INSTABRIGHT e-GAZETTE
ISSN: 2704-3010
Volume VI, Issue I
August 2024
Available online at https://www.instabrightgazette.com

TEACHER ASSESSMENT MANAGEMENT PRACTICES PROMOTING SCIENTIFIC LITERACY

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ABSTRACT:

The primary goal of the K to 12 Science curriculum is to develop the learners to become scientifically literate. Science teachers applied different teaching strategies and approaches to promote science concepts, science processes, and scientific attitudes among the learners. Concerning this, science teachers conducted assessments that determine the level of scientific literacy of the learners. This study was conducted to determine the assessment management practices of teachers promoting scientific literacy. The variables in the study include the three indicators of scientific literacy and the different assessment applied by the teachers. In this study, 50 Junior High School science teachers in the South and West Districts of Lipa participated. The study employed the descriptive quantitative research design where she used purposive sampling as her sampling technique. Survey questionnaire was the main instrument used to gather data. Data were treated and analyzed accordingly using various statistical treatments such as weighted mean and Spearman's rank correlation coefficient.

The results revealed that the teachers' assessment management practices were more focused on developing scientific processes and scientific attitudes. On the other hand, the science concept needs to be given emphasis, especially the application of scientific debate in science classrooms. In the utilization of assessment in promoting scientific literacy, the performance-based assessment is the commonly applied assessment. Giving group or solo projects as a form of performance-based assessment was always given to learners. Multiple choice was always given as a form of objective assessment while in subjective assessment, writing journal was rarely used. A significant relationship between teacher management

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ISSN: 2704-3010
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assessment practices and scientific literacy was revealed in the study. This implies that good teacher assessment practices can promote the scientific literacy of the learners.

Keywords: *Assessment, Performance assessment, scientific attitude, scientific literacy, scientific processes, Subjective assessments*

Introduction:

Classroom assessment is an essential component of science instruction. It is broadly defined as the process of collecting and analyzing information about students in order to improve their learning (Butler & McMunn, 2006). Moreover, assessment enables teachers to determine the strengths and weaknesses of students, provide appropriate feedback and enhance teaching and learning processes. To assess student's science knowledge, skills and attitudes, teachers utilized different assessment tools and practices. Science teachers need to become knowledgeable in creating a high quality assessment. Furthermore, science teachers need to know what to focus on to ensure their assessment of student learning is meaningful and useful for the students' on going learning and development (Edwards 2013).

In teaching Science, the desired learning outcome is to develop students to become scientific literate. Scientific literacy is the capacity to use scientific knowledge, to identify questions and to draw evidence-based conclusions in order to understand and help make decisions about the natural world and the changes made to it through human activity (OECD 2003). According to Laugksch (2000), scientific literacy was used to describe a comprehension of science and its applications to society. In addition, scientific literacy is one of the competencies that students need to succeed in the 4.0 industrial revolution.

The result of PISA 2018 has a great impact on the Science education in the Philippines. It shows low performance of Filipino students in Science and thus indicates poor science literacy. The possible causes should be determined to improve the science literacy of the students and to attain the objectives of K to 12 Science curriculum. Science literacy is a form

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ISSN: 2704-3010
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of student achievement, but also a form of teacher success in teaching science. PISA results become an opportunity for teachers to do new things to innovate to improve students' science literacy. An international assessment is an additional tool to measure the effectiveness of the curriculum and education system, and even teacher performance. The improvement of science literacy among students should be sustained not only because of international assessment but rather for the application of science concepts in real life situations of learners. In relation to this, teacher should evaluate their assessment tools and how it affects the promotion of scientific literacy. Furthermore, there should be a congruency on the assessment we used on the assessment given in a national and international assessment.

The K to 12 Science Curriculum focus on developing scientific literacy among learners that will prepare them to be informed and participative citizens who are able to make judgments and decisions regarding applications of scientific knowledge that may have social, health, or environmental impacts. The curriculum is designed around the three domains of learning science: understanding and applying scientific knowledge in local setting as well as global context whenever possible, performing scientific processes and skills, and developing and demonstrating scientific attitudes and values. (K to 12 Science Curriculum Guide 2016).

