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Exploring Science Teachers' Competence and Laboratory Management Capability on Students' Basic Science Process Skills

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A B S T R A C T

This study determined the relationship between junior high school science teachers' competence, their laboratory management capability, and grade 10 students' basic science process skills among the five public secondary schools in San Miguel, Bulacan, School Year 2024-2025. Mixed-methods research design, specifically, explanatory sequential was employed to describe the science teachers' competence and laboratory management capability of 67 science teachers and basic science process skills of 294 grade 10 students. Findings revealed that in terms of science teachers 'competence, students and teachers assessed themselves as highly competent. For laboratory management capability and students' basic science process skills, teachers perceived these as capable and utilized while students assessed these as highly capable and highly utilized. Based on the study's findings, there is a significant difference between the assessments of both teachers and students in terms of science teachers' competence, laboratory management capability, and students' basic science process skills. Also, there is a significant relationship between science teachers' competence, their laboratory management capability, and students' basic science process skills. Teachers' high level of teaching competence and capability in terms of laboratory management directly influenced students' development and utilization of basic science process skills.

Keywords: *Arrangement of equipment and materials, Assessment, Basic Science Process Skills, Instructional planning and strategies, Laboratory Management Capability*

Introduction

Science education in the Philippines continuously transformed after transitioning to a K-12 curriculum implemented in 2013. The curriculum emphasizes inquiry-based learning, critical thinking, and skills development, aligning with international standards. Science teachers undergo training to enhance their competence in delivering the curriculum effectively, focusing on practical laboratory experiences to supplement theoretical knowledge. These are necessary to nurture the learners' curiosity and understanding while equipping them with essential science process skills and eventually becoming scientifically literate individuals. However, some educational issues are left unaddressed, specifically, the lack of provision for laboratory resources.

The Department of Education (DepEd) released DepEd Order No. 118 s. 2009 pre- scribing the list of Science and Mathematics equipment, laboratory glassware, and con- sumables for all year levels of elementary and secondary science subjects. Enclosed with this order is the prescribed list of materials and equipment that will serve as the main ref- erence for classroom instruction, procurement, and any relevant application. The following year, implementation of the Science and Mathematics Equipment project, FY 2010 in sup- port of the 2010 secondary education curriculum had materialized through DepEd Order No. 52 s. 2010. Twenty lowest-performing high schools per region based on the result of the National Achievement Test were chosen as beneficiaries of science and mathematics equipment packages. Even before the K-12 implementation, DepEd took action to address the inadequacy of laboratory resources, especially in those low-performing schools.

However, these provisions have a life span and need to be assessed after several years. Caballes et al., (2024) examined the compliance rate of science laboratories of vari- ous schools in their division. They concluded that some schools are having deficiencies with the prescribed science laboratory resources. According to Seid et al. (2022), the insuf- ficiency of laboratory materials and equipment affects laboratory work, which in turn affects the quality of science education. It also limits teachers' ability to provide hands-on learning experiences, hindering their effectiveness in teaching scientific concepts and de- veloping students' practical skills.

These difficulties in science education were reflected in the latest result from Pro- gramme for International Student Assessment (PISA). According to the Organization for Economic Cooperation and Development (OECD), students in the Philippines performed below the OECD average in math, reading, and science. In science, the average score de- creased by one point, from 356 to 355. In terms of proficiency, only 23% of Filipino pupils achieved basic science proficiency emphasizing that only one out of every four Filipino students in PISA 2022 can recognize the correct explanation for the familiar scientific phe- nomenon and validate the results (Chi, 2023).

