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Research Article

The Research Capability of Secondary School Science Teachers

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ABSTRACT

This paper described the perceived level of research capability of secondary school Science teachers in the basic education whereas a descriptive-correlational design was employed to determine the extent of relationship between research capability and profile of the 76 Science teachers from the Schools Division of Pampanga. A Research Capability Self-Assessment Scale Abrazado & Coronel (2016) was adopted to identify the level of research capability of the respondents, also a checklist was developed to identify the problems encountered by on their research undertakings. Most of the Science teachers did not yet pursue higher professional studies. Majority did not have the opportunity to attend research trainings; regarded with low research productivity. Science teachers had moderate research capability. Science teachers' research capability had low level relationship with their profile in terms of educational attainment, research trainings and seminars attended, and research output. Lack of time, research trainings and research skills were the problems encountered. A sustainable research development program will aid Science teachers to develop and enhance their research capability.

Keywords: Research capability, science teachers, research productivity, research issues, research training, R & D program

Introduction

Educational institutions and organizations around the world are constantly exerting efforts on their mission of providing world-class and quality education. In the quest for quality education, continuous formulation, implementation and evaluation of academic instruction as well as policy and program development are undertaken in the education sector. These innovations and recalibrations are based on the result-oriented studies and researches, hence research in the educational organization has

become one of its primordial functions to improve the condition of the education particularly in teaching and learning processes and serves as parameter to determine the attainment of its vision, mission, goals and objectives.

Research is the creation of new knowledge and/or the use of existing knowledge in a new and creative way so as to generate new concepts, methodologies and understandings. This could include synthesis and analysis of previous research to the extent that it leads to new

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and creative outcomes (DET, 2020). Researchers around the globe are continuously conducting research to introduce and contribute ideas, processes and products that improve the present situation of mankind. The rapid growth of Asia's research community has led to some countries in the region being referred to as rising stars or the next scientific superpowers (Kamalski & L'Huillier, 2011). This implies that countries in the region are taking steps for the quest of knowledge, findings and innovations. At the same time, investing to research and to their human resources to arm them with research literacy and capability.

The Philippines stands as 67th out of 138 countries in the world leaderboard for research and development spending, yet it is not enough to help our people (Gutierrez, 2020). In this context, the country is taking efforts in the production of research, particularly those who are in the Higher Education Institutions (HEIs) as this is one of their mandates. Commission on Higher Education (CHED) is directed to promote, direct and support higher education institutions in performing their research and instruction functions (CHED, 2017).

Aside from HEIs, the basic education through the Department of Education (DepEd) also adheres to the importance of research. The Basic Education Governance Act of 2001 underlined the significance of research in the organization and administration of the basic education system. With this directive, DepEd has endeavored to promote and strengthen research in the department. Such efforts include different research initiatives beneath the Basic Education System Reform Agenda (BESRA) as well as the founding of the Research, Innovation, and Policy Evaluation Secretariat (RIPES) in 2003.

DepEd also institutionalized the research-based decision and policy making in the department and stipulates that policies in the department should be based on research (DO No. 65, s. 2003). This ignited the agency to promote the culture of research in the basic education. Furthermore, the founded policy development procedure (DepEd Order 13, s. 2015) within the agency controls the use of evidence. Also, DepEd Order No. 24, s. 2015 / DepEd Order No.

4, s. 2016, DepEd began to support backing facility for research across the Basic Education Research Fund. Lastly, DepEd Order No. 16 s. 2017 issued the Research Management Guidelines to provide guidance in managing research initiatives in the national, regional, division and school levels. With these research programs and policies in DepEd research productivity in the department is expected.

Despite of the expectation from teachers to embrace the culture of research, some do not adhere on this objective since they do not have the expertise, capability, and knowledge in research. Alim (2011) teachers were capable of conducting researchers through various trainings, experiences, and skills acquired connected to research. On the other hand, Abarro and Mariño (2016) revealed that the public secondary and elementary school teachers had average level of research capabilities in writing the different parts of a research proposal and publishable research paper or article and low level in using the APA bibliography format. The research capabilities of public secondary school teachers in writing a research proposal was influenced by their position and not affected by age, sex, civil status, highest educational attainment and research trainings or seminars attended.