The NAT result in Science of the Division of Lipa for the SY 2016-2017 was 38.59 and Grade 10 learners participated in the exam. In the following school year, the Grade 10 and Grade 12 students took a National Achievement Test. The Grade 12 obtained a mean of 44.00 while the Grade 12 got 32.94. Lastly, on the SY 2018-2019, the Grade 12 has a result of 34.15. There was a quite increase in the NAT results in every school year. The increase in the result should be sustained or make it greater in the next school year of the administration of National Achievement Test.

Science teachers are responsible and has an essential role in developing learners into scientifically literate citizen. Teachers need to determine if the assessments given were lead toward the attainment of scientific literacy. This study aims to determine the assessment

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ISSN: 2704-3010
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management practices and the assessment tools used to develop learners to become scientific literate.

LITERATURE REVIEW

The OECD/PISA defines scientific literacy as the capacity to use scientific knowledge, identify questions, and draw evidence-based conclusions in order to comprehend the natural world and the changes caused by human activity and assist in making decisions about them. (PISA 2003 Assessment Framework). It comprises of three aspects namely scientific knowledge or concepts, scientific processes and situations or context.

Scientific knowledge or concepts which will be assessed by application to specific subject matter. Collins 2020 expressed that instructors should equipped with new and various strategies for teaching science. Students' active participation in scientific investigations and discussions about scientific and social issues are essential. Students' ability to discuss and argue can be enhanced by incorporating these strategies into science lessons (Bati, 2019).

Scientific processes involve describing, explaining, and predicting scientific phenomena, understanding scientific investigation and interpreting scientific evidence and conclusions. The study of Aktamis and Ergin (2008) revealed that science processes skills improve students' achievements and creativities. Science process skills plays a significant role in improving students' cognitive development and facilitating students' active participation during the teaching and learning process (Johnston 2009).

A scientific attitude is an attitude which will tend to foster scientific achievement (Gilbert 2014). It includes accuracy, intellectual honesty, openness, criticality, and the habit of looking for relationships between causes and effects. A person with a scientific attitude can comprehend natural phenomena and human behavior. Students should be motivated to practice and observe science in order to cultivate a scientific attitude. This will give them a chance to feel and develop the components of a scientific attitude in their minds (Singh and Bai 2017). To determine the scientific literacy of learners, the assessment should have a combination of these three domains.

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Assessment in science classrooms is directly connected with what counts as science and how learning takes place. The goal of science education is that all students develop as knowledgeable and confident knowers, and they use science as part of their everyday lives now and into the future (Cowie 2013). To have a good assessment practice, the teachers need to consider the five focus areas. Focus on teaching, focus on students, focus on evidence learning, focus on future decision-making and focus in impact (Edwards 2013). The five focus areas enable science teachers to consider their approach to assessment in the larger context of the learning environment, improve their pedagogical content knowledge assessment skills and broaden their capacity to evaluate students' learning.

Teachers need a thorough understanding of the distinction between objective and subjective assessments in order to design high-quality assessments. Objective assessment such as multiple-choice tests and fill-in-the-blank exercises, are meant to assess students' knowledge and comprehension of particular facts and ideas. A rubric or automated scoring system is typically used to grade these tests, ensuring a fair and consistent evaluation for all students. An objective assessment provides a clear and precise evaluation of student knowledge and is typically quicker and simpler to grade. In any case, they may not catch the full scope of an understudy's comprehension and can be restricted in their capacity to evaluate higher-request thinking abilities (Leonard 2023). Moreover, Roediger et al. 2005 stated that multiple choice test can yield a positive result when it is properly constructed. A study conducted by Little et al. 2012 showed that multiple-choice test can improve students' retention than cued-recall test, and the misinformation effects were reduced.

