

Futures Thinking and Institutional Capacity as Predictors of ESD Integration in Region XII

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Abstract. In rapidly evolving educational landscapes, schools are challenged to address sustainability, innovation, and future readiness. Consequently, the integration of Education for Sustainable Development (ESD) and futures-oriented leadership has become an important concern in basic education. This study examined the predictive influence of instructional leaders' Futures Thinking capacities and institutional capacity on the integration of ESD across the strategic pillars of education in Region XII, Philippines. Using a quantitative descriptive-correlational design, data were gathered from instructional leaders and teachers in selected schools through a validated survey instrument. Descriptive statistics, correlation analysis, and regression analysis were employed to determine the levels of variables and their predictive relationships with ESD integration. Findings revealed that instructional leaders demonstrated a very high level of Futures Thinking capacities, with trend analysis and systems thinking obtaining the highest ratings, while foresight and backcasting received comparatively lower ratings. Institutional capacity was also rated very high, particularly in structural policy, awareness, and competence, although minor gaps in resource adequacy were identified. Moreover, ESD integration across access, quality, equity, resiliency, well-being, and governance was highly evident. Regression analysis showed that Futures Thinking capacities significantly influenced ESD integration, with systems thinking and backcasting emerging as significant predictors. Institutional capacity demonstrated a stronger predictive influence, particularly in terms of awareness and competence. The study concludes that strengthening leadership competencies and institutional capacity is essential in sustaining effective ESD integration and advancing future-ready school governance.

Keywords: Education for Sustainable Development (ESD); Futures Thinking; Institutional Capacity; Pillars of Education; School Governance

Introduction

Educational leadership in the 21st century demands the capacity to anticipate change and respond strategically to emerging challenges. In increasingly complex and dynamic environments, futures thinking has become a critical competency that enables school leaders to move beyond reactive practices toward proactive and adaptive governance (Park University, 2025; Vidergor, 2023). By anticipating potential disruptions and aligning decisions with long-term goals, futures-oriented leaders contribute to sustainability, resilience, and innovation in educational systems.

At the global level, UNESCO (2021) underscored the importance of futures-oriented governance in advancing Sustainable Development Goal 4, which promotes inclusive and equitable quality education. Consistent with this, recent studies emphasized that anticipatory and participatory governance strengthens institutional effectiveness, adaptability, and accountability in schools (Mifsud, 2025; Laherto & Rasa, 2022). In the Philippine context, the Department of Education institutionalized Education for Sustainable Development (ESD) through the Basic Education Development Plan 2030, integrating sustainability across the pillars of access, quality, equity, resiliency and well-being, and governance (DepEd, 2022; Bautista et al., 2023). However, studies revealed that ESD implementation in Philippine basic education remains inconsistent due to limited professional development opportunities, insufficient instructional resources, governance inefficiencies, and socioeconomic disparities affecting schools and communities (Bautista et al., 2023; Aquino et al., 2023; UNESCO, 2021).

Furthermore, while leadership standards emphasize strategic and instructional competencies, limited empirical evidence explains how futures thinking and institutional capacity influence ESD integration in school governance. Existing studies on futures thinking have primarily focused on transformative science education, international development cooperation, medical and aquaculture practices, and library leadership, with limited attention given to educational leadership and sustainability integration in Philippine basic education (Hossain et al., 2022; Reilly-King et al., 2024; Schlak, 2020; Vidergor, 2023). This gap is further intensified by persistent socioeconomic and resource-related challenges affecting educational outcomes in many public schools.

In response, this study examined the predictive influence of instructional leaders' futures thinking capacities and institutional capacity on the integration of ESD across the strategic pillars of basic education among secondary school leaders in Region XII.

