly capable of writing a research report, their personal and professional motivation tends to become strong, too. This further implies that master science teachers who are very good at writing their research are more motivated to work on their tasks as researchers. As master science teachers received financial or monetary support from the administration in conducting research, their motivation to conduct research increased. This suggests that master science teachers are highly motivated to work on their research papers if they are adequately given financial support, or vice versa; financial support drives them to focus on their research. Like teachers (Abarro & Mariño, 2016; Morales, 2016; Basilio & Bueno, 2019), the master science teachers were moderately capable of writing research proposals, gathering data and performing analysis, and publishing research outputs, which could be related to their demotivation to pursue scholarly undertakings.

Challenges Encountered by the Master Science Teachers in Conducting Research

The master science teachers are moderately challenged (Mean = 3.76, SD = 1.19) in conducting research (Table 4). Both challenges are rated as "moderately challenged", with professional challenges getting a mean score of 3.86 (SD = 1.16) and personal challenges at 3.66 (SD = 1.1). Although master science teachers find significant challenges in both domains, neither is unduly complicated. The difficulties they encounter are significant but not beyond what can be controlled; thus, helping them overcome these obstacles will improve their participation in research. Like Bullo et al. (2021), conducting educational research has become one of the most challenging tasks for master science teachers because of the lack of time, anxiety in writing and conducting the study, and perceived as an additional burden on their part. Even Tindowen et al. (2019) found that many teachers still experience difficulties in conducting action research from identifying their research problem until the publication of the research results. Similar to Syaukani et al. (2025), writing for publication concerns the academe even in today's setting.

Master science teachers present both personal and professional difficulties. Professionally, the main obstacles are financial limitations and limited research exposure, which aligns with Hammad and Al-Ani (2021). Getting funding support inside DepEd requires a lengthy approval process, which can be time-consuming for teachers without extra time. Lack of research exposure aggravates this challenge even

more. Time limits are the most apparent obstacle since teachers have administrative duties, teaching responsibilities, and preparation to balance with little time for research. Further complicating the time available for research are issues with inadequate support from schools on financial, training, and material resources, as well as the growing workload. These difficulties limit teachers' participation in action research projects and help to explain their difficulties with research.

Table 4. Descriptives of the master science teacher's challenges in conducting research (Details in Appendix Table C).

Indicators	Mean	Standard Deviation	Qualitative Description
Professional Challenges	3.86	1.16	Moderately Challenged
Personal Challenges	3.66	1.21	Moderately Challenged
Pooled Mean	3.76	1.19	Moderately Challenged

Note: 5.20-6.00 = Extremely Challenged, 4.36-5.19 = Very Challenged, 3.52-4.35 = Moderately Challenged, 2.68-3.51 = Slightly Challenged, 1.84-2.67 = Barely Challenged, 1.00-1.83 = Not Challenged

Relationship between the Master Science Teacher's Research Capability and Challenges in Conducting Research

The master science teachers' research capability significantly correlates with their research challenges (Table 5). Specifically, identifying and formulating the research problem ($r = -.255$, $p < .05$) and writing the research report ($r = -.221$, $p < .05$) were negatively correlated with professional challenges. This suggests that master teachers with stronger skills in these areas experience fewer professional challenges. However, other aspects of research capability, such as defining the research phenomenon, choosing research methodology, interpreting the results, analyzing data, and logistics/financial requirements, did not correlate significantly with professional and personal challenges.

These results suggest a need for a responsive research capability program for master science teachers. Cochran-Smith and Villegas (2015) argue that research plays a critical role in enhancing educational practices, with the development of research skills helping to overcome challenges in the research process. This aligns with the results, where stronger capabilities in areas like identifying research problems and writing reports are associated with fewer professional challenges. Similarly, Manongsong and Panopio (2018) emphasize the role of experience and capacity-building activities in developing research capabilities. Master science teachers can better manage research-related challenges when they possess the necessary skills, such as problem formulation. Additional support is provided by Bullo et al. (2021), who explore the challenges teachers face in educational research. Master science teachers better equipped with research skills experience fewer obstacles, particularly in problem identification and report writing, which aligns with the negative correlations found in this study. Tindowen (2019) further highlights teachers' difficulties doing research due to limited experience, reinforcing that research capabilities are crucial in managing challenges.

