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"Teachers' Perspectives on Learning Activity Sheets' Effectiveness as Reinforcement Tools in Grade 11 Earth and Life Science"

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ABSTRACT

This qualitative study underscores the importance of Learning Activity Sheets (LAS) as reinforcement tools in Grade 11 Earth and Life Science, particularly in enhancing student comprehension, engagement, and independent learning within senior high school classrooms. Despite the widespread implementation of LAS, a research gap remains in the limited qualitative literature that examines teachers' perspectives on their instructional effectiveness and the practical challenges encountered during classroom implementation. Addressing this gap, the study aimed to explore how LAS support student learning, identify the challenges teachers face in using them, and describe strategies employed to enhance their effectiveness. A qualitative research design was utilized, employing purposive sampling to select Grade 11 science teachers as participants. Data were collected through semi-structured interviews that allowed teachers to share their experiences and insights, and the responses were analyzed using thematic analysis to identify recurring patterns and meaningful themes. Findings revealed that teachers perceive LAS as effective instructional tools that improve student understanding, engagement, and independent learning, particularly when activities are well-structured, promote collaboration, and are linked to real-life contexts. However, teachers also reported challenges such as limited instructional time, varying levels of student motivation, and difficulties in aligning LAS with lesson objectives. Anchored on B.F. Skinner's Reinforcement Theory and Piaget's Constructivist Theory, the study implies that thoughtfully designed and contextually relevant LAS can strengthen instructional practices, promote learner-centered engagement, and improve learning outcomes in Earth and Life Science. The findings provide valuable insights for teachers, curriculum developers, and school administrators in improving the design and implementation of LAS in senior high school science education.

Keywords: Learning Activity Sheets, reinforcement tools, Earth and Life Science, teachers' perspectives, qualitative study, senior high school

INTRODUCTION

Across science education worldwide, teachers continuously seek strategies to reinforce student understanding and improve retention of complex scientific concepts. One commonly adopted approach is the use of structured learning materials such as Learning Activity Sheets (LAS), which guide learners through tasks designed to support mastery and application of lessons. As reinforcement tools, LAS provide opportunities for students to revisit, review, and practice key ideas beyond initial instruction, helping strengthen comprehension and engagement in subjects like Earth and Life Science.

In the Philippines, the use of Learning Activity Sheets has become increasingly significant, particularly with the Department of Education's emphasis on self-paced learning and competency-based instruction. However, many students in public secondary schools still struggle to fully grasp scientific concepts due to varied learning abilities, limited exposure to hands-on activities, and gaps in foundational knowledge. As a result, Earth and Life Science teachers often rely on LAS as reinforcement tools to support learners who need additional practice. Despite their widespread implementation, the effectiveness of these materials depends largely on how teachers design, deliver, and integrate them into instruction.

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Findings from national and international assessments, such as the 2018 Program for International Student Assessment (PISA), reveal that Filipino learners continue to perform below the global average in science. These results highlight persistent comprehension gaps and the need for improved instructional strategies that extend learning beyond classroom discussions. Learning Activity Sheets, when used as reinforcement tools, offer a structured and accessible way for students to revisit lessons, apply knowledge, and deepen understanding—making them a potentially valuable response to the country's science learning challenges.

The use of LAS as a reinforcement tool is grounded in B.F. Skinner's Reinforcement Theory, which states that learning strengthens through repeated exposure, practice, and feedback. By providing follow-up tasks after lessons, LAS helps shape desired learning behaviors and support mastery. At the same time, Constructivist Theory, particularly Piaget's perspective, emphasizes that students build understanding through active engagement with tasks and problem-solving activities. LAS aligns with this theory by guiding learners in constructing meaning through structured exercises, reflections, and applications of Earth and Life Science concepts.

Although Learning Activity Sheets are widely used in secondary science classes, little is known about how teachers themselves perceive their effectiveness as reinforcement tools. Teachers play a central role in creating, modifying, and implementing LAS, and their insights can highlight both the strengths and limitations of these materials. Understanding teachers' perspectives is essential to improving LAS design, ensuring alignment with learning competencies, and enhancing science learning outcomes. Thus, this study explores the experiences and views of Grade 11 Earth and Life Science teachers regarding the effectiveness of Learning Activity Sheets as reinforcement tools in their classroom practice.