Research Questions

This study determined the predictive influence of instructional leaders' Futures Thinking Capacities and Institutional Capacity on the integration of Education for Sustainable Development (ESD) within the strategic pillars of education. It answered the following research questions:

1. To what extent do instructional leaders demonstrate the following Futures Thinking capacities in reference to:
 - 1.1 trend analysis;
 - 1.2 foresight;
 - 1.3 systems thinking; and
 - 1.4 backcasting?
2. To what extent is the institutional capacity of the Implementing Units (IUs) in Region XII in terms of:
 - 2.1 structural policy;
 - 2.2 adequacy of resources and support; and
 - 2.3 degree of awareness and competence?
3. To what extent is Education for Sustainable Development (ESD) integrated into the strategic pillars of education in the Implementing Units (IUs) in Region XII, particularly in terms of:
 - 3.1 access;
 - 3.2 quality;
 - 3.3 equity;
 - 3.4 resiliency and well-being; and
 - 3.5 governance?
4. To what extent do the futures thinking capacities of instructional leaders in the Implementing Units (IUs) significantly influence the ESD integration in strategic pillars of education?
5. Does the institutional capacity of the Implementing Units (IUs) significantly influence ESD integration within the strategic pillars of education?

Scope and Delimitation of the Study

This study examined the relationship between instructional leaders' futures thinking capacities, institutional capacity, and the integration of Education for Sustainable Development (ESD) in public secondary schools in Region XII. It focused on ESD integration across the pillars of access, quality, equity, well-being, resiliency, and governance, and on futures thinking dimensions including trend analysis, foresight, systems thinking, and backcasting. The respondents were school heads, assistant principals, head teachers, master teachers, and teachers from large and very large schools with implementing unit status, based on Department of Education classification. The study was limited to selected schools in Region XII and to the specified variables, excluding other potential influencing factors.

Literature Review

Futures Thinking Capacities of Instructional Leaders

Futures thinking has become an essential leadership competency in education because it enables anticipatory governance and strategic decision-making in increasingly complex systems. In the Philippine context, policy initiatives from the Department of Education and capacity-building programs supported by national agencies have promoted foresight-oriented leadership. However, empirical studies consistently show a gap between policy recognition and actual practice, as school leaders demonstrate awareness of futures tools but limited sustained application of forecasting and backcasting due to insufficient training and institutional constraints (Suazo et al., 2023). This pattern is consistent with international findings. Miller (2021) and Slaughter (2020) conceptualize futures thinking as a combination of trend analysis, systems thinking, foresight, and backcasting, all of which are necessary for adaptive governance. However, studies differ in emphasis: while Miller highlights cognitive dimensions of anticipation, Slaughter stresses structural and systemic foresight. Despite these theoretical differences, both agree that futures thinking is critical for resilience in education systems. In the context of Education for Sustainable Development (ESD), Ghamrawi et al. (2025) and Susanti et al. (2024) report that futures thinking strengthens sustainability integration and teacher leadership. However, they also converge on a key limitation: uneven professional development and weak institutional reinforcement prevent consistent implementation. Collectively, the literature indicates

that futures thinking is widely recognized as essential but remains unevenly translated into leadership practice, particularly in developing education systems.

Futures Thinking

Futures thinking is a strategic capacity that enables individuals and institutions to anticipate multiple possible futures through structured reflection, scenario-building, and long-term planning. UNESCO (2023, 2025) positions it as a foundational element of Education for Sustainable Development because it supports transformative decision-making and sustainability-oriented governance. However, the literature reveals inconsistencies in how futures thinking is operationalized. While Chen (2020) and Suhendar (2025) emphasize its cognitive dimensions such as visioning and forecasting, Balonier and Huber (2025) highlight its governance function in institutional adaptability. These differing perspectives suggest that futures thinking operates both as an individual leadership skill and an organizational capacity. Despite its increasing visibility in global education agendas, implementation remains uneven across systems. UNESCO (2024) and Yulikah et al. (2024) attribute this to short-term policy priorities and limited institutional readiness. The synthesis of literature suggests that futures thinking is conceptually well established but lacks consistent institutional integration in educational governance.