On the other hand, the master science teachers' research capability significantly correlates with their research challenges. Specifically, identifying and formulating the research problem ($r = -.234$, $p < .05$) was negatively correlated with personal challenges. However, other aspects of research capability, such as defining the research phenomenon, choosing research methodology, interpreting the results, analyzing data, writing the research report, and logistics/financial requirements, did not correlate significantly with professional and personal challenges.

Table 5. Correlational analysis between the master science teacher's research capability and challenges in conducting research.

Research Capability	Challenges in Conducting Research			
	Professional		Personal	
	Pearson's *r*	*p*-value	Pearson's *r*	*p*-value
Identifying and Formulating the Research Problem	-.255	.010	-.234	.019
Delineating the Research Phenomenon	-.186	.063	-.172	.085
Selecting Research Methodology	-.172	.086	-.112	.263
Interpreting and Analyzing Data	-.159	.113	-.118	.241
Writing the Research Report	-.221	.026	-.145	.148
Logistics/Financial Requirements	-.059	.559	-.011	.915

Relationship between the Master Science Teacher's Motivation and Challenges in Conducting Research

Professional motivation has no significant correlation with professional (r = -.123, p > .05) and personal challenges (r = -.078, p > .05) in conducting research (Table 6). In the same way, it has no significant correlation between personal motivation in conducting research and professional (r = -.027, p > .05) and personal (r = .003, p > .05) challenges in conducting research. These results imply that the master science teacher's drive to participate in research has not changed regardless of the challenges master science teachers encounter—related to time, workload, or confidence. This independence suggests that rather than the existence or lack of problems, motivation results from more profound inner or extrinsic elements. Therefore, obstacles neither enhance nor diminish a teacher's personal or professional motivation to pursue research. This emphasizes the complexity of motivation and suggests that institutional culture or internal desires would be more likely to affect it than environmental constraints (Livinţi et al., 2021; Nwoji et al., 2025; Putri et al., 2025; Roath et al., 2025; Sigar et al., 2025).

Research on teacher motivation indicates that professional and personal challenges do not necessarily significantly impact teachers' motivation to engage in research. Li and Zhang (2022) argue that while teachers face numerous obstacles in conducting research, their intrinsic motivation tends to remain stable, suggesting that the challenges they encounter do not substantially alter their drive to participate in research activities. Furthermore, Ryan and Deci (2020) emphasize the role of self-determination theory, which posits that intrinsic motivation is sustained by personal fulfillment and autonomy, and thus is not easily swayed by external factors. Internal beliefs may shape master science teachers' motivation more than external challenges.

Table 6. Correlational analysis between the master science teacher's motivation and challenges in conducting research.

Motivation in Conducting Research	Challenges in Conducting Research			
	Professional		Personal	
	Pearson's *r*	*p*-value	Pearson's *r*	*p*-value
Professional	-.123	.220	-.078	.436
Personal	-.027	.792	.003	.973

Developing a culture that highly values evidence-based methods is crucial to helping master science teachers improve their research capability and motivation while reducing the challenges they may encounter. Schools should give top priority to ensuring that research results are readily available to master teachers using context-specific evidence and the application of both internal and outside support structures. Simplifying the process of interacting with and using research outputs would help them concentrate on incorporating it into their daily work. Professional development initiatives, such as mentorship, capability-building programs, and opportunities for collaboration, should motivate them to do basic and action research. This would promote a more research-driven atmosphere and improve their potential for instructional effectiveness even more.