METHODS

The study employed a qualitative research design using Interpretative Phenomenological Analysis (IPA) to examine teachers' lived experiences and personal interpretations of using Learning Activity Sheets (LAS) as reinforcement tools in Grade 11 Earth and Life Science. IPA was chosen because it enables an in-depth exploration of how teachers make sense of their instructional practices, classroom challenges, and the perceived effectiveness of LAS in supporting student learning. To gather rich and meaningful data, semi-structured interviews were conducted to elicit teachers' perceptions and insights regarding their use of LAS. The interview responses were examined through thematic analysis, which allowed the researcher to systematically identify recurring patterns, significant themes, and shared experiences that characterize teachers' perspectives.

The study was conducted at San Vicente National High School, located in Sumilao, under the Division of Bukidnon, which serves a diverse population of Senior High School learners and implements the Earth and Life Science curriculum under the K–12 program. The school was deemed appropriate for this study because Learning Activity Sheets (LAS) are widely used as supplementary materials and reinforcement tools in science instruction. Using purposive sampling, the study selected four Grade 11 science teachers with at least five years of teaching experience, as their familiarity with LAS and active involvement in implementing them made them suitable sources of rich qualitative data. Data were collected through semi-structured, conversational interviews designed to capture teachers' perspectives, insights, and reflections on the use of LAS. The researcher facilitated the interviews using open-ended questions, allowing participants to freely express their experiences, and responses were documented through audio recording and field notes to ensure accuracy and completeness of the data.

Ethical protocols were strictly observed throughout the conduct of the study to ensure the protection of participants and the integrity of the research. Approval to conduct the study was obtained from the Senior High School Science department head and the school principal. Prior to data collection, participants were briefed on the purpose of the study and assured of the confidentiality and anonymity of their responses. Informed consent forms were distributed, clearly outlining participants' rights. To ensure comfort and authenticity of responses, participants were encouraged to use the language they felt most comfortable with when sharing their experiences. These measures were implemented to uphold ethical standards and maintain a respectful and safe research environment for Senior High School teachers.

ISSN 2278-2540 | DOI: 10.51583/IJLTEMAS | Volume XIV, Issue XII, December 2025

The data collected from the interviews were analyzed using Interpretative Phenomenological Analysis (IPA), focusing on participants' personal perspectives and classroom contexts. The analysis examined how teachers make sense of their use of Learning Activity Sheets (LAS) as reinforcement tools and their impact on student learning and engagement in Grade 11 Earth and Life Science. The study highlighted patterns in how teachers implement LAS, perceive their effectiveness, and address challenges in supporting student comprehension and mastery of scientific concepts.

RESULTS AND DISCUSSION

The interviews revealed that Learning Activity Sheets (LAS) play a crucial role in enhancing learner understanding and engagement in Grade 11 Earth and Life Science. Respondents consistently highlighted that LAS provide structured, step-by-step exercises that guide students through complex scientific concepts. This organized approach enables learners to process information at their own pace, clarify misconceptions, and reinforce key ideas, fostering a supportive and inclusive learning environment. Teachers emphasized the importance of a learner-centered approach, adapting LAS activities to students' abilities and the complexity of the material to ensure meaningful participation, particularly for those who may struggle with specific topics or concepts.

Encouraging peer collaboration was also highlighted as a key practice, where learners work in pairs or small groups to complete LAS activities. This approach not only supports clearer understanding of complex scientific concepts but also fosters confidence among students, leading to greater engagement in Earth and Life Science lessons. Respondents noted that learners are more likely to participate actively and contribute meaningfully when they can discuss and solve tasks collaboratively. Additionally, LAS are seen as effective tools for reinforcing understanding, as they allow students to process information step by step, apply concepts in practice exercises, and develop a solid conceptual foundation before tackling more challenging material independently.

Overall, the findings underscore a strong commitment to using Learning Activity Sheets (LAS) as effective reinforcement tools in Grade 11 Earth and Life Science. This approach not only enhances learner engagement and confidence but also promotes deeper understanding of scientific concepts through structured and inclusive learning practices. The study further revealed that LAS significantly increase classroom participation, particularly among students who are typically less active, by providing a clear and supportive medium for completing tasks. This approach also builds confidence, enabling learners who may struggle with complex topics to engage meaningfully with the material. Improved collaboration is another benefit, as students working with LAS in pairs or groups demonstrate more effective teamwork and foster richer discussions while applying scientific concepts.