Science teachers' competence plays a vital role in improving this result. According to Asanalieva and Nasipova (2022), a teacher's competence is essential as it provides in- sights into the knowledge, skills, and personal qualities that contribute to successful teach- ing practices. Likewise, Canuto et al. (2024) mentioned that the effectiveness of a science teacher in enhancing scientific proficiency depends on their competence and ability to in- spire and engage their students in the subject. In addition, the adeptness of science teachers in laboratory management serves as a critical aspect of their teaching competence. Suseno et al. (2022) emphasized that management improvement and inventory of laboratory tools and materials as well as making practical standard operating procedures, are effective in optimizing the role of science laboratories in supporting the learning process. Integrating these two aspects could influence the students' acquisition of basic science process skills. Basic science process skills encompass a range of fundamental abilities essential for scientific inquiry and understanding. These skills include observing, measuring, classi- fying, inferring, communicating, and predicting. As stated by Kurniawati (2021), these pro- cess skills are beneficial in designing and constructing scientific facts in natural sciences at the school level and in scientific activities involving various methods.Teachers' competence and laboratory management capability are two important as- pects in science instruction. The development of students' basic science process skills may depend on how the teachers facilitate the classroom discussion and laboratory activities.

The abilities of teachers in the classroom and laboratory may contribute or hinder the stu- dents' scientific learning experiences, thus, affecting the acquisition of their basic science process skills. Exploring the science teachers' competence and laboratory management capability could provide insights for educational improvement and resource allocation to enhance their teaching practices and laboratory management since it requires adequate resources and infrastructure. In the public secondary schools in San Miguel Bulacan, science teachers can demonstrate a commendable teaching competence, however, it is also evident that chal- lenges such as insufficiency in laboratory facilities and equipment hinder them to practice their laboratory skills and so their students to develop their science process skills. So, their capability in terms of laboratory management must be assessed as this could be a basis for improving their science laboratories and training programs for laboratory management. Also, previous studies mostly focused on teachers' competence. The laboratory manage- ment capability of teachers and its influence on students' basic science process skills is rarely explored. Ultimately, understanding how teachers' competence and laboratory man- agement capability influence students' basic science process skills can help identify dis- parities in access to high-quality instruction and resources by crafting an appropriate action plan to address these disparities and eventually improve students' achievement in science.

Theoretical Framework

This section presents an understanding of relevant theories that govern and guide the entire process of study.

The primary goal of science education is not merely to encourage memorization of scientific facts but rather to facilitate them to acquire scientific attitudes, skills, and knowledge essential for comprehending the world, addressing challenges, and making in- formed decisions regarding scientific and socio-scientific matters (Ozdem-Yilmaz & Bili- can, 2020). The Cognitive Constructivism Theory by Jerome Bruner (1960) views learning as the process of constructing meaning and making sense of one's experience. As knowledge is actively constructed, learning is portrayed as an active process of discovery. Guided by this, students develop science process skills through hands-on activities and inquiry-based learning facilitated by competent science teachers. Thus, the effective labor- atory management competence of teachers plays an important role in creating a learning environment that encourages active engagement, exploration, and construction of scientific knowledge.

Active engagement allows students to develop practical skills and knowledge in an authentic context (Drew, 2024). Situated Learning Theory developed by Lave and Wenger (1991) posits that knowledge is best acquired through active participation and social inter- action within the community of practice. In the context of science teaching, this theory emphasizes authentic learning in which teachers' competence and effective laboratory man- agement are essential. Competent teachers design activities that reflect real-world science, and facilitate collaboration, helping students develop science process skills. Effective man- agement ensures a safe, organized environment, fostering a community of practice where students learn from teachers and peers. This approach enhances engagement, making learn- ing relevant and meaningful, and leads to better outcomes.

Both theories offer valuable insights into the complex interplay between teachers' competence, laboratory management capabilities, and students' science process skills. By considering these theoretical perspectives, the researcher could explore how teachers' in- structional approaches and management strategies in handling laboratories influence stu- dents' learning experiences and outcomes in science education and consequently, lead to the development of effective teaching practices and educational interventions aimed at en- hancing students' scientific inquiry skills and understanding of scientific concepts.

Conceptual Framework

This section offers a structured approach to understanding the relationships be- tween key variables, concepts, and constructs relevant to the study.