Science educators in the basic level of education are expected to conduct both pure and applied academic researches as they are supervising investigatory projects as well as providing solutions to classroom and community based problems through different endeavors. Thus, this ignited the researcher to assess the research capability of Science teachers in the Schools Division of Pampanga and further explore the issues and challenges of the respondents in conducting and making research. Indeed, research serves as a tool for the understanding of society's needs, commitment in research benefits teacher nurture constant growth and development Manalili (2016). With this, Science educators' research capability was determined in this study in order to assess their knowledge and skills in conducting research. As educators and nature of the area of specialization, they should possess with research skills to produce excellent, relevant and

responsive research outputs that would contribute meaningfully in the present situation of education in the country.

Statement of the Problem

The study aimed to determine the research capability of secondary Science teachers in order to assess their research knowledge and skills that would serve as a basis for the formulation of a sustainable research development program.

Specifically, this study sought to answer the following questions:

1. How is the profile of the secondary Science teachers be described as to the following?
 - 1.1 Educational Attainment;
 - 1.2 Trainings or Seminars attended in research; and
 - 1.2.1 Number of Trainings/Seminars Attended
 - 1.2.2 Level of Trainings/Seminars Attended
 - 1.3 Research Output
 - 1.3.1 Completed
 - 1.3.2 Presented
 - 1.3.3 Published
2. How is the research capability of the teachers described in terms of the following?
 - 2.1. Technical Skills;
 - 2.2. Skills in Conceptualizing a Research Problem;
 - 2.3. Designing the Research Plan; and
 - 2.4. Research Data Processing?
3. How is the research capability of the teachers related to the following?
 - 3.1 Educational Attainment
 - 3.2 Trainings/Seminars attended in Research; and
 - 3.3 Research Output?
4. What are the issues encountered by teachers in making their research?

Significance of the Study

As an institution mandated with significant role in holistic development of the Filipino youth, DepEd is currently implementing programs based on result-oriented studies.

To the Department of Education. The findings of this study may provide feedback and intervention to enhancement of the research programs of the department specifically in the

Division of Pampanga for teachers in conducting action research by providing series of workshops and trainings. These can address the problems encountered by teachers in making research.

To the Teachers. The results of this study may provide data that can be used for enhancing their research capability and to deliver excellent research outputs.

Scope and Delimitation of the Study

The study focused in determining the level of research capability of secondary Science teachers of the Schools Division of Pampanga in terms of technical skills, conceptualizing research problem, designing research plan, research data processing and writing the research paper and the problems encountered in making research. The profile of the respondents were described in terms of trainings or seminars in research and educational attainment.

Conceptual Framework

The level of research capability of teachers was determined in terms of the following research skills; technical skills, skills in conceptualizing a research problem, skills in designing the research plan, research data processing skills and skills in writing the research paper. In addition, these research skills were associated with the trainings or seminars in research and educational attainment to see their relationship. This looked into the problems encountered by teachers and the implications of teachers' research capability in doing research to educational management.

Methodology

Research Design

Correlational research design describes the nature and extent of relationship between and among variables. The study established the relationship between research capabilities to and profile of the secondary Science teachers.

Sampling Procedure and Participants

The utilization of a purposive sampling technique guided the researcher to determine the respondents of the study. In here, 76

secondary Science teachers were involved from the Schools Division of Pampanga. These are teachers practicing their area of specialization in the secondary level of basic education.

Instrument

A survey- questionnaire was used to gather the necessary information from the respondents in terms of the profile such as the trainings or seminars on research attended educational attainment and research output. A Research Capability Self-Assessment Instrument (RCSI) with obtained 0.992 Cronbach alpha was adopted (Abrazado and Coronel, 2016) to analyze Science educators' research capability. The scale assessed the technical skills, skills in conceptualizing research problem, knowledge and skills in designing the research plan, skills on research data processing and skills in writing the research paper. Also, a checklist was developed to identify the problems and issues encountered by the Science educators in conducting research.

Data Collection

Permission to conduct the study was sought among the respondents by a transmittal letter that was attached to the questionnaire. All gathered data were treated with utmost care and confidentiality. The responses from the retrieved and accomplished survey questionnaire undergone statistical treatment,

presented in a graphical and textual form and provided appropriate interpretation supported with literature and studies.

Data Analysis Framework

Frequency and percentages scores were utilized in order to describe the profile of the Science educators. Mean scores from the research capability instrument were drawn and interpreted using a 5 Point Likert Scale. Issues encountered by teachers in conducting research were tabulated to determine the frequency of these problems. Spearman correlation was utilized to establish the extent and relationship between Science teachers' research capability and profile.