Learning Activity Sheets (LAS) facilitate a better understanding of complex Earth and Life Science concepts, as learners can work through structured exercises at their own pace, reinforcing key ideas and clarifying misconceptions. LAS also contribute to a dynamic and interactive classroom environment, encouraging students to engage actively with the material and participate in discussions. By integrating real-life examples and practical applications into LAS tasks, teachers make the content more relatable, increasing learner interest and motivation. Overall, the use of LAS fosters effective communication, builds learner confidence, encourages collaboration, and enhances conceptual understanding, contributing to a supportive and engaging learning environment.

Additionally, the effectiveness of Learning Activity Sheets (LAS) as reinforcement tools for enhancing students' understanding of Earth and Life Science concepts is evident across several key themes. Respondents consistently noted that LAS significantly improve learners' comprehension by providing structured opportunities to practice and apply complex ideas independently or collaboratively. Teachers use multiple indicators to assess their effectiveness, including increased student participation, improved performance on quizzes and tests, and more dynamic classroom discussions, all of which reflect a deeper understanding of the material. LAS, therefore, serve not only as a reinforcement strategy but also as a diagnostic tool that supports both learning and instructional planning.

Learning Activity Sheets (LAS) also help students connect new information with prior knowledge, particularly when exercises incorporate real-life or locally relevant examples that make content more relatable. By providing

ISSN 2278-2540 | DOI: 10.51583/IJLTEMAS | Volume XIV, Issue XII, December 2025

a structured framework for practice, LAS allow learners to work confidently and independently, reducing anxiety when approaching complex topics. Additionally, LAS support academic performance, as students demonstrate improved outcomes when guided through exercises that reinforce lesson concepts. They also foster skill development, enhancing learners' critical thinking, problem-solving, and application of scientific knowledge. Finally, LAS encourage meaningful engagement by linking content to students' experiences, making learning more relevant and motivating. Overall, LAS are an effective instructional tool that promotes deeper understanding, strengthens connections to prior knowledge, enhances academic performance, and supports learner engagement and confidence in science education.

Furthermore, the implementation of Learning Activity Sheets (LAS) in Earth and Life Science instruction presents several challenges. A key issue is that some students may struggle with completing LAS independently, particularly when tasks involve complex concepts, which can limit their effectiveness as reinforcement tools. Teachers also face difficulties in ensuring that all learners engage meaningfully, as differences in prior knowledge, learning pace, or confidence levels may result in uneven participation. Ensuring equitable involvement is a recurring concern, especially for students who require additional guidance or support to complete the exercises successfully. Addressing these challenges requires careful planning, scaffolding, and ongoing teacher support to maximize the benefits of LAS in reinforcing learning outcomes.

Managing the use of Learning Activity Sheets (LAS) can also present challenges, particularly when students rely too heavily on peer support or struggle to complete tasks independently. Teachers must carefully balance the level of guidance and autonomy, providing sufficient support for key concepts while allowing learners to engage with exercises at their own pace. Classroom dynamics, such as differences in prior knowledge or confidence, may further complicate participation, as some students might feel hesitant to attempt tasks without assistance. Additionally, the lack of structured guidelines for designing and implementing LAS, as well as misalignment between LAS activities and formal assessments, can reduce their effectiveness. Addressing these challenges requires deliberate planning, ongoing monitoring, and supportive strategies to ensure that LAS serve as effective and inclusive reinforcement tools in the classroom.

Lastly, integrating localized content into Earth and Life Science instruction through Learning Activity Sheets (LAS) enhances the relevance of learning by connecting lessons to students' everyday experiences. Respondents emphasized that incorporating local issues, such as environmental concerns, community practices, and agricultural examples, makes scientific concepts more relatable and engaging. This approach fosters a deeper understanding by linking theory to familiar contexts, allowing learners to see the practical application of what they are studying. Additionally, integrating locally relevant content strengthens cultural connections, as students can relate scientific ideas to their heritage, such as through local plant species, traditional ecological knowledge, or community-based examples. By contextualizing learning, LAS not only reinforce content mastery but also promote meaningful engagement and cultural relevance in the classroom.

