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Utilization of Learning Action Cell (LAC) Session Contents among Science Teachers in Vigan, Ilocos Sur

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ABSTRACT

The professional development of teachers is essential for effectively implementing the K to 12 Basic Education Program in the Philippines. Learning Action Cells (LACs) provide a collaborative platform for teachers to enhance competencies in addressing diverse learners' needs, integrating 21st-century skills, and contextualizing the curriculum. This study examined the utilization of LAC session contents by 42 Junior High School Science teachers in Vigan City and its impact on teaching practices. Using a mixed-method design, data were collected through surveys and interviews. Quantitative data were analyzed statistically, while qualitative data underwent thematic analysis. The study focused on Learners' Diversity and Student Inclusion, Content and Pedagogy, 21st-century Skills and ICT Integration, Assessment, and Curriculum Contextualization. Findings revealed high utilization of LAC content across all areas, with Learners' Diversity being the most utilized. Teachers' educational attainment and position significantly influenced their LAC content utilization, with correlations noted between these factors and session attendance. Key outcomes included enhanced subject matter knowledge, improved pedagogy, and refined assessment strategies. A proposed action plan emphasized inclusive teaching methods, curriculum localization, digital literacy, and contextual integration. Recommendations include encouraging postgraduate studies, active participation in LAC sessions, and ICT-related training for teachers. Administrators are advised to monitor LAC utilization, provide comprehensive guides, and support professional growth. Broader studies are recommended to validate these findings and further explore LAC's impact on educational practices. This study underscores the pivotal role of LACs in fostering professional development and improving teaching efficacy.

Keywords: *Learning Action Cell, LAC Sessions Contents, Science Teachers*

INTRODUCTION

Ensuring high-quality education is paramount for every learning institution in the Philippines. The Department of Education (DepEd) recognizes that teaching quality significantly impacts learning outcomes, investing in highly qualified licensed professional teachers. These educators are essential in fulfilling DepEd's mission of producing competent graduates who contribute to nation-building.

Educators are pivotal assets, with their teaching techniques directly influencing students' achievements (UNESCO 2015). They interpret and implement educational plans, shaping the learning experience. Teachers' effectiveness is measured by their impact on learners' academic performance, reflecting their professional responsibilities.

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As global standards evolve, educational systems must adapt to maintain competitiveness. Implementing the K to 12 Education Program signifies the Philippines' commitment to meeting international benchmarks (Rin & Domondon, 2021; Almazan et al., 2020). Teachers deliver instruction that fosters outstanding learner performance (Rabanal & Domondon, 2023; Domondon et al., 2022) while considering students' cultural backgrounds and educational principles.

The K-12 curriculum presents demands on teachers, from lesson planning to technology integration (DepEd, 2015). Continuous professional development is essential to equip teachers with the necessary skills (Darling-Hammond, 2017). Interactive teaching techniques enhance understanding and retention among students (Sutradhar & Naraginti, 2022; Domondon et al., 2024), necessitating comprehensive training that addresses physical, mental, and moral development (UNESCO, 2015). Teachers' success is reflected in their ability to create conducive learning environments and implement effective strategies (Marzano, 2017).

Professional development initiatives like the Learning Action Cell (LAC) sessions are crucial for teachers' growth. Established over a decade ago but not widely implemented (Mendoza et al., 2017), LAC was institutionalized through DepEd Order No. 35 s. 2016, emphasizing its role in enhancing teachers' competencies. LAC sessions promote collaboration, allowing educators to share experiences and insights on instructional practices, reinforcing their knowledge and skills.

LAC sessions facilitate ongoing professional development at a low cost, replacing traditional cascade models by empowering teachers to address school-based challenges. They serve as platforms for teachers to reflect on and discuss new materials and methods, enhancing their familiarity with curricula and classroom protocols. This peer collaboration fosters critical self-reflection and knowledge expansion, ensuring teachers stay abreast of contemporary educational trends.

The Schools Division of Vigan City has actively implemented these LAC sessions, resulting in significant teacher participation. The researcher notes the need to evaluate how effectively Junior High School science teachers utilize LAC content. Insights from this study could guide teachers and administrators and inform division specialists on how to effectively implement LAC as a vital component of continuing professional development.