Giving master science teachers support will help them to be more intrinsically motivated. Schools may raise motivation by providing financial aid for research-related expenditures, enabling them to access research funding prospects, and establishing a clear framework for supporting research projects. Schools may establish an atmosphere where research is not perceived as an extra load but as a valuable instrument for ongoing professional development and improving instructional practices by prioritizing research in learning environments. Reducing too much paperwork and teaching loads can also help lessen administrative responsibilities by freeing master teachers more time and space to participate in research, attend training, and actively support the scholarly community.

CONCLUSION

The study illustrates that master science teachers exhibit impressive skills across various facets of the research process. They demonstrate exceptional abilities in identifying and articulating research issues, clarifying research phenomena, selecting appropriate methodologies, interpreting and analyzing data, and drafting comprehensive research reports. Their advanced educational backgrounds and active participation in Learning Action Cell sessions emphasize their commitment to collaborative problem-solving and enhancing research skills. However, challenges such as average proficiency in managing

research responsibilities and logistical constraints in securing funding for research projects reveal areas for growth. These highlight the critical expertise of master science teachers in conducting thorough educational research. Furthermore, the commitment of master science teachers to engage in research is remarkably strong, reflecting both personal and professional dimensions. They find fulfillment in expanding their knowledge, collaborating with the research community, and validating educational methods through empirical studies. This dedication is essential for continuous professional development and enhancing educational strategies within their fields. Despite challenges such as time constraints and administrative responsibilities, their intrinsic motivation to innovate and address classroom issues remains steadfast. Future initiatives must prioritize addressing these challenges to boost research output and support overall professional growth within educational settings.

ACKNOWLEDGMENTS

Acknowledgment is given to the master teachers who provided insights to complete this study.

AUTHOR CONTRIBUTIONS

Pablo: Conceptualization, Data Gathering, and Writing; Collantes: Conceptualization, Supervision, Writing, and Editing; Pentang: Data Analysis, Writing, Review, and Editing; Gaboy: Review and Editing; Astrero: Review and Language Editing.

CONFLICTS OF INTEREST

The author(s) declare no conflict of interest.

USE OF ARTIFICIAL INTELLIGENCE (AI)-ASSISTED TECHNOLOGY

The authors declare that no artificial intelligence (AI) tools were used in the generation, analysis, or writing of this manuscript. All aspects of the research, including data collection, interpretation, and manuscript preparation, were carried out entirely by the authors without the assistance of AI-based technologies.

REFERENCES

Abarro, J. O. & Mariño, W. P. (2016). Research capabilities of public secondary and elementary school teachers in the Division of Antipolo City. *International Journal of Scientific and Research Publications, 6*(6), 407-410. https://www.ijsrp.org/research-paper-0616.php?rp=P545501

Afriani, H. N., & Widodo, A. (2025). Designing a green chemistry-based practical guide: enhancing learning on reaction rates and chemical equilibrium. *Journal of Chemical Learning Innovation*, *2*(1), 73-80. https://doi.org/10.37251/jocli.v2i1.1922

Ariyani, W. R., Marmoah, S., & Winarno, W. (2025). Effectiveness of literacy program in primary education. *Journal of Basic Education Research*, *6*(2), 206-217. https://doi.org/10.37251/jber.v6i2.1758

Basilio, M. B., & Bueno, D. C. (2019, January 29-30). *Research skills and attitudes of master teachers in a division towards capability training* [Paper presentation]. 19th CEBU - Philippines Int'l Conference on Economics, Education, Humanities & Social Sciences, Cebu, Philippines. https://erpub.org/siteadmin/upload/5544UH0119421.pdf

Beltran, K. A. (2025). Development and validation of microbiology and parasitology laboratory manual for science education. *Integrated Science Education Journal*, *6*(2), 62-71. https://doi.org/10.37251/isej.v6i2.1543