Results and Discussion

This section presents the results of data obtained from the respondents that includes the profile, level of research capability, problems and issues encountered by Science teachers in making research and the extent of relationship between their profile and perceived level of research capability.

Profile of the Science Teachers

The profile of teachers consisted of their highest educational attainment, trainings or seminars attended in research and research output. The profile was described through the use of frequency and percentage.

Highest Educational Attainment

Table 1. Educational Attainment of Science Teachers

Degree	F	Percent
Doctorate Degree	2	3 %
Ed.D/Ph.D Units	1	1 %
MA Graduate	10	13 %
MA Complete Academic Requirement	15	20 %
MA with units	11	14 %
BSEd/BS Graduate	37	49 %
Total	76	100.0

Table 2 shows that most of the Science teachers did not yet pursue higher professional studies (37 or 49%) but some of them had doctoral degrees (1 or 1%) and master's degrees (10 or 13%). Pursuing higher

educational attainment widens one's horizon and perspectives in a certain field (Manalili, 2016). Science teachers need to pursue graduate school to enrich their academic, instructional and research capabilities.

Trainings in Research

Table 2. Research Trainings of Science Teachers

Level of Trainings / Seminars Attended	F	Percent
International	3	4 %
National	4	5 %
Regional	3	4 %
Division	20	26 %
Cluster	7	9 %
School	8	11 %
None	31	41 %
Total	76	100.0

Majority of the Science teachers did not have the opportunity to attend research seminars and trainings (31 or 41%) while some of them were able to attend on division (20 or 26%), regional (3 or 4%) , national (4 or 5%) as well as international (3 or 4%) level of trainings and seminars. Still, Science teachers were actively participating and engaging themselves on the different research related

endeavors. This is to confirm the findings of Alim (2011) which showed the association between trainings and research capability. Science teachers need to have related trainings to improve their research productivity. Although majority had trainings in research, it would be much better if everybody is given the chance to attend trainings in research.

Research Output

Table 3. Research Output of Science Teachers

Research Output	F	Percent
Published	2	3 %
Presented	5	7 %
Completed	14	18 %
None	55	72 %
Total	76	100.0

Table 3 revealed that only 2 or 3 % of the teachers had published their research output in journals. Five or 7 % of them had the opportunity to present their studies in colloquia and conferences and 14 or 18 % completed their researches. Quimbo (2013) stated that research productivity can be associated with educa-

tional attainment, research benefits, and incentive system. Therefore, the department should strengthen research development program among Science teachers by establishing a motivating and rewarding system to ensure research productivity. From the results, it could be concluded that Science teachers had low research productivity since most of them had no

research outputs. From here, it could be a question of how will teachers lead students to research when they have not yet completed any research.

Research Capability

Research skills among Science teachers should have been developed during the undergraduate studies and one of the ways to strengthen this is by their enrolment in the

graduate students are required to conduct researches. Wittman et.al (2013) highlighted that the skills needed by a researcher in order to solve research problems incorporate creativity, judgment, communication, organization and persistence. In here, research capability of Science teachers was determined through the following skills: technical skills, skills in conceptualizing a research problem, knowledge and skills in designing the research plan and skills in research data processing.

Technical Skills

Table 4. Technical Skills of Science Teachers

Technical Skills	Mean	SD	Description
Written communication	3.40	0.68	Moderately Capable
Oral communication	3.50	0.76	Capable
Critical/analytical thinking	3.50	0.76	Capable
Problem solving	3.40	0.68	Moderately Capable
Research organization	3.30	0.93	Moderately Capable
Online research, use of electronic resources databases and search engines (ICT)	3.50	0.76	Capable
Use of computer commands/programs/software (ICT)	3.60	0.87	Capable
Acknowledging or citing sources/cross referencing	3.30	0.93	Moderately Capable
Total	3.40	0.68	Moderately Capable

Science teachers are moderately capable (3.40) in written communication and capable in oral communication (3.50). In terms of critical thinking skills Science teachers were capable (3.50) in evaluating ideas and analyzing the arguments of others. Science teachers showed moderate capability (3.40) in problem solving and research organization (3.30).