Objectives of the Study

The study aimed to (1) Assess the utilization of LAC session contents among Science High School teachers in the Schools Division of Vigan City, (2) Examine the relationship between teachers' socio-demographic characteristics and their utilization of LAC content, and (3). Identify the outcomes observed from utilizing LAC session contents among these teachers.

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METHODOLOGY

This section outlines the research design, methods, and procedures employed in the study, including the population, data-gathering instruments, procedures, and statistical treatment.

Research Design

A mixed-method research design was employed to examine teachers' utilization of Learning Action Cell (LAC) session contents across various dimensions, including Learners' Diversity and Student Inclusion, Content and Pedagogy, 21st Century Skills and ICT Integration, Assessment, and Curriculum Contextualization. This approach is particularly appropriate given the complexity of the research questions, which necessitate both quantitative and qualitative insights.

The mixed-methods design allows for a comprehensive understanding of the multifaceted nature of LAC session content utilization. Quantitative data provides measurable insights into the extent of utilization and the relationships between teachers' socio-demographic characteristics and engagement with LAC contents. This statistical analysis offers a clear picture of patterns and correlations that can be generalized across the population of Junior High School Science teachers. Conversely, qualitative methods—specifically interviews—enable an in-depth exploration of how teachers apply insights from LAC sessions in their classrooms. This qualitative component helps to uncover the nuances behind the numbers, revealing the challenges and successes teachers experience in implementing LAC content. By integrating quantitative and qualitative data, the study captures a fuller picture of the impact of LAC sessions, acknowledging that various contextual factors influence educational practices.

Participants of the Study

The respondents included 42 Junior High School Science teachers from the Schools Division of Vigan City for the School Year 2023–2024. Total enumeration was used, with 34 teachers from Ilocos Sur National High School, five from Vigan National High School East, and three from Vigan National High School West. Participation in the interview segment was voluntary and encompassed teachers from all schools.

Research Instrument

Data were collected using a survey questionnaire aligned with DepEd Order No. 35, s. 2016. Part I gathered socio-demographic data, while Part II assessed the teachers' utilization of LAC session contents. Interview questions further explored how teachers applied insights from LAC sessions and identified challenges they faced.

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Data Gathering Procedure

Upon obtaining approval from the Schools Division Superintendent, letters of request were sent to school principals and participants. Survey questionnaires were distributed and retrieved personally, and interviews were conducted during participants' free periods. Data from surveys and interviews were consolidated, tabulated, and analyzed to provide quantitative and qualitative insights into the study.

Data Analysis

The teachers' socio-demographic characteristics were analyzed using frequency counts, percentages, and mean. Pearson-r moment of correlation was used to ascertain the relationship between teachers' level of utilization of LAC session contents and their socio-demographic characteristics.

RESULTS AND DISCUSSIONS

This chapter provides presentations, analyses, and interpretations of data to answer the specific research questions stated in the first chapter.

1. Teachers' Socio-Demographic Characteristics

The socio-demographic characteristics of 42 teacher-respondents were determined by their educational attainment, position, length of service, number of seminars/trainings related to professional development, and LAC sessions attended.

On Educational Attainment. Most (37 or 88.1%) of the respondents hold Bachelor's degrees with Master's units, while two others (4.8%) have attained Master's degrees and accumulated credits towards a doctoral program.

On Position. In terms of their positions, the majority (25 or 59.9%) of the respondents are Teacher III, while there are 3 (7.1%) are Teacher II and 3 (7.1%) are Master Teacher I.

On Length of Service. A significant number (12 or 28.6%) have been in the service for 11-15 years, while 1 (2.4%) served for more than 30 years.

On Number of Seminars/Training Attended. A significant number (12 or 28.6%) have attended 6-10 seminars/training, while 6 (14.3%) of them have attended 11-15, and 6 (14.3%) have attended 21-25 seminars or training.

On Number of LAC Sessions Attended. A significant number (17 or 40.5%) of the teachers could attend 16-20 LAC sessions throughout their careers, while 1 (2.4%) has attended 26-30 LAC sessions.

2. Teachers' Level of Utilization of LAC Session Contents

Table 1 presents the teachers' level of utilization of LAC session contents.