Trend Analysis

Trend analysis is a core component of futures thinking that enables instructional leaders to interpret emerging patterns in demographics, technology, and policy environments. Akomodi (2025) and Huong et al. (2025) argue that it strengthens anticipatory governance by allowing leaders to align school decisions with long-term educational reforms. However, empirical findings indicate a disconnect between awareness and application. Duldulao (2022) found that while school leaders often monitor trends, they rarely use systematic data analysis to inform strategic planning. This suggests that trend analysis is frequently practiced at a descriptive level rather than as a predictive governance tool. Comparatively, studies in other contexts emphasize its potential for evidence-based decision-making, yet its weak integration into school leadership practices limits its contribution to institutional foresight. The literature therefore highlights a persistent gap between data availability and its strategic utilization in educational governance.

Foresight

Foresight involves structured approaches such as scenario planning and horizon scanning that support long-term decision-making in education systems. Page (2024) and Wright (2019) emphasize its role in strengthening institutional resilience and adaptive governance, particularly in complex and uncertain environments. Despite this, implementation remains inconsistent. Shaked (2019) reports that foresight improves institutional adaptability when applied systematically, yet Susanti et al. (2024) and Yulikah et al. (2024) note that short-term administrative pressures and limited professional development hinder its institutionalization. When compared across studies, a clear contradiction emerges: foresight is widely recognized as essential for sustainability planning, yet it is rarely embedded as a routine leadership practice. This gap highlights the difference between conceptual acceptance and operational implementation in educational systems.

Systems Thinking

Systems thinking focuses on understanding education as an interconnected system involving multiple stakeholders, processes, and feedback mechanisms. McGlacken-Byrne et al. (2022) and Levenchuk (2023) emphasize that it enables leaders to address complex educational problems through holistic rather than fragmented approaches. In leadership practice, Churches and McAleavy (2022) and Shaked (2019) demonstrate that systems thinking improves curriculum alignment, collaboration, and governance effectiveness. However, Susanti et al. (2024) report that limited institutional support and insufficient training hinder its consistent application. Across studies, systems thinking is consistently viewed as essential for sustainability and ESD integration, yet its operational use remains uneven. This indicates a gap between theoretical importance and practical implementation in school leadership contexts.

Backcasting

Backcasting is a strategic futures method that begins with defining a desired future and works backward to identify the necessary steps to achieve it. Ziegler and Porto-de-Oliveira (2022) describe it as a transformative planning tool that links long-term sustainability goals with present decision-making. Empirical studies support its value in education. Matos et al. (2024) found that backcasting strengthens reflective and strategic thinking, while Weicha and Muth (2021) highlight its use in aligning institutional planning with sustainability objectives. Compared to forecasting, which extends current trends forward, backcasting promotes transformational change by prioritizing desired futures. However, despite its

theoretical strength, its use in school governance remains limited. The literature suggests that backcasting is underutilized due to operational constraints and short-term planning priorities in educational systems.

Institutional Capacity Affecting Futures Thinking

Institutional capacity significantly influences how futures thinking is developed and applied in educational systems. In the Philippines, frameworks such as the Philippine Professional Standards for School Heads and DepEd policy reforms emphasize leadership competencies related to foresight and sustainability (Department of Education, 2020, 2021). However, Rhodes (2020) and Laguda et al. (2025) highlight that fragmented governance structures and weak implementation mechanisms reduce policy effectiveness. Balonier and Huber (2025) further argue that institutional effectiveness depends on alignment between leadership competence, organizational systems, and policy coherence. Across studies, a consistent pattern emerges: institutional capacity is not merely structural but also relational, requiring integration of leadership, resources, and governance systems.