Using real-world applications within Learning Activity Sheets (LAS), such as analyzing the impact of climate change on local crops, further increases student engagement by demonstrating the practical relevance of Earth and Life Science concepts. Incorporating localized content through LAS also encourages community involvement, as students participate in projects that address local environmental concerns, fostering a sense of responsibility and civic awareness. Additionally, LAS help students better understand and retain complex scientific concepts by linking lessons to familiar, real-life experiences. This approach promotes critical thinking, as learners explore solutions to local challenges, and supports multimodal learning, allowing students to demonstrate their understanding through various formats, such as written reports, presentations, or visual projects. Overall, the use of LAS in this way not only makes science more meaningful and relevant but also strengthens cultural connections, enhances problem-solving skills, and encourages active participation in the community.

CONCLUSION AND RECOMMENDATION

The implementation of Learning Activity Sheets (LAS) in science education has proven to be an effective instructional strategy, particularly in reinforcing student understanding and engagement in complex scientific concepts. This approach not only provides structured guidance but also promotes independent learning through

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carefully designed exercises and step-by-step activities. LAS have been shown to enhance student engagement by allowing learners to process information at their own pace, revisit challenging topics, and apply concepts through practical exercises, creating a more supportive and inclusive learning environment. Research highlights that structured learning materials, such as LAS, improve students' confidence and willingness to participate when they can follow clear, guided activities (Bernardo, 2020; Dela Cruz, 2021), which translates into better comprehension of scientific content. By scaffolding learning and connecting new information with prior knowledge, LAS facilitate deeper understanding and retention of key concepts (Piaget, 1976). Furthermore, studies show that incorporating LAS into classroom instruction enables students to actively apply and reflect on Earth and Life Science concepts, leading to improved academic performance and engagement (Sevilla, 2020; Salvador, 2022). This strategy not only supports mastery of content but also fosters critical thinking, problem-solving skills, and meaningful application of science in real-life contexts.

Learning Activity Sheets (LAS) also foster a collaborative classroom environment, where students work together to complete guided tasks that strengthen collective understanding and support the development of higher-order thinking skills. Collaborative engagement through LAS allows learners to exchange ideas, clarify misconceptions, and build shared solutions—an approach consistent with Vygotsky's Sociocultural Theory, which highlights the importance of social interaction and scaffolding in deepening cognitive development (Vygotsky, 1978). Research shows that structured learning materials, when used in group tasks, enhance students' communication, problem-solving, and scientific inquiry skills by encouraging peer-to-peer dialogue (Bernardo, 2020; Cabansag, 2019). Additionally, the multimodal nature of LAS—combining written tasks, diagrams, real-life applications, and reflective questions—caters to diverse learning styles and improves overall academic performance (Dela Cruz, 2021). Integrating localized content into LAS further enriches the learning experience by linking scientific concepts to familiar community contexts, making lessons more relevant and engaging for students. Studies have found that contextualized and culturally responsive materials significantly increase student motivation and deepen conceptual understanding by connecting learning to real-world experiences (Salvador, 2022; Sevilla, 2020). This approach not only strengthens comprehension but also encourages critical thinking as learners interact with meaningful, locally grounded tasks that reflect their lived realities.

Despite their many advantages, the use of Learning Activity Sheets (LAS) in science education also presents several challenges that can affect their overall effectiveness. One common issue is the varying levels of learner readiness, where students with limited foundational knowledge may struggle to complete LAS independently, reducing equitable participation and undermining the goal of reinforcement (Bernardo, 2020). Teachers likewise encounter difficulties in balancing guidance and autonomy, as too much support may limit student initiative, while insufficient scaffolding can lead to misconceptions—an issue consistent with Vygotsky's Zone of Proximal Development, which emphasizes the need for appropriate instructional support (Vygotsky, 1978). Additionally, the process of designing high-quality LAS that are aligned with learning competencies, engaging, and contextualized can be time-consuming and demanding, particularly for teachers handling multiple classes (Dela Cruz, 2021). Misalignment between LAS activities and formal assessments may further hinder students' ability to transfer reinforced concepts to evaluative tasks (Salvador, 2022). To address these challenges, educators must receive adequate training and resources to develop effective LAS, as well as institutional support to ensure that materials are coherent, scaffolded, and responsive to learner diversity. While LAS remain a powerful reinforcement tool that enhances comprehension, engagement, collaboration, and contextual learning, maximizing their impact requires deliberate planning, continuous teacher support, and well-structured implementation strategies.