Based on the table, the overall mean rating of 4.08 indicates that the teachers' utilization of the different LAC session contents is Highly Utilized.

The utilization of LAC session contents as to Learners' Diversity and Student Inclusion

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implies that this is the most utilized, as indicated by the definite mean rating of 4.45, interpreted as Very Highly Utilized. This indicates that teachers emphasize recognizing and addressing diverse learner needs and fostering an inclusive classroom environment.

Table 1

Summary of the Categorical Mean Rating of the Teachers' Level of Utilization of LAC Session Contents

	Utilization	$\underline{x}$	DR
A.	Learners' Diversity and Student Inclusion	4.45	THU
B.	Content and Pedagogy of the K to 12 Basic Education Program	4.15	HU
C.	21st Century Skills and ICT Integration in Instruction and Assessment	3.85	HU
D.	Assessment and Reporting in the K to 12 Basic Education Program	3.96	HU
E.	Curriculum Contextualization, Localization, and Indigenization	4.00	HU
	Overall Mean	4.08	HU

Legend: Norm	Descriptive Rating
4.21 – 5.00	Very Highly Utilized (VHU)
3.41 – 4.20	Highly Utilized (HU)
2.61 – 3.40	Moderately Utilized (MU)
1.81 – 2.60	Fairly Utilized (FU)
1.00 – 1.80	Not Utilized (NU)

Creating an inclusive classroom environment where all students feel valued and supported can lead to a more positive and conducive learning atmosphere. According to the study by Anastasiou et al. (2015), inclusive education practices advanced understanding of 21st-century skills and ICT integration, stemming from their higher education levels and leadership roles. These educators are likely more familiar with modern teaching methodologies and technology, enabling them to effectively incorporate these elements into their teaching and assessment practices. Additionally, their elevated positions afford them more opportunities for professional development and access to resources that facilitate the integration of 21st-century skills and ICT into instruction.

Taken singly, teachers' educational attainment is found to have a significant relationship with the teachers' utilization of the LAC session contents along with Learner Diversity and Student Inclusion based on the correlation coefficient of .367, which is significant at the .05 level. This implies that teachers with higher educational attainment have a higher utilization of LAC session contents and Learners' Diversity and Student Inclusion. This could be due to their more profound understanding of the pedagogical principles and their ability to adapt their teaching strategies to meet the diverse needs of students.

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This concurs with the finding of Darling-Hammond (2017) that teachers' educational attainment is positively associated with their ability to address learner diversity and promote student inclusion effectively. Her study found that teachers with higher levels of education were more likely to implement differentiated instructional strategies and create inclusive classroom environments.

In addition, the position is also found to correlate significantly with the teachers' level of utilization of the LAC session contents along with Learner's Diversity and Student Inclusion (r = .389) at a .05 level of significance. This means that teachers who are occupying higher positions tend to have a higher level of utilization of LAC session contents along with Learners' Diversity and Student Inclusion. This could be because teachers in higher positions may have greater access to resources, authority to implement changes, and professional development opportunities than those in lower positions.

The result above supports the finding of Desimone and Garet (2015) that teachers with higher positions are more likely to participate in professional development programs, which enhances their ability to access resources and drive instructional changes.

Similarly, the number of LAC sessions attended registered a significant correlation with the teachers' level of utilization of the LAC session contents along with Learner Diversity and Student Inclusion, as attested by the computed correlation coefficient of .317, which is significant at the .05 level. This indicates that those who have attended more LAC sessions tend to have a higher utilization of LAC session contents regarding Learners' Diversity and Student Inclusion. This is because they have had more exposure to various strategies, resources, and discussions on addressing learner diversity and promoting student inclusion during these LAC sessions.

The result above supports the finding of Gumban and Pelones (2021) that teachers who were highly engaged in LAC activities exhibited a deeper understanding and application of pedagogical concepts within the K to 12 Basic Education Program and enhanced abilities in addressing learner diversity.