Adequacy of Resources and Support

Resource availability remains a critical determinant of effective futures thinking and ESD implementation. EDCOM II (2023, 2025) reports persistent shortages in infrastructure, learning materials, and human resources in Philippine schools, which limits long-term planning capacity. While capacity-building initiatives exist, access remains uneven across regions, resulting in disparities in leadership development opportunities. Balonier and Huber (2025) and Kioupi and Voulvoulis (2022) emphasize that resource adequacy directly affects the translation of knowledge into practice. This indicates that institutional capacity is strongly dependent on both structural and financial support systems.

Degree of Awareness and Competence

Awareness and competence are essential for translating futures thinking into effective educational practice. TESDA (2021) and the Development Academy of the Philippines (2024) report increased awareness of foresight tools among educators, yet application remains inconsistent. Corres et al. (2024) and Ghamrawi et al. (2025) highlight that competence develops effectively when supported by organizational systems and collaborative environments. Balonier and Huber (2025) further emphasize that institutional structures play a decisive role in shaping leadership capability. Across studies, a clear pattern emerges: awareness alone is insufficient without sustained institutional reinforcement and professional development.

Education for Sustainable Development (ESD)

ESD integrates sustainability principles into educational governance, curriculum, and instructional practices. Teves (2023) highlights its role in aligning institutional policies with long-term sustainability goals, while Sinakou et al. (2024) emphasize the importance of teacher beliefs and instructional practices in implementation. Ghamrawi et al. (2025) position teachers as key agents in translating ESD into practice, reinforcing the role of instructional leadership. However, despite strong policy support, implementation remains uneven due to resource constraints and weak institutional alignment. The literature therefore suggests that ESD functions as both a policy framework and a practice-driven reform requiring strong leadership support.

Integration of ESD in Strategic Pillars of Education

ESD is increasingly embedded in key educational pillars, including access, quality, equity, resilience, well-being, and governance. In the Philippine context, the BEDP 2030 provides a framework for this integration (DepEd, 2022), yet operationalization remains limited. UNESCO (2023) and Leal Filho et al. (2023) emphasize that effective ESD integration requires strong governance systems and institutional coherence. However, Flores (2023) and Oloroso and Bustamante (2023) report persistent implementation gaps due to resource limitations and uneven leadership readiness. This indicates that policy presence alone does not guarantee effective implementation.

Access, Quality, Equity, Resilience, and Governance (Synthesis)

Across the five strategic pillars, the literature consistently reveals a shared pattern: policy frameworks are well established, but implementation remains uneven. Studies by Estanislao (2024), Tan (2023), and Bayudan-Dacuyucy et al. (2024) highlight persistent inequalities in access, quality, and equity, driven by structural and resource constraints. UNESCO (2023) and Kioupi and Voulvoulis (2022) further emphasize that these pillars are interdependent, meaning weaknesses in one area affect overall system performance. This synthesis suggests that improving ESD integration requires not only policy alignment but also strengthened leadership and institutional capacity across all governance levels.

Methodology

Research Design

This study employed a quantitative descriptive–correlational research design to examine the relationships among instructional leaders' futures thinking capacities, institutional capacity, and the integration of Education for Sustainable Development (ESD) in school governance. The descriptive component assessed the extent of ESD integration across the strategic pillars of access, quality, equity, resiliency and well-being, and governance. The correlational component analyzed the relationships between these dimensions and the futures thinking capacities of instructional leaders, including trend analysis, foresight, systems thinking, and backcasting. This design was appropriate for describing existing conditions and determining the strength and direction of relationships among variables without manipulation (Creswell & Creswell, 2018; Gay et al., 2012). By using quantitative data and statistical analysis, the study generated objective and reliable evidence on patterns and associations, providing an empirical basis for understanding sustainable governance practices in the educational context of Region XII.

Sampling Design

This study employed a combination of total enumeration and random sampling techniques. Four divisions in Region XII—General Santos and Koronadal (city), and Tacurong and Kidapawan (provincial)—were selected as research sites. Total enumeration was applied to school heads to ensure complete representation of instructional leaders. For teachers, random sampling was used to provide equal chances of selection and reduce sampling bias, thereby improving representativeness (Cohen et al., 2018). The required sample size was determined using the Raosoft sample size calculator to ensure adequate representation of the target population.