Bullo, M. M., Labastida, R. T., & Manlapas, C. C. (2021). Challenges and difficulties encountered by teachers in the conduct of educational research: Basis for teachers' enhancement program. *International Journal of Research Studies in Education, 10*(13), 67-75. https://doi.org/10.5861/ijrse.2021.a044

Caabas, D. G., Diaz, F., Luna, A. L., Borris, J., Borris, J., Dadule, J. A. G., Saac, D. K., Pentang, J. T., Dangkulos, T. G., & Bitangcol, R. I. S. (2024). Self-efficacy, productivity, and challenges in conducting action research among public school teachers. *Education Digest*, *19*(1), 16-24. https://philpapers.org/rec/CAASPA

Caingcoy, M. (2020). Research capability of teachers: Its correlates, determinants and implications for continuing professional development. *Journal of World Englishes and Educational Practices*, 2(5), 1-11. https://doi.org/10.32996/jweep.2020.2.5.12.5.1

Cochran-Smith, M., & Villegas, A. M. (2015). Studying teacher preparation: The questions that drive research. *European Educational Research Journal*, *14*(5), 379-394. https://doi.org/10.1177/1474904115590211

Cortés, R. R., Thanjangreed, W., & Chertenko, T. (2025). Relationship between environmental sanitation and dengue hemorrhagic fever incidents. *Journal of Health Innovation and Environmental Education*, *2*(1), 43-51. https://doi.org/10.37251/jhiee.v2i1.1736

Department of Education (DepEd). (2015a). DepEd Order No. 13, series of 2015: Establishment of a Policy Development Process at the Department of Education.

Department of Education (DepEd). (2015b). DepEd Order No. 43, series of 2015: Revised Guidelines for the Basic Education Research Fund.

Department of Education (DepEd). (DepEd, 2016a). DepEd Order No. 4, series of 2016: Amendment to DepEd Order No. 43, s. 2015 (Revised Guidelines for the Basic Education Research Fund.

Department of Education (DepEd). (2016b). DepEd Order No. 39, series of 2016: Adoption of the Basic Education Research Agenda. https://www.deped.gov.ph/2016/06/10/do-39-s-2016-adoption-of-the-basic-education-research-agenda/

Dzulfikar, A., Turmudi, T., Herman, T., & Kusnandi, K. (2025). How ICT supports the mathematical problem-solving learning process of secondary school students: A systematic literature Review. *Journal Evaluation in Education (JEE)*, *6*(3), 924-936. https://doi.org/10.37251/jee.v6i3.1649

Endra, K., & Villaflor, G. M. (2024). Integration of the POE model and metaphoral thinking in student worksheets: improving mathematical reasoning abilities in the modern education era. *Journal of Educational Technology and Learning Creativity*, *2*(1), 41-53. https://doi.org/10.37251/jetlc.v2i1.981

Fernandez, L., Vega, M. G., & Wahyuningsih, E. N. (2025). Exploring the interplay of self-regulated learning, critical thinking, and scientific communication: insights from international biology learners. *Journal of Academic Biology and Biology Education*, *2*(1), 123-131. https://doi.org/10.37251/jouabe.v2i1.2107

Hammad, W., & Al-Ani, W. (2021). Building educational research capacity: Challenges and opportunities from the perspectives of faculty members at a National University in Oman. *SAGE Open*, *11*(3). https://doi.org/10.1177/21582440211032668

Ikhsan, M., Atun, S., Agusta, F., Unayah, H., Buhera, R., Pamungkas, O., Sarip, M., & Sitorus, P. A. (2025). Development of critical thinking essay test instrument and prosocial intention questionnaire for environmental care in students. *Journal Evaluation in Education (JEE)*, *6*(1), 66-78. https://doi.org/10.37251/jee.v6i1.1273

Ismail, R., & Meerah, T. S. M. (2012). Evaluating the research competencies of doctoral students. *Procedia-Social and Behavioral Sciences*, *59*, 244-247. https://doi.org/10.1016/j.sbspro.2012.09.271