Science teachers also showed capable level (3.50) in doing online research, use of electronic resources databases and search engines and use of computer commands/programs/software (3.60). Furthermore, Science teachers had a moderate capability in acknowledging or citing sources/cross-referencing (3.30). In addition, Science teachers had high level of competence in their technical skills (61 or 80.26%) while fifteen or 19.74% had very low capability.

As to the extent of technical skills of the Science educators, sixty-one or (80.26%) of them had a high level of competence in demonstrating their technical skills in research. Fifteen or (19.74%) of them were scaled with low level of competence in their technical skills. Majority of the Science teachers had high level of technical skill. This was because in the four (4) technical skills the Science teachers were capable and on the other skills they were on the upper limit of moderate capability. On the whole, technical skill was high among the Science teachers. As to process, the researchers were capable along conceptual skills, moderately capable in computational skills and technical skills (Dela Cruz, 2016). It means that the Science teachers had the technical skill characterized by capability to do oral communication, critical thinking, and online research and by their skill to use computers.

*Skills in Conceptualizing a Research Problem**Table 5. Science Technical Skills in Conceptualizing a Research Problem*

Skills in Conceptualizing a Research Problem	Mean	SD	Description
Identification of a research problem or topic	3.40	0.68	Moderately capable
Reviewing related literature	3.40	0.68	Moderately capable
Defining concepts, constructs or variables.	3.40	0.68	Moderately capable
Formulating hypothesis or proposition	3.40	0.68	Moderately capable
Developing a theoretical framework	3.30	0.93	Moderately capable
Developing a conceptual framework	3.30	0.93	Moderately capable
Formulating the research objectives or statement of the problems.	3.30	0.93	Moderately capable
Total	3.40	0.68	Moderately Capable

Science teachers were moderately capable in identifying problem (3.40). Same interpretation was obtained in reviewing literature (3.40) and defining concepts and constructs or variables (3.40). Also, they were moderately capable in formulating hypothesis (3.40) as well as in developing a theoretical framework (3.30) and (3.30) developing a conceptual framework. Moreover, on their ability of formulating the research objectives or statement of the problems, teachers had moderate capability (3.30)

Science teachers' skills had moderate capability in conceptualizing a research problem (3.40). In a study conducted by Formeloza and Pateña (2013) faculty members found that they were least capable in constructing a research problem and the conceptual / theoretical paradigm. Moreover, as to the extent of this research skill, majority (34 or 44.74%) of the teachers had very high level of capability, while 29 or 38.16% of the teachers were high. Some of the teachers (13 or 17.11%) fell under very

low level of capability in conceptualizing a research problem.

As to the level of competence of the Science teachers in their skills on conceptualizing the research problem, results shows that 34 (44.74 %) of the Science teachers were on very high level of skill in conceptualizing a research problem, while 29 (38.16%) were under high level and 13 or 17.11% were under very low level. The results shows that Science teachers were high to very high in this research skills. They can easily deal on the nature of their research problem. Others need to seek the guidance for them to be able to conceptualize a research.

Majority of the Science teachers had very high level of skill in conceptualizing a research problem. Though in all skills Science teachers were moderately capable, this is for the reason that they were on the upper limit of moderate capability. In general, Science teachers had a very high level in their skills in conceptualizing a research problem.

*Skills in Designing the Research Plan**Table 6. Science Teachers Skills in Designing the Research Plan*

Knowledge and Skills in Designing the Research Plan	Mean	SD	Description
Research design	3.20	0.92	Moderately capable
Study locale	3.20	0.92	Moderately capable
Population and Sampling techniques	3.20	0.92	Moderately capable
Sources of data	3.30	0.93	Moderately capable
Types of instruments	3.10	0.91	Moderately capable
Procedures in data collection	3.20	0.92	Moderately capable
Ethical considerations	3.20	0.92	Moderately capable
Statistical tools	3.10	0.91	Moderately capable
Total	3.20	0.92	Moderately Capable

Science teachers had moderate capability (3.20) in designing a research plan. In making a research design (3.20), skill in identifying the locality of their study (3.20) and sources of data (3.30) they were moderately capable. In collecting data, performing sampling techniques and ethical considerations, teachers had moderate capability (3.20). Moreover, a moderately capable level (3.10) was observed among the Science teachers on their skill of the instruments and statistical tools being used in their researches (3.10).