Research Locale

The study was conducted in Region XII, also known as SOCCSKSARGEN, which comprised the provinces of Cotabato, South Cotabato, Sultan Kudarat, and Sarangani, as well as the cities of General Santos, Kidapawan, Tacurong, and Koronadal. The research focused on public secondary schools within the city schools' divisions that had implementing unit (IU) status, particularly those offering complete Junior High School (JHS) and Senior High School (SHS) programs. These schools typically managed diverse programs and complex organizational structures, requiring effective and sustainable governance practices.

Research Participants

The study included a total of 647 respondents from public secondary schools in the City Divisions of Region XII (General Santos City, Tacurong, Kidapawan, and Koronadal), which are classified as large to very large implementing units (IU) offering complete Junior High School and Senior High School programs. For the teacher group, a population of 2,088 was considered, and using a 5% margin of error, the computed sample size was 325 teacher respondents, selected through random sampling and distributed proportionally across the four divisions. For instructional leaders, complete enumeration was applied, including 30 respondents composed of school heads, assistant principals, and head teachers. In addition, 292 master teachers were included through purposive sampling due to their direct involvement in instructional leadership and school governance.

Research Instrument

The study used a researcher-made survey questionnaire to measure three constructs: Futures Thinking capacities of instructional leaders, institutional capacity, and Education for Sustainable Development (ESD) integration across strategic educational pillars. Part I gathered respondents' profile (position and years of experience). Part II measured Futures Thinking capacities in terms of trend analysis, foresight, systems thinking, and backcasting. Part III assessed institutional capacity in terms of structural policy, adequacy of resources and support, and awareness and competence. Part IV evaluated ESD integration across access, quality, equity, resiliency and well-being, and governance. A five-point Likert scale was used, ranging from 5 = Very High Extent to 1 = Very Low Extent for Futures Thinking and institutional capacity, and 5 = Highly Integrated to 1 = Least Integrated for ESD integration. Content validity was established using Yusoff's (2019) ABC Framework (adequacy, believability, and clarity). The instrument was evaluated by six experts, including the Chief of the School Governance and Operations Division, an Education Program Supervisor, a Senior Education Program Specialist, a school principal, a Master Teacher II in English, and a university language specialist. Each item was reviewed for construct relevance, contextual appropriateness, and linguistic clarity. Items that met the validation criteria were retained, while those requiring improvement were revised based on expert feedback; items deemed inappropriate were removed or modified to ensure alignment with the study constructs. Reliability testing using Cronbach's alpha showed

excellent internal consistency: Futures Thinking ($\alpha = 0.94$), institutional capacity ($\alpha = 0.92$), and ESD integration ($\alpha = 0.97$).

Data Gathering Procedure

The study commenced upon approval from the Dean of the Graduate School. Subsequently, permission was sought from the Regional Office of Region XII and the Schools Division Superintendents of the four selected divisions. After approval, the researcher coordinated with school heads to formally introduce the study and its procedures. An orientation was conducted for the participants to explain the purpose of the study, data collection process, and ethical considerations, including voluntary participation, confidentiality, and anonymity. Survey questionnaires were then distributed to the respondents in both online and printed formats to ensure wider participation, especially in schools with limited internet access. Participants were given sufficient time to accomplish the survey, with follow-up reminders to improve response rates, following the approach of Dillman et al. (2014). After retrieval, all responses were checked, organized, and encoded for analysis. Instructional leaders were included through total enumeration, while teacher respondents were selected through random sampling. Ethical standards were strictly observed throughout the process, ensuring confidentiality and reporting of only aggregated results.

Results and Discussions

Research Question 1: To what extent do instructional leaders demonstrate the following Futures Thinking capacities in reference to trend analysis, foresight, systems thinking, and backcasting?