Students are required to apply their knowledge and demonstrate their ability to think critically on subjective assessments. Some examples of subjective assessments are essays and journals. Instead of focusing on specific correct answers, these assessments are typically graded according to the quality of the student's work. On the other hand, subjective assessments evaluate student's knowledge and asses critical thinking, creativity, and problem-solving abilities.

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Another way to assess the scientific literacy of learners is through performance-based assessment. Performance assessment enable the students to construct a response, create a product, or perform a demonstration to show their understanding on the subject matter. It reveals students' deep knowledge and skills rather than memorization and recall (Mctighe& Ferrera, 2016). Hands-on experiences allow students to be more critically motivated and involved when they are allowed to perform on their own, and the performance-based assessment process is the creative aspect of the students in bringing out what they know and what they can do through various performance tasks like exhibits, projects, and works. Students can learn and apply more knowledge, skills, and habits through the different tasks which are engaging and meaningful. In general, a performance-based assessment measures students' ability in the application of the skills and knowledge learned and the task given challenges students to use their higher-order thinking skills to create a product or complete a process (Chun, 2010).

The study of Bouchaib (2016) enable us to understand the practitioners' classroom-centered assessment practices as well as their awareness of assessment issues in a contemporary standards-based setting and within a formative assessment framework. Students are more likely to suffer from their teachers' lack of assessment literacy skills as they blindly navigate the teaching and learning process. As a result, teachers absolutely require the appropriate training in assessment issues to perform at their best. Science and non-science teachers should take extra effort to continuously monitor students' progress in learning and employ appropriate assessment strategies to track students' understanding to gain a better understanding of how students' ideas develop. teachers can utilize appropriate formative assessment practices to make strategic decisions about the ways students are grouped, assigned tasks, and given support individual needs in relation to their learning progression (Macaya 2020). A scientifically literate parent or teacher provides a strong foundation for children to learn science. A person with scientific literacy can contribute to the ongoing research, inventions, and discoveries (Wondrium Daily 2021).

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Materials and Methods:

RESEARCH OBJECTIVES

This study aimed to determine teachers' assessment management practices in promoting scientific literacy of learners. Specifically, it attempted to answer the following research objectives.

1. Determine teacher assessment management practices promoting scientific literacy in terms of:
    1.1 scientific concept
    1.2 science process
    1.3 scientific attitude
2. Ascertain the assessment practices utilized by the teachers in terms of:
    1.1 subjective assessment
    1.2 objective assessments
    1.3 performance-based assessments
3. Significant relationship of teacher management assessment practices and scientific literacy.
4. Develop an action plan that enhance teacher assessment management practices promoting scientific literacy.

Research Design

The study utilized the quantitative research to determine the teacher management practices promoting scientific literacy. To get a significant result, the researcher applied the descriptive research design. Descriptive method is a research method that tries to describe phenomenon, occurrence, event, that happens in the present. Creswell 2012 explained the purpose of descriptive method is to find a detailed explanation and description about the object of the research systematically. Furthermore, it aims to analyze and discuss the status of current phenomenon.

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Respondents and Sampling

The participants of this study were 58 Junior High School Science teachers in South and West District of the Division of Lipa. The researcher utilized purposive sampling to choose a sample for this study. Purposive sampling is 'used to select respondents that are most likely to yield appropriate and useful information' (Kelly, 2010) and is a way of identifying and selecting cases that will use limited research resources effectively (Palinkas et.al, 2015). The purposive sampling technique involves selecting samples from the entire sample size based on the survey taker's or researcher's judgment. Furthermore, a purposive sample is obtained in accordance with the specifications of the test, survey, or research for which it will be utilized.

Instruments

To materialize the objectives of the research, the researchers used a researcher-developed survey questionnaire. The survey questionnaire underwent content validation by experts in the field of science and assessment. The questionnaire is consisting of two parts: teacher assessment management practices and scientific literacy.

Data Collection

Quantitative data was gathered from the respondents through utilization of questionnaire. The main instrument for collecting data was the questionnaire. The researcher sought permission and approval from the superintendent and the school head before the administration of questionnaire to respondents. The respondents were given an ample time to answer. Data was gathered and subject to data analysis. Appropriate statistical tools were applied.