The findings also revealed that majority or 43.42% of the teachers had high level of capability in constructing the plan for research, 32.89% of them had the average skill, and eighteen (18) or 23.69% of them had very low level of competence.

In addition, the study reveals that 33 (43.42%) of the Science teachers had high level of competence in designing the research plan and 25 (32.89%) of them were on the average level. However, 18 (23.69%) were still within

very low level of competence. Majority of the Science teachers were average to high on their capacity to plan and execute their research. Nevertheless, some were still finding a hard time on how they will plot their research activities.

Though in all skills the Science teachers were moderately capable, this is for the reason that some were on the upper limit of moderate capability. Thus, most of them were on the high level of research capability in designing research. However, some teachers demonstrated average level on this skill since some of them were on the lower limit moderate capability. Generally, the Science teachers had a high level on their skills in designing the research plan. Salom (2013), exposed that faculty members are capable in the areas of the research procedure. This has been contributed to the nature of the subject matter which usually entail procedural activities.

Skills in Research Data Processing

Table 7. Science Teachers Skills in Research Data Processing

Skill on Research Data Processing	Mean	SD	Description
Statistical treatment of data for quantitative research	3.00	0.90	Moderately capable
Treatment of data for qualitative research (coding)	3.00	0.90	Moderately capable
Presentation of data (textual, graphical, tabular)	3.10	0.91	Moderately capable
Analysis of data	3.20	0.92	Moderately capable
Interpretation of data	3.20	0.92	Moderately capable
Total	3.10	0.91	Moderately capable

Skills of Science teachers in research data processing fell under moderate capability (3.10). In addition, the Science teachers had quite difficulty in statistical treatment of data for quantitative and qualitative research with moderate capable level (3.00). Presentation of data among the Science teachers fell under moderate capability (3.10). Analyzing and interpretation of data (3.20) were under the same level. Thirty-five (35 or 46.05%) of the teachers were under very high level of competence in handling research data and 21 or 27.63% of the Science teachers were highly capable. Only thirteen (13 or 17.11%) of the Science teachers were under the average level. A

minimal number or 7 (9.1%) of the teachers had very low level of proficiency in this research skill.

Furthermore, findings indicates the level of competence in research data processing among the Science teachers that most of them (35 or 46.05 %) were already with very high level of expertise in managing research data while 21 or 27.63% had high and 13 or 17.11 had average level. Seven or 9.21 % of the teachers showed very low level of competence in research data processing. These Science teachers were finding a hard time to manage and administer research data.

Most of the Science teachers had high to very high level of skill in research data processing for they were capable in quantitative data and on the other skills they were on the upper limit of moderate capability. Salom (2013) stated that analyzing and interpreting

data are considered as one of the difficulties encountered by teacher-researcher. This means that this area of research is critical as this leads to the generation of research-driven data. Generally, skill in research data processing was high to very high among the Science teachers.

Research Capability Related to Educational Attainment, Training or Seminar Attended in Research and Research Output

Table 8. Relationship of Teachers' Profile to Research Capability

Research Capability	Educational Attainment		Research Trainings and Seminars Attended		Research Output	
	R	VI	R	VI	R	VI
Technical Skills	0.4629	Low	0.4376	Low	0.3043	Low
Skills in Conceptualizing Research Problem	0.4740	Low	0.4135	Low	0.3815	Low
Skills Designing the Research Plan	0.4780	Low	0.3895	Low	0.4475	Low
Skills in Research Data Processing	0.4111	Low	0.3464	Low	0.3401	Low

Educational attainment had a significant relationship to the Science teachers' technical skills (0.4629), skills in conceptualizing the research problem (0.4740), skills in designing research plan (0.4779) and skills in data processing (0.4110). In connection to the findings of Salom (2013) that the academic rank, highest educational attainment, and teaching load have significant difference in teachers' level of research capability. This means that educational attainment is one of the predictors of research capability as this expose teachers in the field of research since this is being offered as one of the core subjects and requirement for the degree.

Attending trainings or seminars in research had significant relationship to Science 60 teachers' technical skills (0.4376), skills in conceptualizing the research problem was 0.41346, skills in designing research plan 0.3895 and skills in data processing 0.3464.

Alim (2011) teachers were capable of conducting researchers through various trainings, experiences, and skills acquired connected to research. Hence, exposure to research-related activities will equipped teachers in conducting research and ensure the production of quality research outputs.