Table 1. Futures Thinking Capacity of Instructional Leaders in terms of Trend Analysis

	Indicators	M	SD	Verbal Description
1.	Monitors educational trends affecting teaching and learning.	4.41	0.64	Very High Extent
2.	Analyzes demographic changes that may influence schooling.	4.28	0.71	Very High Extent
3.	Uses research data to anticipate potential challenges.	4.19	0.76	High Extent
4.	Examines technological innovations for educational use.	4.35	0.69	Very High Extent
5.	Assesses student outcomes in relation to global competencies.	4.39	0.63	Very High Extent
6.	Evaluates emerging policy reforms and initiatives to align school practices with the goals of BEDP 2030.	4.22	0.78	Very High Extent
	Mean	4.37	0.44	Very High Extent

Table 1 shows that instructional leaders demonstrate a very high level of futures-thinking capacity in trend analysis ($M = 4.37$, $SD = 0.44$), indicating strong and consistent engagement in identifying, interpreting, and responding to emerging developments in education. This implies that trend analysis is not merely an awareness-based activity but has already become an embedded component of leadership practice within school governance. The high ratings across indicators suggest that instructional leaders are actively monitoring educational and technological advancements, examining demographic and policy shifts, utilizing research-based evidence, and aligning student outcomes with global competencies. Taken together, these competencies reflect a systematic and structured approach to environmental scanning, which supports evidence-informed decision-making in schools. From a theoretical standpoint, this finding reinforces the role of futures thinking as a core leadership capacity in managing complexity and uncertainty in education systems. Suazo et al. (2026) emphasize that trend awareness is essential for navigating rapidly changing educational environments, while Anduyan et al. (2024) argue that effective educational systems require leaders who can translate emerging trends into forward-looking strategies and institutional direction. In this sense, the results suggest that instructional leaders in Region XII are already demonstrating foundational futures-thinking competencies that support anticipatory governance. However, literature also indicates that while trend awareness is well developed in many education contexts, higher-order futures skills such as scenario building, forecasting, and strategic simulation remain less developed (Sulasula, 2023; Magdato et al., 2025). This gap suggests that although instructional leaders exhibit strong competence in recognizing and analyzing trends, there is still a need to strengthen their capacity in transforming these insights into deeper predictive and long-term strategic planning. Overall, the findings indicate that trend analysis is a

well-established strength among instructional leaders, serving as an entry point for futures-oriented leadership. Strengthening advanced analytical and forecasting competencies may further enhance their ability to support transformative and sustainable educational governance.

Table 2. Futures Thinking Capacity of Instructional Leaders in terms of Foresight

	Indicators	M	SD	Verbal Description
1.	Develops long-term strategic plans for the school.	4.19	0.78	High Extent
2.	Explores alternative scenarios for the school's future.	4.25	0.76	Very High Extent
3.	Encourages innovation in school programs.	4.33	0.73	Very High Extent
4.	Aligns school goals with global sustainable development goals.	4.35	0.72	Very High Extent
5.	Engages stakeholders in imagining future possibilities.	4.33	0.74	Very High Extent
6.	Anticipates risks and opportunities in education.	4.36	0.70	Very High Extent
	Mean	4.30	0.60	Very High Extent

Table 2 shows that instructional leaders demonstrate a very high level of foresight capacity ($M = 4.30$, $SD = 0.60$), indicating that foresight practices are consistently integrated into school governance. The highest-rated indicator is the ability to anticipate risks and opportunities, reflecting leaders' proactive orientation toward future challenges and decision-making. This suggests that instructional leaders are not only responsive to current demands but also engaged in strategic planning for future scenarios, which is essential for effective and adaptive educational leadership. This aligns with Page (2024), who emphasized that foresight enhances resilience through scenario-building, and Amihan et al. (2024), who highlighted its role in anticipating global shifts and aligning institutional goals with sustainability agendas. Overall, the findings indicate that instructional leaders in Region XII are future-oriented and capable of linking governance with long-term sustainability goals. Consistent with UNESCO (2024) and Wright (2019), foresight strengthens strategic governance and supports evidence-based decision-making. However, the results also suggest the need to further strengthen long-term strategic planning to fully institutionalize foresight in school governance.