According to Gamayao and Biñas (2021), the high level of pedagogical content knowledge demonstrated by science teachers is likely due to their comprehensive understanding of various scientific concepts, which enhances student learning. Their ex- pertise in the subject matter plays a vital role in maximizing students' learning. By employ- ing suitable methods and strategies, teachers facilitate students' acquisition of essential knowledge specifically in the laboratory setting.

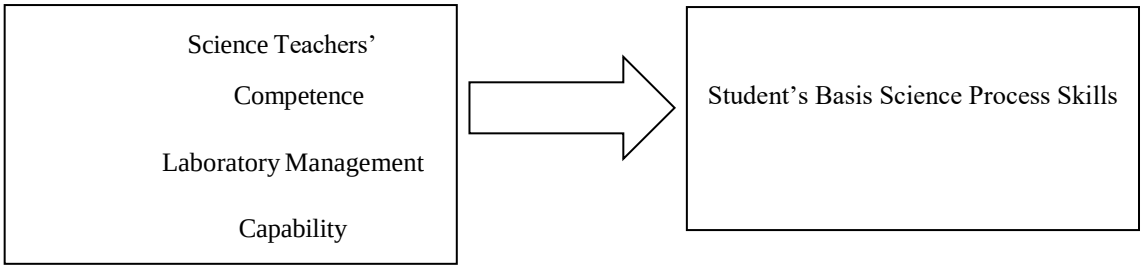
The conduct of science laboratory activities has a significant impact on capturing the students' attention and ensuring that there is an understanding of the lesson. Students' utilization of basic science process skills is practiced in the laboratory as well. Therefore, teachers must have adequate experience with laboratory resources, procedures, and ob- servance of safety precautions for teachers to lead, teach, and manage laboratory activities effectively.

Zorluoğlu et al. (2022) stated that science process skills are essential components of science and focus on the methods of thinking and utilizing process skills rather than memorizing scientific facts. These skills also contribute to psychomotor competence, sup- porting students' knowledge acquisition. In learning various activities, having these science process skills are vital elements essential for students (Yulihapsari et al., 2023).

Figure 1.

Paradigm of the Study

Independent variable Dependent variable



The study was guided by the paradigm depicted in Figure 1, which illustrates the independent and dependent variable model. The researcher utilized this model to exhibit the relationship among the variables. As presented, the independent variables include sci- ence teachers' competence (subject matter knowledge, instructional planning and

Statement of the Problem

This study determined the relationship between junior high school science teachers' competence, their laboratory management capability, and grade 10 students' basic science process skills among the five public secondary schools in San Miguel, Bulacan, School Year 2024-2025.

Specifically, it sought answers to the following questions:

1. How may the science teachers' competence, as assessed by teachers and students, be described in terms of:
    1.1. subject matter knowledge;
    1.2. instructional planning and strategies;
    1.3. assessment;
    1.4. learning environment; and
    1.5. effective communication?
2. How may the teachers' laboratory management capability, as assessed by teachers and students, be described in terms of:
    2.1. arrangement of equipment and materials;
    2.2. observance of safety rules;
    2.3. maintenance of equipment and materials; and
    2.4. keeping laboratory records?
3. How may the science process skills of students, as assessed by teachers and students themselves, be described in terms of:
    3.1. observing;
    3.2. classifying;
    3.3. measuring;
    3.4. communicating;
    3.5. inferring; and
    3.6. predicting?
4. Is there a significant difference between teachers' and students' perceptions of science teachers' competence, laboratory management capability, and students' science process skills?

5. Is there a significant relationship between science teachers' competence, laboratory man- agement capability and students' level of utilization of science process skills?
6. What are the views and insights of teachers and students regarding science teachers' competence, laboratory management capability, and students' basic science process skills?
7. What school action plan may be crafted based on the results of the study?