Research outputs of teachers had significant relationship to technical skills (0.3043), skills in conceptualizing the research problem (0.3815), skills in designing research plan (0.4475) and skills in data processing (0.3401). Abrazado & Coronel (2016) describe research productivity in terms of full-length research output produced in the past five years. This period of time enable researcher to develop and improve necessary skills in conducting research. Thus, acquiring research-capability related skills will ensure increase in productivity since this enable teacher-researcher to craft quality and responsive research outputs.

*Problems or Issues Encountered in Conducting Research**Table 9. Problems/Issues Encountered by Teachers in Making and Conducting a Research Output*

Problems	F	Precent	Rank
1. lack of time	53	69.74%	1
2. lack of trainings/workshops in research	41	53.94%	2
3. lack the necessary research skills	28	36.84%	3
4. lack of writing skills	7	9.21%	4
Identified Issues Encountered by Teachers	F	Precent	Rank
1. less idea about research	1	1.32%	1.5
2. financial problems	1	1.32%	1.5
3. problems on materials and tools	1	1.32%	1.5
4. pre-occupied with teaching loads and paper works	1	1.32%	1.5
5. retrieval of questionnaires from respondents is difficult	1	1.32%	1.5

Insufficient time in conducting research was the leading problem among the Science teachers (53 or 69.74%). Next to this was the lack of trainings or workshops in research (41 or 53.94%). Twenty-eight (28 or 36.84%) of the Science teachers lacked the necessary research skills. The lack of writing skills was also experienced by the Science teachers (7 or 9.21%). Furthermore, other problems raised by the Science teachers were less idea about research, financial problems, and problems on materials and tools, pre-occupation with teaching loads and paper works and difficulty on the retrieval of questionnaires from their respondents. Abrazado and Coronel 's (2016) found that productivity of the faculty in terms of producing research output was more determined by research capability in terms of the levels of proficiency or competency in going through the research process than the workload. It can be implied that reducing the number of teaching preparations or the hours of work did not always follow improvement in research productivity.

Conclusion

The study aimed to determine the research capability of secondary Science teachers and established the relationship between their highest educational attainments, trainings/seminars attended, and research output on their research capability. Problems encountered by teachers in conducting research was also explored.

Based on the results and findings, the following conclusions were derived. Most of the Science teachers had not yet pursued higher education. The number of Science teachers who attended seminars or training in research organized by the Division Office was high but majority of the Science teachers did not have the opportunity to attend this kind of seminar/training at any level. A very minimal number of Science teachers were able to produce their research output.

Science teachers were classified moderately capable level in their technical skills, skills in conceptualizing research problem, skills in designing the research plan and skills in research data processing. Science teachers' ability to conduct research is at approaching proficiency. Research capability of the Science teachers showed low level relationship to highest educational attainment, trainings or seminars attended in research and research output. The lack of time was the main problem of teachers in making and conducting a research.

Recommendations

Science teachers had established some skills needed in making and conducting research. This was evident from the level of research capability of the teachers. Supervision from research experts is still highly needed for the Science teachers to be guided in producing their research output. Teachers who were enrolled or had finished programs in the graduate schools were capable to do research. In this

case, teachers must find means and ways to enroll in the graduate school programs in order to develop and strengthen their research capability. Pursuing higher educational studies lead to high quality research output.

Continuous training of teachers in the field of research should be sustained through enhanced and enriched research activities being provided in the school, division, regional and national level. Developing research skills through trainings or seminars is highly needed for an efficient research output. This will address the inadequacy of research capability. Production of research outputs strengthens one's ability to deliver excellent researches. School authorities should empower and encourage teachers to make and conduct research in order for them to address their problems in their own ways and minimal provisions should be given by the school administrators. In addition, ability to produce and publish research output can also lead teacher's promotion.

Inadequate time for making and conducting research due to quasi and instruction-related activities was the main problem encountered by the teachers. To solve this issue, teachers must improve and enhance their managerial skills on time management. Moreover, personal commitment is a necessary ingredient in doing research. Provision of more funding was also perceived by teachers as another issue. Support on research activities such as trainings and capability workshops, publications and research materials or references, and laboratory facilities for experimental work must be allotted to research writers to motivate them to do research.

Researchers who intend to conduct the same nature study may explore to widen the respondents in terms of the teacher's area of specialization to identify the present situation of all teachers towards research.

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