Data Analysis

According to (Creswell, 2014) the data collection steps include setting the boundaries for the study, collecting information through unstructured or semi structured observations and interviews, documents, and visual materials, as well as establishing the protocol for recording

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information. Descriptive statistics such weighted mean and Spearman's rank correlation coefficient were used to analyze the data from the questionnaire.

Ethical Considerations

The researcher ensures that the data to be collected from respondents will be used for educational purposes. The information about the respondents will be kept confidential as it follows the Data Privacy Act 2012. The researcher personally conducted the research and all the sources used in the study are cited to avoid plagiarism.

RESULTS AND DISCUSSIONS

The following discussions and tables were the results of the conducted study.

1. Assessment management practices

1.1 Scientific Concepts

Teachers employ various approaches to enhance students' literacy in scientific concepts. Scientific concepts are knowledge that enable us to understand and explain a certain scientific phenomenon. It can be assessed by applying theories, laws and principles to specific subject matter. Table 1 shows the assessment management practices of teachers in order to uphold scientific concepts.

Table 1

Assessment Management Practices in terms of Scientific Concepts

ITEMS	MEAN	INTERPRETATION
1. Engage students in hands-on activities beyond lecture	4.19	High Level

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2. Provide project-based learning	4.12	High Level
3. Conduct Science drill or scientific vocabulary	4.03	High Level
4. Provide real-life scenario that involves ways of analyzing current problems.	3.95	High Level
5. Perform Science debates	3.34	Moderate Level
Grand Mean	**3.93**	**High Level**

The table shows that teachers demonstrate high level of practices in engaging students in hands –on activities beyond lecture, providing project based learning and real-life scenario that involves ways of analyzing current problems and conducting Science drill or scientific vocabulary. This means that the teachers provided techniques in order to enhance the knowledge of students in terms of scientific concepts. The result implies a considerable level of application of effective strategies in enhancing scientific concepts. In line with this, Collins 2020 stated that educators armed with new and different strategies and techniques for teaching science can plant the seeds for future scientists who could do amazing things for society and the world.

On the other hand, performing science debates was practiced at a moderate level. This implies a limited exposure to scientific debates which may be attributed to the inclusion of many topics to be discussed which did not permit the application of debates as a learning activity. This activity requires more time and preparation which may not be done due to the bulk of competencies that should also be touched. Learners need to expose in science debates to promote critical thinking and communication. According to Jimenez et. al 2000 students use various communication activities, such as argumentative and epistemic, when they are giving the opportunity to discussions; thus, develops additional skills of communication and discussion.Students' active participation in scientific investigations and the development of engagement in discussions about scientific and social issues are essential components of an

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effective science education. These methods can be incorporated into science lessons to improve students' ability to discuss and argue (Bati 2019).

1.2 Scientific Process.

Science as a systematized body of knowledge requires set of processes. In order to do such, these processes must be based on logic. Scientific process is needed to ensure that there is an accurate solution to any scientific problem. In this study, the researcher included the assessment of the strategies conducted in order to hone the application of scientific process.

Table 2

Teacher Assessment Management Practices in terms of Scientific Process

ITEMS	MEAN	INTERPRETATION
1. Utilize problem-based and inquiry -based approaches	4.12	High Level
2. Interpret scientific evidences and formulate conclusions	4.05	High Level
3. Conduct observations in a particular phenomenon	3.98	High Level
4. Perform investigations /experiment to test the hypothesis	3.97	High Level
5. Provide scientifically investigable questions that could be investigated scientifically in a given situation.	3.91	High Level
Grand Mean	**4.01**	**High Level**

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Table 2 shows the assessment management practices of teachers in terms of scientific process was at a high level. It implies that the teachers have the skills in helping students conduct scientific processes. This is supported by the study of Aktamis and Ergin (2008) that science processes skills improve students' achievements and creativities. Science process skills are significant in improving students' cognitive development and facilitating students' active participation during the teaching and learning process (Johnston 2009).