Hypotheses

Based on the problems stated, the following null hypotheses were crafted:

1. There is no significant difference between the teachers' and students' perceptions of sci- ence teachers' competence, laboratory management capability, and students' science process skills.
2. There is no significant relationship between science teachers' competence, laboratory management capability and students' level of utilization of science process skills.

Research Methodology

Research Design

This study utilized a mixed-methods research design specifically, the explanatory- sequential approach to determine the relationship between science teachers' competence, their laboratory management, and capability on students' science process skills. According to Edmons and Kennedy (2017), it is a sequential approach and is used when the researcher wants to support the quantitative results with qualitative data. Thus, the qualitative data is used in the subsequent interpretation and clarification of the results from the quantitative data analysis.

In this study, this research method established the relationship between science teachers' competence, laboratory management capability, and students' science process skills. Meanwhile, qualitative data was acquired through semi-structured interviews with selected science teachers and grade 10 students to discuss comprehensively the quantitative outcomes of the study.

Sampling and Respondents

The respondents were the junior high school science teachers and grade 10 students at public secondary schools in San Miguel, Bulacan having a total population of 67 science teachers and 2,940 grade 10 students. To determine the recommended sample size, a total students was chosen as respondents of the study. As stated by Yasmeen et al. (2022), for descriptive research, 10% of the total population may be selected as respondents.

Table 1 depicts a total enumeration of 67 science teachers and 294 randomly se- lected grade 10 students as respondents. Also, they were requested to answer the question- naire for quantitative data collection. For the collection of qualitative data, 1 teacher and 2 students per school were selected. For the selection of students, 1 student each from the upper and lower limit of their grade level was considered. Before the interview, the selected respondents were given information about the topics to be discussed during the interview for them to be prepared.

Table 1.

Respondents of the Study

Name of Public Secondary Schools	JHS Science Teachers	Grade 10 students	Student-Re- spondents
Emilia Perez Ligon High School	2	66	7
John J Russel Memorial High School	10	466	47
Partida National High School	5	192	19
San Miguel National High School	38	1 617	161
Vedasto R. Santiago High School	12	599	60
TOTAL	67	2 940	294

Locale of the Study

The study was conducted in five public secondary schools in San Miguel, Bulacan. These schools are Emilia Perez Ligon High School, John J Russell Memorial High School, Partida National High School, San Miguel National High School, and Vedasto R. Santiago High School.

Enumeration sampling technique was employed for science teachers. Meanwhile, propor- tional stratified simple random sampling was utilized in selecting the grade 10 student- respondents. In this sampling method, 10% of the total population of 2,940 grade 10.

Instruments of the Study

Instruments can take various forms depending on the nature of the research and the type of data being gathered. In this study, the researcher utilized an adopted survey ques- tionnaire and semi-structured interviews to determine the relationship between science teachers' competence, their laboratory management capability, and students' science pro- cess skills.

The questionnaire incorporated with a 5-point Likert rating scale consisted of state- ments about science teachers' competence and laboratory management capability and stu- dents' science process skills.

The questionnaire was composed of three parts. The first part is for the science teachers' competence, which described the teachers' subject matter knowledge, instruc- tional planning and strategies, assessment, learning environment, and effective communi- cation and was adopted from Akram (2018). The second part described the teachers' labor- atory management capability which includes the arrangement of equipment and materials, observance of safety rules, maintenance of equipment and materials, and keeping labora- tory records. This was adopted from Anaeche (2022). The third part was adopted from Mellona (2022), and is about students' science process skills such as observing, classifying, measuring, communicating, inferring, and predicting. Since there were two groups of re- spondents, the researcher made two sets of questionnaires with the same variables and statements but in the point of view of teachers and students.

For the qualitative part, the researcher conducted a semi-structured interview with selected science teachers and grade 10 students to delve deeper and have more comprehen- sive views and insights regarding the relationship between science teachers' competence, their laboratory management capability, and students' basic science process skills.