Julianti, R. T., Sahiner, M., & Khalid, N. (2025). Utilization of MOOC for Subak values extension: Maintaining Balinese local wisdom in modern education. *Journal of Educational Technology and Learning Creativity*, *3*(1), 131-137. https://doi.org/10.37251/jetlc.v3i1.1569

Li, Y., & Zhang, L. J. (2022). Influence of mentorship and the working environment on English as a foreign language teachers' research productivity: The mediation role of research motivation and self-efficacy. *Frontiers in Psychology, 13*, Article 906932. https://doi.org/10.3389/fpsyg.2022.906932

Livinţi, R., Gunnesch-Luca, G., & Iliescu, D. (2021). Research self-efficacy: A meta-analysis. *Educational Psychologist, 56*(3), 215-242. https://doi.org/10.1080/00461520.2021.1886103

Manongsong, M. J. G., & Panopio, E. (2018). Dentistry faculty members' research competencies and attitude towards research engagement. *Asia Pacific Journal of Education, Arts and Sciences, 5*(3), 13-19. https://bit.ly/3dIaAXn

Mansyuarna, M., Silajdžić, A., & Hamzah, M. S. (2023). Application of the demonstration method in islamic religious education learning in improving student learning outcomes. *Jurnal Pendidikan Agama Islam Indonesia (JPAII)*, *4*(4), 80-83. https://doi.org/10.37251/jpaii.v4i4.781

Morales, M. P. E. (2016). Participatory action research (PAR) cum action research (AR) in teacher professional development: A literature review. *International Journal of Research in Education and Science, 2*(1), 156-165. https://www.ijres.net/index.php/ijres/article/view/96

Nou, H., Mok, S., Lim, S., & Em, S. (2025). The relationship between students' attitudes towards cooperative learning strategies and their academic achievement. *Journal of Social Knowledge Education (JSKE)*, *6*(2), 200-210. https://doi.org/10.37251/jske.v6i2.1606

Nwune, E. C., Oguezue, N. K., & Odum, B. I. (2023). Secondary school students' perception of science laboratory accident status and preventive measures in Awka education zone. *Integrated Science Education Journal*, *4*(3), 104-110. https://doi.org/10.37251/isej.v4i3.550

Nwoji, Q., Gada, B. A., & Alqahtani, Z. M. (2025). New media, learning outcomes, and social development of children: a case study of digital technology use in Nigeria. *Journal of Educational Technology and Learning Creativity*, *3*(1), 185-193. https://doi.org/10.37251/jetlc.v3i1.1854

Pentang, J. T., & Domingo, J. G. (2024). Research self-efficacy and productivity of select faculty members: Inferences for faculty development plan. *European Journal of Educational Research*, *13*(4), 1693-1709. https://doi.org/10.12973/eu-jer.13.4.1693

Putri, E. N., Mahdavi, M., & Awlqadir, M. S. (2025). An analysis of students' motivation and their achievement in learning english at the department of english education. *Journal of Language, Literature, and Educational Research*, *2*(1), 43-50. https://doi.org/10.37251/jolle.v2i1.1698

Roath, C., Alkaki, Z. R. A., & James, J. S. (2025). Critical thinking as a key to solving mathematical problems: findings from the timss framework in middle schools. *Interval: Indonesian Journal of Mathematical Education*, *3*(1), 95-101. https://doi.org/10.37251/ijome.v3i1.1626

Ryan, R. M., & Deci, E. L. (2000). Self-determination theory and the facilitation of intrinsic motivation, social development, and well-being. *The American Psychologist*, *55*(1), 68-78. https://doi.org/10.1037//0003-066x.55.1.68