1.3 Scientific Attitude

Scientific attitude is essential to become successful in the field of science. This study sought to deal on the assessment management practices in terms of scientific attitude. The teachers were asked to assess how they help learners attain a sound scientific attitude. Table 3 presents the assessment management practices of teachers in terms of scientific attitude.

Table 3

Teacher Assessment Management Practices in terms of Scientific Attitude

ITEMS	MEAN	INTERPRETATION
1. Accept the facts as supported by convincing evidence	4.16	High Level
2. Complete all scientific activities until the end	4.10	High Level
3. Observe and record the facts without the influence of personal pride	4.00	High Level
4. Prioritize asked to face the new situation	3.98	High Level
5. Report the observing result despite contradict with hypothesis	3.97	High Level
Grand Mean	**4.04**	**High Level**

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It was revealed that the teachers have shown a high level of application of practices in terms of scientific attitude. This means that the teachers have a good skill in developing of scientific attitude among students. An individual with good scientific attitude can understand the phenomena of nature and human behavior. To develop scientific attitude among students, they should be made to practice and observe science so that they get the opportunity to feel and develop the components of scientific attitude in their minds Singh and Bai (2017).

2. Classroom assessment practices

Assessments are crucial part of the teaching and learning process. To verify learning, teachers devise assessments that will tell whether learning took place or not. In this study, the researcher assessed the assessment practices in terms of subjective assessments.

2.1 Subjective Assessments

Table 4

Subjective Assessments

ITEMS	MEAN	INTERPRETATION
1. Define a term, concept, or significant event	4.16	Very Often
2. Respond with short answers	3.71	Very Often
3. Formulate answers about theoretical scenario	3.67	Very Often
4. Create their answers in the form of an essay	3.55	Very Often
5. Write a Science Journal	3.31	Sometimes
Grand Mean	**3.68**	**Very Often**

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Table 4 shows the utilization of subjective assessments to determine the scientific literacy of the learners. It was revealed that the teachers utilize very often the form of subjective assessment such as definition of term, concept or significant event, respond with short answers, formulate answers about theoretical scenario and create their answers in the form of an essay. An assessment through writing a journal is utilized sometimes in science class. This means that the teachers have limited application of essay and journals. This form of assessment should give emphasis as it serves as the primary channel for communicating scientific knowledge (Harris 2022). .

In consonance, subjective assessments are commonly referred to as constructed response items. It has two variations-the restricted response items and extended response items (Chun, 2010). This explained the wide use of the subjective assessment on teaching.

2.2 Objective Assessment

Objective assessment is another method to determine the knowledge gained by learners in any subject areas. This is a kind of assessment with a specific answer. Table 5 shows the frequency of employing the different forms of objective assessment.

Table 5

Objective Assessments

ITEMS	MEAN	INTERPRETATION
1. Multiple Choice	4.36	Always
2. Matching Type	3.78	Very Often
3. Identification	3.69	Very Often
4. Fill in the blanks	3.57	Very Often
Grand Mean	**3.84**	Very Often

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Table 5 shows that matching type, identification and fill in the blanks were used very often as a form of objective assessment. It was also revealed that most of the respondents utilized multiple choice as an assessment. This implies the appropriateness and convenience of using this type of test to determine the level of scientific literacy of learners. In support, objective assessment is very specific with a predetermined correct answer (Chun, 2010). This proved the convenience given by this assessment. Application to teaching is easier on this type. This finding was supported by the study of Roediger et al. 2005 that multiple choice test can yield a positive result when it is properly constructed. Furthermore, the study conducted by Little et al. 2012 showed that multiple-choice test can improve students' retention than cued-recall test, and the misinformation effects were reduced.

2.3 Performance-based Assessments

Another way to assess the scientific literacy of learners is through performance-based assessment. Today, educational assessments are not limited to pen and paper tests. The 21st century skills posed demands for students to perform or create an output. Therefore, the education nowadays focused on the utilization of performance-based assessments. Table 6 presents the frequency of the utilization of performance-based assessments.