Data Gathering Techniques

Before the collection of data, the researcher sought permission from the Schools Division Superintendent of Schools Division of Bulacan to conduct the study in five public secondary schools in San Miguel, Bulacan. Upon receiving the letter of approval, the re- searcher coordinated with the school principals, teachers, and students for the schedule of data collection. The questionnaire was personally administered by the researcher to explain the content and for further questions and clarifications.

Also, an informed consent form was obtained first from the respondents. This con- tains the number of participants, procedures, safeguards and confidentiality, voluntary par- ticipation, benefits, contact information, and the participant's consent to be part of the study. Since grade 10 students are below 18 years of age, an assent form was obtained from the parents/guardians of the student-respondents of this study. The content of the consent and assent forms was written in plain language to be easily understood by the respondents. This study used an adopted survey questionnaire to quantitatively describe the science teachers' competence, their laboratory management capability, and students' science process skills. Meanwhile, a semi-structured interview was done to obtain qualitative data for an in-depth understanding of quantitative findings.

The collected data from the respondents was stored in a secure place to which only the researcher has access. The data collected was organized and tabulated for statistical analysis. Furthermore, responses were kept in full confidentiality and were only used for the study, and were subjected to existing laws and regulations such as Republic Act 10173 or the Data Privacy Act of 2012 titled "An Act Protecting Individual Personal Information in Information and Communications Systems in the Government and the Private Sector, Creating for this Purpose a National Privacy Commission, and for other purposes."

In adherence to Memorandum No. 9, s. 2021, the researcher deleted the collected records containing the data to leave no potential records prints which may potentially be used for some unlawful and unethical undertakings that are not within the bounds of this present study.

Data Analysis

The collected survey questionnaires were organized, tabulated, tallied, and ana- lyzed using descriptive and inferential statistics.

Descriptive Statistics such as weighted mean and standard deviation was computed to describe the science teachers' competence, their laboratory management capability, and students' science process skills. Meanwhile, inferential statistics such as correlation analysis determined the significant relationship between science teachers' competence, their laboratory management capability, and students' science process skills.

An Independent T-test was used to determine whether significant differences exist between the assessments of science teachers and grade 10 students on science teachers' competence and laboratory management capability.

Ethical Considerations

The Graduate Studies Program at Bulacan Agricultural State College has recently incorporated the adoption and implementation of specific ethical guidelines within all the- ses and dissertations. This integration aimed to ensure the adherence to ethical standards and safeguard the welfare of research respondents.

Before commencing the study, the researcher guaranteed that informed consent forms were obtained from respondents, providing clear and comprehensive information about the purpose, procedures, potential risks, and benefits involved. These were obtained voluntarily without coercion.

Additionally, precautions were strictly observed throughout the process of the study to safeguard the privacy and confidentiality of respondents' personal information from un- authorized access or disclosure. This included securing the storage, transmission, and usage of data. To prevent individual

respondents from being identified, the data was anonymized. Also, the researcher strived to minimize any potential harm to participants and ensure that the benefits of the study outweigh any risks.

Moreover, the researcher conducted the study with honesty, integrity, and transpar- ency regarding the methods, findings, and any conflicts of interest that may arise. By ad- hering to these ethical guidelines, the integrity and credibility of the study were upheld while respecting the rights and well-being of those involved.

Results and Discussion

The Difference between Teachers and Students' Perceptions on Science Teachers' Competence, Laboratory Management Capability and Students' Basic Science Pro- cess Skills

Perceptions from both teachers and students are crucial to counter check their as- sessments on the variables pertaining to them, delving in a more comprehensive understanding of the assessments. In this study perceptions of teachers and students were collected and analyzed to describe the science teachers' competence, laboratory manage- ment capability and students' utilization of basic science process skills.

In order to determine if significant difference existed between their perceptions, T- test was employed. The results from the said statistical treatment was shown below.

Table 2.

Significant Difference Between Teachers' and Students' Perceptions on Science Teachers' Competence, their Laboratory Management Capability, and Students' Science Process Skills.