As regards the level of utilization of LAC session contents along the Content Pedagogy of the K to 12 Basic Education Program, it can be deduced from Table 8 that the teachers' level of utilization is significantly related to their educational attainment (r = .388), and position (r = .496). These results imply that the teachers with higher educational attainment and higher positions use the LAC session contents and the Content Pedagogy of the K to 12 Basic Education Program. This could be due to their more profound understanding of the pedagogical principles embedded within the K to 12 curriculum.

The results above align with the finding of Hill et al. (2015) that teachers with higher educational attainment are more likely to engage deeply with professional development content, leading to a better understanding and application of pedagogical principles. Day and Sammons (2016) found that higher-level leaders are instrumental in ensuring that educational content is used effectively, providing teachers with the necessary direction, resources, and support. In support of this, Pagani et al. (2016) mentioned that higher educational attainment corresponds to more excellent proficiency in using ICT. Moreover, Ablog and Avila (2020) said

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using ICT-related tools is associated with their experience and development.

3. Outcomes Observed as a Result of the Teachers' Utilization of LAC Session Contents

This section presents the outcomes observed by the teachers due to their utilization of LAC session contents.

The teachers were asked how utilizing LAC session contents helped them as teachers. Based on the data gathered from the interview, the following outcomes were observed: 1) enhanced content knowledge, 2) improved pedagogical knowledge, and 3) enhanced assessment strategies.

Enhanced Content Knowledge

Teachers play an essential role in ensuring quality instruction within the classroom. This encompasses meticulously planning lessons that accommodate the diverse learning needs of students. However, a spiral approach is employed within the K to 12 Basic Education Program, especially in Science, which may not always align with teachers' educational backgrounds. This misalignment can pose challenges in effectively delivering lessons. Some educators specialize in certain branches of Science, such as Physical Sciences or Biological Sciences, yet they must teach across the K to 12 Science curriculum spectrum. This disparity can result in suboptimal instructional delivery in certain instances.

Utilizing the LAC session contents has made the teachers more confident in teaching some topics that fall outside their areas of specialization, as attested in interviews. According to participating teachers, the collaborative environment of LAC sessions has empowered them to tackle unfamiliar subjects with greater assurance. For instance, Participant 10 noted how discussions during LAC sessions, particularly on Physics concepts, have enriched their comprehension, enhancing confidence in addressing student inquiries. Participant 17, despite being a Biological Sciences major, highlighted the challenge of teaching Physical Sciences topics under the K to 12 Curriculum spiral approach but expressed gratitude for LAC sessions, which provided support and strategies for simplifying complex topics. Similarly, Participant 23 emphasized the importance of mastering lessons for quality instruction and credited LAC sessions for offering opportunities to deepen understanding, particularly in challenging areas like Chemistry. The teachers' statements underscore how LAC sessions' structured approach and collaborative resources contribute to their confidence levels when teaching topics beyond their specialized areas.

This aligns with Vega's study (2020), which found that LAC enhances teachers' theoretical understanding of science, providing further evidence of the positive impact of collaborative professional development on pedagogical practice.

A study conducted by Cartilla and Rondina (2020) similarly found that participation in collaborative professional development activities, such as Learning Action Cell (LAC) sessions, positively influenced teachers' confidence levels in teaching subjects outside their expertise.

Improved Pedagogical Knowledge

Though teachers have many talents, they must stay updated on teaching methods to educate today's learners effectively. The world is changing fast, so teachers must upgrade

their skills and knowledge to stay relevant and connected to current events.

Utilizing the LAC session contents has made the teachers upgrade their teaching and pedagogical skills, as stated in an interview. According to participants, the collaborative nature of these sessions has facilitated the exchange of ideas and strategies for addressing challenging topics in the classroom. Participant 04, for example, noted how sharing ideas during LAC sessions has broadened their teaching methods, transitioning from a lecture-based approach to more interactive and engaging strategies. Similarly, Participant 18 highlighted the valuable knowledge gained from LAC sessions about utilizing offline and online platforms to enhance student participation in class activities. Furthermore, Participant 24 shared insights gained from LAC sessions regarding the effectiveness of incorporating games into teaching practices despite previous challenges in preparation.

Based on the responses, the teachers have improved in terms of their knowledge of pedagogy. The teachers have learned how to utilize games, offline and online platforms, and different teaching strategies, which allow learners to participate in the learning process. This supports Cartilla and Rondina's (2020) study, which found that teachers' lesson preparation skills improve due to the LAC session, resulting in exceptional performance. Furthermore, the teachers have obtained pedagogical expertise to aid them in their teaching careers.