Table 6

Performance-based Assessments

ITEMS	MEAN	INTERPRETATION
1. Group or solo project	4.28	Always
2. Portfolios	3.98	Very Often
3. Experiment testing/ Demonstrations	3.88	Very Often

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4. Research Report/Presentation	3.66	Very Often
5. Visual displays/Exhibits	3.62	Very Often
Grand Mean	**3.88**	**Very Often**

It was revealed that teachers always used group or solo project as a performance-based assessment. This means that teachers have high regard to projects as a basis of the attainment of competencies. On the other hand, portfolios, experiment testing or demonstration and research report or presentation were used very often.

This finding was supported by the study of Chun 2010 about performance-based assessment. Hands-on experiences allow students to be more critically motivated and involved when they are allowed to perform on their own, and the performance-based assessment process is the creative aspect of the students in bringing out what they know and what they can do through various performance tasks. In general, a performance-based assessment measures students' ability in the application of the skills and knowledge learned and the task given challenges students to use their higher-order thinking skills to create a product or complete a process (Chun, 2010).

3. Relationship between teacher assessment management practices on scientific literacy.

Significant relationship between teacher management assessment practices and scientific literacy was assessed in this study. The possible relationship between the two variables may communicate possible refinement on assessment practices to improve scientific literacy. Table 7 reflects the relationship between the variables of the study.

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Table 7

Significant Relationship

INDICATORS	r_s	p-value	Interpretation	Decision on Ho	Conclusion
Scientific Concept					
Subjective Assessment	.756	.000	Very Strong Relationship	Reject	Significant
Objective Assessment	.594	.000	Strong Relationship	Reject	Significant
Performance-based Assessment	.794	.000	Very Strong Relationship	Reject	Significant
Science Process					
Subjective Assessment	.704	.000	Strong Relationship	Reject	Significant
Objective Assessment	.499	.000	Moderate Relationship	Reject	Significant
Performance-based Assessment	.800	.000	Very Strong Relationship	Reject	Significant
Scientific Attitude					
Subjective Assessment	.788	.000	Very Strong Relationship	Reject	Significant
Objective Assessment	.604	.000	Strong Relationship	Reject	Significant
Performance-based Assessment	.845	.000	Very Strong Relationship	Reject	Significant
OVERALL	**.850**	**.000**	**Very Strong Relationship**	**Reject**	**Significant**

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Assessment Practices and Scientific Literacy

Coefficient of correlation (r): +1.0 (Perfect relationship), +.76 to .99 (Very Strong relationship), +.51 to .75 (Strong relationship), +.26-.50 (Moderate Relationship, +.11 to .25 (Weak relationship), +.01 to .10 (Very weak relationship), .00 (No relationship)

In terms of scientific concept, both the Subjective Assessment and Performance-Based Assessment has a very strong relationship. As regards to Objective Assessment, it attained a strong relationship. This means that the nurturing of scientific concept is greatly affected by the assessment practices.

In terms of scientific process, the Subjective Assessment attained a correlation value that signifies Strong Relationship, Objective Assessment with moderate relationship and Performance-based Assessment has Very Strong Relationship. This implies that altering assessment practices can impact the literacy on scientific processes.

In terms of scientific attitude, Subjective Assessment and Objective Assessment reflected a Very Strong Relationship. On the other hand, Performance-Based Assessment has Strong relationship in promoting scientific literacy. This implies that scientific attitude is affected by assessment practices.

In conclusion, there is a very strong relationship between teacher assessment management practices and scientific literacy. The null hypothesis has been rejected. There is a significant very strong relationship between the two variables. This means that an increase on the extent of teacher management assessment practices will mean an increase on scientific literacy.

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In relation to this, the study of Bouchaib (2016) enable us to understand the practitioners' classroom-centered assessment practices as well as their awareness of assessment issues in a contemporary standards-based setting and within a formative assessment framework. Macaya 2020 stated that Science teachers should take extra effort to continuously monitor students' progress in learning and employ appropriate assessment strategies to track students' understanding to gain a better understanding of how students' ideas develop. As a result, teachers absolutely require the appropriate training in assessment issues to perform at their best. Teachers should apply their understanding of how the students develop the three domains of scientific literacy to create an effective assessment for the students.