Sigar, P. A., Nguyen-Quang, D., & Hendry, R. (2025). Can private schools overcome promotional limitations through a 4P-based digital marketing strategy? a case study in Malaysia. *Journal of Educational Technology and Learning Creativity*, *3*(1), 166-174. https://doi.org/10.37251/jetlc.v3i1.1843

Somantri, Y. N. (2024). Analysis of the physical education learning process through online media. *Multidisciplinary Journal of Tourism, Hospitality, Sport and Physical Education*, *1*(1), 11-15. https://doi.org/10.37251/jthpe.v1i1.1037

Syaukani, S., Ismahani, S., Razak, R. A., & Mukminin, A. (2025). Unveiling the practices of research publication among Indonesian academics. *Jurnal Ilmiah Ilmu Terapan Universitas Jambi, 9*(2), 485-494. https://doi.org/10.22437/jiituj.v9i2.41838

Tamban, V. E., & Maningas, O. B. (2020). Research capability of public school teachers: A basis for research capability enhancement program. *PEOPLE: International Journal of Social Sciences*, *6*(1), 222-235. https://doi.org/10.20319/pijss.2020.61.222235

Tindowen, D., Guzman, J., & Macanang, D. (2019). Teachers' conception and difficulties in doing action research. *Universal Journal of Educational Research, 7*(8), 1787-1794. https://doi.org/10.13189/ujer.2019.070817

Tingabngab, V., & Binayao, B. (2023). Challenges faced by the public elementary school teachers in conducting action research. *Teacher Education and Curriculum Studies, 8*(1), 14-22. https://doi.org/10.11648/j.tecs.20230801.13

Yulisman, H., Wardiah, W., Artika, W., Pada, A. U. T., & Nurina, C. I. E. (2025). Evaluation of changes in students' perceptions of scientific article writing skills through a cohort survey. *Indonesian Journal of Education Research (IJoER)*, *6*(2), 168-176. https://doi.org/10.37251/ijoer.v6i2.1607

Appendix Table A

Detailed Descriptive Analysis of the Master Science Teachers' Research Capability

Indicators	Mean	SD
Identifying and Formulating the Research Problem		
I can identify potential research problems from various areas.	4.50	0.81
I can prioritize the topics to be researched from a set of topics.	4.54	0.82
I can recognize areas in the workplace that need to be researched.	4.50	0.78
I can recognize problems that may be solved through research.	4.51	0.81
I can evaluate a research problem in the light of data availability.	4.46	0.81
I can identify the perspective of a topic to be studied.	4.50	0.84
I can select topics that are feasible to study.	4.58	0.84
I can discover a problem to be studied.	4.52	0.84
I can state problems in forming the whole research concept.	4.47	0.86
I can determine the theory or concept appropriate for my study.	4.48	0.86
I can discuss theories and concepts that are part of the study.	4.44	0.87
Delineating the Research Phenomenon		
I can choose literature that will reinforce the study.	4.56	0.88
I can operationally define terms in research.	4.65	0.91
I can delimit the scope of the study (not too broad or simple).	4.56	0.90
I can specify the hypotheses or assumptions of my study.	4.55	0.84
I can identify the significance of the research to be conducted.	4.59	0.85
I can recognize the importance of the study.	4.69	0.86
I can frame the locale where the research will be conducted.	4.59	0.92
Selecting Research Methodology		
I can determine the research design for the study.	4.43	0.93
I can determine the desired sample size and sampling procedures.	4.50	0.94
I can establish which data-gathering instrument is to be used.	4.51	0.96
I can construct the instrument to be used for data gathering.	4.38	0.97
I can devise ways to collect data in an accessible way.	4.39	1.01
I can select the appropriate statistical treatment to test the hypotheses.	4.32	0.98
I can use data analysis software to analyze data.	4.27	1.01
Interpreting and Analyzing Data		
I can present data gathered in various forms.	4.39	1.02
I can perform descriptive and inferential analysis.	4.32	0.99
I can analyze qualitative data.	4.36	1.03
I can interpret the results from the data analysis.	4.39	0.99
I can draw implications and practical applications of the study.	4.39	0.98
I can arrive at valid conclusions based on the data presented.	4.49	0.96
I can give recommendations in light of my study's conclusions.	4.45	0.96
Writing the Research Report		
I have a facility with the English language.	4.54	0.92
I know what to write and how to write it.	4.55	0.93
I am familiar with the standard format of the paper.	4.41	0.96
I can apply the conventions in scientific/technical writing.	4.35	0.94
I know the research's physical requirements (margins, pagination, etc.).	4.42	0.97
Logistics/ Financial Requirements		
I can source funds to finance my research.	4.09	1.01
I can scout for assistance in the conduct of surveys or interviews.	4.27	1.03
I can secure office supplies such as bond papers, printers, etc.	4.45	0.92
I can find cost-effective solutions for my study.	4.32	0.94
I can seek administrative support to conduct the study.	4.22	0.99
I can network with collaborators for joint funding applications.	4.16	0.97
I can manage the budget effectively throughout the study.	4.26	0.92
I can seek support for the dissemination of the results.	4.32	0.95
I can source funds for the publication of research outputs.	4.09	1.01
I can apply for travel grants to attend relevant conferences.	4.02	1.01