Table 3. Futures Thinking Capacity of Instructional Leaders in terms of Systems Thinking

	Indicators	M	SD	Verbal Description
1.	Analyzes interconnections between school policies and outcomes.	4.32	0.70	Very High Extent
2.	Applies holistic approaches to problem-solving.	4.42	0.66	Very High Extent
3.	Integrates environmental, social, and economic factors in planning.	4.40	0.68	Very High Extent
4.	Adopts interdisciplinary approaches to governance.	4.32	0.73	Very High Extent
5.	Identifies root causes of recurring problems.	4.41	0.67	Very High Extent
6.	Aligns school initiatives with community needs.	4.36	0.69	Very High Extent
	Mean	4.37	0.55	Very High Extent

Table 3 shows that instructional leaders demonstrate a very high level of systems thinking ($M = 4.37$, $SD = 0.55$), indicating strong and consistent integration of holistic approaches in school governance. This suggests that leaders recognize the interconnected nature of educational systems and apply comprehensive strategies in addressing governance challenges. The highest-rated indicators reflect strengths in holistic problem-solving, identification of root causes, and integration of environmental, social, and economic dimensions in planning. These align with Churches and McAleavy (2022) and McGlacken-Byrne et al. (2022), who emphasize systems thinking as essential for sustainability-oriented and evidence-informed leadership. However, comparatively lower ratings in policy–outcome analysis and interdisciplinary application suggest areas for further development. This implies the need to strengthen leaders' capacity to better link policies with outcomes and to enhance cross-disciplinary integration, consistent with Levenchuk

(2023). Overall, the findings confirm strong systems-thinking capacity among instructional leaders, while also highlighting the need for continued development to fully embed systems thinking in sustainable and future-oriented governance.

Table 4. Futures Thinking Capacity of Instructional Leaders in terms of Backcasting

Indicators		M	SD	Verbal Description
1.	Sets long-term visions for the school's future.	4.24	0.74	Very High Extent
2.	Aligns daily operations with long-term objectives	4.32	0.71	Very High Extent
3.	Integrates backcasting into project planning.	4.19	0.77	High Extent
4.	Ensures policies contribute to future-readiness.	4.32	0.70	Very High Extent
5.	Conducts evaluations to measure progress toward visions.	4.29	0.73	Very High Extent
6.	Uses backcasting in strategic planning workshops.	4.19	0.77	High Extent
Mean		4.26	0.61	Very High Extent

Table 4 shows that instructional leaders demonstrate a very high level of backcasting capacity ($M = 4.26$, $SD = 0.61$), indicating that future-oriented planning is consistently integrated into school governance. This suggests that leaders are able to translate long-term educational goals into present actions, reflecting strong alignment between visioning and operational decision-making. The highest-rated indicators highlight the alignment of daily operations with long-term objectives and the integration of future-readiness into policy implementation. This finding aligns with established literature describing backcasting as a reverse-planning approach that links desired future outcomes with present strategic actions (Ziegler & Porto de Oliveira, 2022), as well as with DepEd professional standards that emphasize forward-looking and anticipatory leadership development. However, the relatively lower ratings in integrating backcasting into project planning and strategic workshops indicate that its application remains partially informal and inconsistently institutionalized within school planning systems. This supports Ziegler (2022) and Matos (2024), who argue that backcasting yields stronger outcomes when systematically embedded in formal planning and governance structures rather than applied as an ad hoc tool. Overall, the findings suggest that while instructional leaders demonstrate a strong conceptual understanding of backcasting, its translation into structured and routine planning practices remains limited. This highlights the need to strengthen institutional mechanisms that operationalize foresight tools within formal school governance and planning processes