Variable	t-value	p-value	Decision	Verbal Interpretation
Science Teachers' Compe- tence	-3.337	0.001	Reject H_o	Significant
Laboratory Management Capability	-7.323	0.000	Reject H_o	Significant
Science Process Skills	-6.963	0.000	Reject H_o	Significant

Legend: $\alpha = 0.01$

As shown in Table 15, science teachers' competence obtained a p-value of 0.001, while both laboratory management capability and students' basic science process skills got a p-value of 0.000, both labeled as "Significant". The result from each variable indicates that their p-values are less than the significance level ($\alpha = 0.01$) which means that the null hypothesis is rejected, implying that there is significant difference between the teachers' and students' perceptions on science teachers' competence, laboratory management capa- bility and students' basic science process skills.

The significant difference between teachers' and students' perceptions of science teachers' competence, laboratory management capability and students' basic science pro- cess skills highlight a gap on how these variables were viewed by both groups. In terms of teachers' competence, teachers assessed themselves based on their professional standards, training, and experiences, which often lead to higher self-assessments of their abilities and practices. This assessment also reflects on how students perceived the teaching competence of their teachers, describing them as highly competent. For laboratory management capability and students' basic science process skills, teachers see that there are still areas where expectations are not met. Although students are confident about their perceptions, still, for their teachers, there are aspects in their laboratory management and science pro- cess skills that are needed to revisit for further improvement.

These differences are aligned to the study conducted by Abbas et al. (2020) during the student-teacher research collaboration. Teachers expect better outcomes from students while the students anticipate expertise, support, creativity and criticism. In contrast, Mellona (2022) revealed in his study that in terms of science process capabilities, there is no significant difference between the two groups being compared.Knowing that teachers and students have different views on the said variables, these findings highlight potential gaps in perception that could be the basis for future discussions on alignment in expectations and experiences for both science teachers and students.

Relationship Between Science Teachers' Competence, their Laboratory Management Capability and Students' Science Process Skills

Table 3 presents the result of correlation analysis that was performed to determine whether significant relationship existed among the variables composing of science teach- ers' competence, their laboratory management capability, and students' basic science pro- cess skills.

Table 3

Significant Relationship between Science Teachers' Competence, their Laboratory Man- agement Capability and Students' Science Process Skills.

Variable		r-value	p-value	Decision	Verbal Interpretation
Science Teachers' Competence	Laboratory Management Capability	0.658	0.000	Reject H_o	Significant
	Science Process Skills	0.586	0.000	Reject H_o	Significant

It can be noticed that science teachers' competence, their laboratory management capability, and students' science process skills obtained a p-value of 0.000 verbally inter- preted as "Significant". The results point out that the null hypothesis is rejected, stating that there are significant relationships between science teachers' competence, their labora- tory management capability, and students' basic science process skills. Teachers high level of teaching competence and capability in terms of laboratory management directly influ- enced students' development and utilization of basic science process skills. Mastery of the subject alongside with effective use of teaching strategies and proficient laboratory man- agement give opportunities for students to perform better and further develop their science process skills.

In line with Yulihapsari et al. (2023), their study indicated that teachers' competence significantly influences the development of students' science process skills. By promoting practicum method, students' engagement and understanding may be improved and em- power various competencies that may help to develop science process skills. Likewise, Rivera (2024) whose study explored the influence of laboratory environment on students' achievement in science, concluded that laboratory environment significantly influenced the science achievement of students. In terms of science process skills, Batisla-Ong (2021) concluded that in their district when schools were categorized, there were significant dif- ferences in the science process skills of students. From these results, it is implied that teach- ers' competence, laboratory environment and management are essential factors in shaping students' science process skills and overall achievement in science.

Action Plan Based from the Results of the Study

Results of this study revealed that the science teachers' competence and laboratory management capability were interconnected to students' basic science process skills.