A good assessment management practices has a significant role in the measurement of scientific literacy of the learners. Assessment enables teachers to determine the strengths and weaknesses of students, provide appropriate feedback and enhance teaching and learning processes. Science teachers need to know what to focus on to ensure their assessment of student learning is meaningful and useful for the students' on going learning and development (Edwards 2013). To assess student's science knowledge, skills and attitudes, teachers must continuously upgrade his knowledge in different assessment tools and practices. Science teachers need to become knowledgeable in creating a high quality assessment and continuously enhance his assessment management practices and assessment utilized in the classroom.

Conclusion:

1. The teacher assessment management practices were concentrated in promoting scientific literacy in the domains of scientific processes and scientific attitudes. On the other hand, some teachers utilized practices aiming to enhance scientific concept. Science debate which is a part of practices in developing scientific concept was rarely used in science classroom.

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2. Performance-based assessment was the leading assessment utilized by the teachers in promoting scientific literacy on learners. In performance-based assessment, group or solo project was always used while in objective assessment the multiple choice was the leading assessment in measuring scientific literacy. In subjective assessment, writing a science journal was sometimes used by the teachers.

3. There is a very strong relationship between teacher assessment management practices and scientific literacy. The null hypothesis has been rejected. A good teacher assessment management practices lead to an increase in the development of scientific literacy among learners.

Recommendations:

1. Teacher should expose the students in science debates and writing science journal. These activity promotes also an application of scientific knowledge, critical thinking and communication skills. The three domains of scientific literacy should be equally given an emphasis to ensure that learners become scientifically literate.

2. Teachers should continuously engage themselves in different programs enhancing their capacity in creating quality assessment and application of various assessment tools.

3. School leaders should have a concrete program for the teachers on assessment management practices promoting scientific literacy.

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Available online at https://www.instabrightgazette.com

****

References:

Aktamis, H. and Ergin, O. (2008.). The Effect of Scientific Process Skills Education on Students' Scientific Creativity, Science Attitudes and Academic Achievements. https://eric.ed.gov/?id=EJ832103

Bati, K. (2016). Are We Ready for Argumentation in Science Classrooms? An Investigation into the Scientific Discussion Climate in a Turkish Elementary School. https://eric.ed.gov/?id=EJ1203426

Bouchaib, B. (2016). Exploring Teachers' Assessment Practices and Skills. International Journal of Assessment Tools in Education, 4 (1), 1-18. DOI: 10.21449/ijate.254581

Butler, S. M. & McMunn, N. D. (2006). A teacher's guide to classroom assessment: Understanding and using assessment to improve student learning. Jossey-Bass.

Chun, M. (2010, March). "Taking teaching to (performance) task: Linking pedagogical and assessment practices." Change: The Magazine of Higher Education.

Collins Learning. (2022, March 11). Importance of Learning Science : Teaching Strategies - Collins Learning. https://collins.in/events/blog/importance-of-learning-science-teaching strategies/#:~:text=Science%20education%20gives%20students%20the,the%20information%20they%20

Cowie, B. (2013). Assessment in the science classroom: Priorities, practices, and prospects. In J. H. McMillan (Ed.), SAGE handbook of research on classroom assessment. Thousand Oaks, CA: Sage.

Creswell, J. W. (2012). Qualitative inquiry & research design: Choosing among five approaches (4th ed.). Thousand Oaks, CA: Sage.

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INSTABRIGHT e-GAZETTE
ISSN: 2704-3010
Volume VI, Issue I
August 2024
Available online at https://www.instabrightgazette.com

Creswell, J. W. (2014). Research design: qualitative, quantitative, and mixed methods approaches. 4th ed. Thousand Oaks, California, SAGE Publications.