Enhanced Assessment Strategies

Discovering ways to assess learners is one of teachers' most significant yet challenging tasks. To fit each student's interests and demands, their understanding of the subject they study in the classroom must be assessed honestly. This is why teachers must incorporate various assessment strategies into their classrooms.

Based on the interview, the teachers expressed how utilizing LAC session contents helped them improve using varied assessment strategies. Participant 13 shared insights from LAC sessions, emphasizing the importance of platforms like Quizizz, Kahoot, and Zipgrade in assessing students' understanding. These tools engage students and provide immediate feedback, enabling instructors to tailor instruction to address areas of confusion promptly. Similarly, Participant 29 appreciated learning about Zipgrade in LAC sessions, citing its utility in swiftly identifying areas where students require additional support. Moreover, Participant 25 credited LAC sessions for improving their assessment practices, noting positive feedback from their mentor regarding the effectiveness of various assessment methods to gauge student learning.

Based on the teachers' statements, utilizing LAC session contents has helped them employ varied classroom assessment strategies. Assessment is critical because it stimulates learners' attitudes and behaviors toward learning. Andersson and Palm (2017) claim that assessment significantly impacts students' learning experiences and behaviors more than the type of instruction they receive. The study underscores the importance of using varied assessment methods to provide learners with ample opportunities to demonstrate their knowledge and skills in diverse contexts.

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CONCLUSIONS

This study's findings have significant implications for teacher development and educational practices. The high educational attainment of respondents, primarily holding Bachelor's degrees with Master's units, highlights a solid foundation for further professional growth. The high utilization of LAC session contents, especially in areas like Learners' Diversity and Student Inclusion, demonstrates their effectiveness in addressing teachers' needs and fostering inclusive classrooms. With most respondents holding Teacher III positions and 11–15 years of experience, there is potential to leverage their expertise in mentoring novice teachers and facilitating peer-led training, promoting collaboration and continuous improvement. The correlation between LAC utilization and teacher positions underscores the importance of equitable access to professional development opportunities. School leadership should ensure all teachers can benefit from LAC sessions and resources regardless of position. Outcomes such as improved pedagogy and assessment strategies further validate the role of LAC sessions in enhancing teaching effectiveness and meeting diverse learner needs, ultimately supporting student achievement. This study emphasizes the importance of sustained professional development, the role of experienced teachers in fostering collaboration, and equitable access to resources. By addressing these areas, schools can improve teacher effectiveness, enhance student outcomes, and create more inclusive learning environments. These efforts are crucial for adapting to evolving educational demands and ensuring high-quality education for all learners.

RECOMMENDATIONS

Based on the findings, several recommendations are prioritized for implementation. First, schools should develop a comprehensive LAC session guide on ICT integration, assessment strategies, and inclusive teaching practices. A committee of experienced teachers and administrators can draft the guide, pilot it in select schools, and revise it based on feedback. Second, promoting postgraduate studies among teachers is essential. Schools can organize informational workshops, establish partnerships with local universities for discounted courses, and create mentorship programs to support teachers pursuing advanced degrees. Enhancing participation in school-based LAC sessions is also recommended. Schools should regularly schedule sessions, include them in the calendar, provide incentives for participation, and gather feedback for continuous improvement.

Additionally, ICT training should be prioritized to equip teachers with the skills to integrate technology into their teaching. Surveys can identify training needs, and targeted workshops led by technology experts can address these gaps. School administrators should monitor the utilization of LAC session content in classrooms by developing a framework for observation, feedback, and evaluation. Regular check-ins with teachers will ensure effective implementation and provide support. Lastly, future research is recommended to validate and expand this study's findings. Collaboration with educational research institutions and

dissemination of results through conferences and publications can foster ongoing improvements in teacher development.

ETHICAL STATEMENT

The study strictly adhered to research ethics, prioritizing the privacy and confidentiality of data as well as the anonymity of the respondents. Additionally, the researchers confirm that no conflicts of interest were involved in the study's conduct.

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