To maximize the effectiveness of Learning Activity Sheets (LAS) in science education while addressing the challenges identified in their implementation, several key recommendations can be adopted. First, professional development for teachers should be strengthened through targeted training programs that focus on designing pedagogically sound LAS aligned with learning competencies, grounded in Constructivist Theory and Reinforcement Theory, which emphasize active engagement and repeated practice (Piaget, 1976; Skinner, 1953). These trainings should provide practical workshops on contextualizing LAS, integrating real-life examples, and scaffolding tasks based on learners' varying needs. Additionally, establishing mentorship and peer collaboration systems among teachers can significantly improve LAS quality, as experienced educators can guide their colleagues through the creation, revision, and implementation of materials. Collaborative lesson planning, peer

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review of LAS, and classroom-based consultations promote consistency, alignment, and innovation in instructional design (Dela Cruz, 2021). Schools should also allocate sufficient time and resources for LAS development, ensuring teachers are not overburdened and can produce well-structured and engaging materials. By prioritizing continuous capacity-building, collaborative support, and resource provision, the use of LAS can become more efficient and impactful, ultimately strengthening students' comprehension, engagement, and mastery of Earth and Life Science concepts.

Curriculum development should also incorporate well-designed Learning Activity Sheets (LAS) and complementary instructional materials that address diverse learner needs and promote deeper understanding of scientific concepts. Integrating localized and context-based content into LAS allows teachers to connect lessons to students' real-world experiences, making science concepts more relevant and meaningful (Bernardo, 2019). This approach aligns with Constructivist Theory, which emphasizes that learners build knowledge more effectively when new information is linked to prior experiences (Piaget, 1976). Visuals, examples, and tasks within LAS should be culturally responsive and accessible, enabling students with varying levels of prior knowledge to engage meaningfully. Furthermore, assessment practices should be diversified alongside LAS implementation by incorporating alternative assessment methods such as performance tasks, collaborative activities, oral explanations, and visual outputs, allowing learners to demonstrate understanding in various ways (DepEd, 2020). Providing multiple modes of assessment aligns with Howard Gardner's Multiple Intelligences Theory, acknowledging that student's express comprehension differently based on their cognitive strengths. By enhancing curriculum materials and assessment strategies, the effective use of LAS can be strengthened, ensuring equitable learning opportunities and improved mastery of Earth and Life Science concepts.

To ensure equitable participation and maximize the effectiveness of Learning Activity Sheets (LAS), clear guidelines for their implementation should be established. Teachers should be trained to provide structured instructions, manage group dynamics, and balance guidance with student autonomy, ensuring that all learners can engage meaningfully with the tasks (Vygotsky, 1978). Establishing consistent procedures for completing LAS—such as step-by-step scaffolding, collaborative peer work, and timely feedback—helps maintain the flow of learning while accommodating diverse student abilities and learning paces (Bernardo, 2020). By implementing these strategies, educators can ensure that LAS serve as effective reinforcement tools, promoting comprehension, confidence, and active participation across the classroom.

By implementing these strategies, educators can create a more inclusive and effective science learning environment through the use of Learning Activity Sheets (LAS). This approach not only enhances students' comprehension and academic performance but also fosters confidence, independence, and collaboration among learners (Piaget, 1976; Skinner, 1953). Well-designed LAS support differentiated learning by accommodating diverse abilities and learning styles, allowing all students to engage meaningfully with Earth and Life Science content. Additionally, LAS can integrate culturally relevant examples and real-world applications, making learning more relatable and motivating. Overall, the strategic use of LAS promotes equitable participation, strengthens conceptual understanding, and supports the development of critical thinking and problem-solving skills, contributing to a learner-centered and inclusive classroom environment.

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