Edwards, F. (2013). Quality assessment by science teachers: Five focus areas. International Council of Association for Science Education Science Education International, v24 n2 p212-226 Jun 2013

Gilbert, H.H. (2014). Secondary Science and Pupil Prejudice, The Journal of Educational Research, 10.1080/00220671.1941.10881085, 35, 4, (294-299), (2014).

Harris, J. (2022). Why is Scientific Writing Important? 5 Purposes of Scientific Writing. Jesse Harris. https://jesse-harris.ca/2022/06/07/why-is-scientific-writing-important-5-purposes-scientific-writing/#:~:text=Scientific%20writing%20is%20important%20because,to%20be%20v

Jimenez-Aleiandre, M. P., Rodriguez, A. B., & Duschl, R. (2000). "Doing the science lesson" or "doing science": Argument in high school genetics. Science Education, 84(6), 757 – 792.

Johnston, J. S. (2009). What does the skill of observation look like in youngchildren? International Journal of Science Education, 31(18), 2511–2525.)

K to 12 Science Curriculum Guide August 2016 Page 2 of 203 Learning Materials and equipment technical specifications may be accessed at http://lrmds.deped.gov.ph/.

Kelly S. (2010) Qualitative interviewing techniques and styles. In: Bourgeault I, Dingwall R, de Vries R. (eds) The Sage Handbook of Qualitative Methods in Health Research, Thousand Oaks: Sage Publications.

Laugksch, Rüdiger. (2000). C.(2000). Scientific literacy: A conceptual overview. Science Education. 84. 71â 94. 10.1002/(SICI)1098-237X(200001)84:1<71::AID-SCE6>3.0.CO;2-C.

Leonard, S. (2023). Objective & Subjective Assessment: What's the Difference? TAO. https://www.taotesting.com/blog/objective-subjective-assessment-whats-the-difference/

INSTABRIGHT e-GAZETTE
ISSN: 2704-3010
Volume VI, Issue I
August 2024
Available online at https://www.instabrightgazette.com

Little, J. L., & Bjotk, E. (2012). The Persisting Benefits of Using Multiple-Choice Tests as Learning Events. ResearchGate. https://www.researchgate.net/publication/267028787_The_Persisting_Benefits_of_Using_Multiple-Choice_Tests_as_Learning_Events

Macaya, A. M. (n.d.). Learners' Learning Progression and Science Teachers' Formative Assessment Practices: Bases for the Development of a Module in Physics. https://eric.ed.gov/?id=ED614295

OECD [Organisation for Economic Co-operation and Development] (2003) The PISA 2003 Assessment Framework – Mathematics, Reading, Science and Problem Solving Knowledge and Skills. Paris: OECD.

Palinkas LA, Horwitz SM, Green CA, et al. (2015) Purposeful sampling for qualitative data collection and analysis in mixed method implementation research. Administration and Policy in Mental Health and Mental Health Services Research 42(5): 533–544. [PMC free article] [PubMed] [Google Scholar] [Ref list]

Roediger HL, III, Marsh EJ. The positive and negative consequence of multiple-choice testing. Journal of Experimental Psychology: Learning, Memory, & Cognition. 2005;31:1155–1159. [PubMed] [Google Scholar] [Ref list]

Singh,C.Y., Bai, A.C. (2017) :: "A Study of Scientific Attitude of Secondary School Students in West Tripura District" International Journal of Informative & Futuristic Research (ISSN: 2347-1697), Vol. 4 No. (5), January 2017, pp. 6231-6237, Paper ID: IJIFR/V4/E5/025.

The PISA 2003 Assessment Framework- Mathematics, Reading. Science and Problem Solving Skills, Knowledge and Skills. Programme for International Student Assessment. https://www.oecd.org/education/school/programmeforinternationalstudentassessmentpisa/33694881.pdf

INSTABRIGHT e-GAZETTE
ISSN: 2704-3010
Volume VI, Issue I
August 2024
Available online at https://www.instabrightgazette.com

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Wondrium Daily. (2021). Scientific Literacy and Its Importance. Wondrium Daily. https://www.wondriumdaily.com/scientific-literacy-and-its-importance/

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