Appendix Table B

Detailed Descriptive Analysis of the Master Science Teachers' Research Motivation

Indicators	Mean	SD
Personal Motivation		
I enjoy conducting research.	4.20	0.96
I have a sense of fulfillment in doing research.	4.32	0.97
Research is my passion.	4.00	1.06
I can use it to be recognized in research.	4.06	1.00
I can use it to broaden my horizons.	4.32	0.95
I can use it to establish connections in my field.	4.26	0.95
I can use it to join the research community.	4.27	1.01
Research can be a form of leisure or relaxation for me.	4.04	1.03
I feel satisfied when I am sharing the results of my research.	4.27	1.03
I can use it as a reason to travel.	3.95	1.12
Professional Motivation		
I research to comply with my core functions.	4.40	0.88
I can use it to solve problems in the classroom.	4.58	0.86
I can use it as an excuse to lessen my teaching load.	4.04	1.09
I can use it to perfect my craft as a teacher-researcher.	4.32	0.87
I can use it for promotional purposes.	4.44	0.93
I can use it to gain financial rewards.	4.22	0.96
I can use it to grow professionally.	4.59	0.87
I can use it to establish the effectiveness of my teaching practice.	4.58	0.86
I can use it to hone my writing ability.	4.52	0.83
Research has improved my field of specialization.	4.58	0.89

Appendix Table C

Detailed Descriptive Analysis of the Master Science Teachers' Research Challenges

Indicators	Mean	SD
Professional Challenges		
I lack knowledge in conceptualizing my problem.	3.81	1.13
I lack the skills to do research.	3.80	1.16
I have difficulty identifying my research design.	3.82	1.18
I have difficulty determining what statistical tools will be used.	3.88	1.19
I lack the competence to gather my data.	3.80	1.21
I have difficulty interpreting the results of my research.	3.83	1.18
I have difficulty writing my manuscript.	3.79	1.15
I lack financial resources.	4.13	1.13
I encountered uncooperative institutions and respondents.	3.78	1.07
I do not have research exposure.	3.94	1.15
Personal Challenges		
I do not have enough time to conduct research.	4.31	1.16
I feel that I am not recognized for my research endeavors.	3.37	1.25
The beneficiaries of the research do not appreciate the results.	3.42	1.24
No research mentoring and technical assistance were received.	3.68	1.22
There are limited facilities and equipment for research.	3.79	1.18
There is inadequate recognition given to researchers.	3.64	1.23
No available journals with which the results may be published.	3.65	1.14
I am not interested in writing research.	3.60	1.23
I have anxiety whenever I do research.	3.52	1.23