From the assessment and perceptions of science teachers and grade 10 students, the sub-variables consisting of assessment, observance of safety rules, and classifying got the highest results. However, sub-variables composing of instructional planning and strategies, keeping laboratory records, and inferring obtained the lowest results. From these results, the researcher crafted a program of activities which aims to further strengthen and improve

the science teacher basics' competence, th esseir laboratory management capabili ty and students' science proc Table 4. skills.

Action Plan for Pr

oposed Program of

Activities.

Objective	Action	Timeline	Person Involved	Expected Outcome
To enhance laboratory rec- ord-keeping practices of sci- ence teachers by improving their accuracy, organization, and con- sistency.	Implementa- tion of Project RECORDS: **R**eliable and **E**fficient **C**onsolidation of **O**rganized **R**ecords for **D**ocumentation in **S**cience Laboratories	Year round S.Y. 2025-2026	Science Teachers Laboratory Teacher ICT Teachers Property Custodian School Head	Enhanced la- boratory ac- curacy, consistency, and updated in la- boratory rec- ords
To improve students' ability to draw logical conclusions and interpretations	Infusion of Project INFER: **I**nspiring **N**ota- ble **F**indings	First Quarter and Second Quarter of S.Y. 2025-	Science Teachers Students	Improved ability and confidence to make accu- rate infer- ences from laboratory data

based on obser- vations and data gathered during labora- tory experi- ments.	through **E**n- hanced **R**ea- soning	2026	and in- creased en- gagement and critical thinking

This study determined the relationship between junior high school science teachers' competence, their laboratory management capability, and grade 10 students' basic science process skills among the five public secondary schools in San Miguel, Bulacan, School Year 2024-2025.

Following the procedures outlined in the preceding chapter, the answers to the prob- lems posed in the study were identified and summarized as follows:

Based on the assessments of science teachers and grade 10 students, science teach- ers were highly competent in terms of subject matter knowledge, instructional planning and strategies, assessment, learning environment, and effective communication.

In terms of laboratory management capability consisting of arrangement of materi- als and equipment, observance of safety rules, maintenance of equipment and materials, and keeping laboratory records, science teachers assessed themselves as capable while the students perceived them as highly capable.

In relation to students' basic science process skills composing of observing, classi- fying, measuring, communicating, inferring, and predicting, grade 10 students can highly utilize their skills based on their assessment while their science teachers perceived that they can only utilize their science process skills.

Significant difference was found on the perceptions of science teachers and grade 10 students regarding the teachers' competence and laboratory management capability, and students' basic science process skills.

Likewise, there is a significant relationship between science teachers' competence, laboratory management capability, and students' basic science process skills.

Conclusions and Recommendations

Conclusions

Based on the findings of the study, the following conclusions were drawn:

There is a significant difference between the perceptions of science teachers and grade 10 students regarding science teachers' competence, laboratory management capa- bility, and students' basic science process skills.

There is a significant relationship between science teachers' competence, labora- tory management capability, and students' basic science process skills.

Overall, the competence of science teachers, as assessed by themselves and their students is at a high level indicating that teachers' mastery, instructional practices and teaching strategies that influence the students to learn the concepts and theoretical knowledge in science. However, there is a need for further enhancement when it comes to their laboratory management capability. The lack of laboratory facilities and limited re- sources are impeding factors because they could not fully practice their management skills in the laboratory. This also significantly affects the utilization of basic science process skills of students because they are limited to perform hands-on laboratory activities. By provid- ing them the necessary materials, equipment, and conducive laboratory facilities, strength- ened by training programs regarding laboratory management, teachers may further improve their capabilities about this aspect and eventually, this may lead to the development and utilization of basic science process skills of students.

Recommendations

In light of the findings and conclusions drawn in study, the following recommen- dations are hereby presented:

1. The school may implement the action plan for the crafted program of activities based on the results of the study.
2. Teachers may continuously invest on their professional growth and develop- ment to strengthen their teaching competence in science subjects and improve their laboratory management skills.
3. School heads may include the procurement and repair of laboratory materials and equipment on their school improvement and annual implementation plan.

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