Table 5. Extent of Futures Thinking Capacity of Instructional Leaders

Indicators	M	SD	Verbal Description
Trends Analysis	4.37	0.44	Very High Extent
Foresight	4.30	0.60	Very High Extent
Systems Thinking	4.37	0.55	Very High Extent
Backcasting	4.26	0.61	Very High Extent
Overall Mean	4.32	0.55	Very High Extent

Table 5 presents the overall futures-thinking capacity of instructional leaders across trend analysis, foresight, and systems thinking, with a composite mean of 4.32 ($SD = 0.55$), interpreted as a very high extent. This indicates that futures-thinking competencies are strongly embedded in school governance and consistently applied in leadership practices. Among the dimensions, trend analysis and systems thinking obtained slightly higher ratings, while foresight, although still very high, registered the lowest mean. This suggests that instructional leaders are particularly strong in environmental scanning and systems-based analysis, enabling them to make informed and structured governance decisions in complex educational settings. These strengths position instructional leaders as proactive and adaptive decision-makers capable of supporting data-informed and systems-oriented governance. However, the relatively lower rating in foresight implies a need to further enhance their capacity to anticipate multiple future scenarios and translate these into strategic and innovative actions. Strengthening foresight alongside other dimensions may further support transformative leadership and enhance institutional resilience in implementing Education for Sustainable Development (ESD). This aligns with Miller (2021) and Slaughter (2020), who emphasize futures thinking as a core competency for navigating uncertainty, and Ghamrawi et al. (2025), who highlight its role in strengthening leadership for sustainable education systems. In summary, the findings suggest that

while futures-thinking capacity is strong and well-developed, targeted enhancement of foresight is necessary to achieve more balanced and fully transformative educational leadership.

Research Question 2: To what extent is the institutional capacity of the Implementing Units (IUs) in Region XII in terms of: structural policy, adequacy of resources and support; and degree of awareness and competence?

Table 6. Institutional Capacity in School Governance in terms of Structural Policy

Indicators	M	SD	Verbal Description
1. Futures Thinking concepts are integrated into the school's strategic and operational plans.	4.31	0.69	Very High Extent
2. Existing policies are regularly reviewed and updated to ensure alignment with sustainability goals.	4.33	0.71	Very High Extent
3. School policies and rules promote innovation, foresight, and continuous improvement.	4.41	0.66	Very High Extent
4. Institutional policies promote inclusivity, diversity, and equity among stakeholders.	4.43	0.66	Very High Extent
5. Sustainability objectives are embedded in the School Improvement Plan (SIP) and other planning documents.	4.43	0.66	Very High Extent
6. Mechanisms are in place to monitor, evaluate, and ensure compliance with school policies.	4.40	0.67	Very High Extent
Mean	4.38	0.55	Very High Extent

Table 6 shows that institutional capacity in terms of structural policy is very high ($M = 4.38$, $SD = 0.55$), indicating that futures-thinking and sustainability principles are systematically embedded in school governance. This suggests that schools have established formal policies and structures that support long-term, forward-looking decision-making aligned with sustainable development goals. The findings imply that instructional leaders are capable of institutionalizing Education for Sustainable Development (ESD) through coherent policy frameworks, reflecting strong governance commitment to sustainability integration. This aligns with Jumawan and Fabiania (2025), who emphasized the role of leadership competence and awareness in effective ESD implementation. Taken together, the results indicate that schools in Region XII demonstrate strong policy-based governance for sustainability. However, continuous policy refinement and the application of foresight tools such as scenario planning and backcasting are necessary to further strengthen resilience and future-readiness in school governance (Rhodes, 2020; Development Academy of the Philippines, 2024).

Table 7. Institutional Capacity in School Governance in terms of Adequacy of Resources and Support

Indicators	M	SD	Verbal Description
1. Futures Thinking concepts are integrated into the school's strategic and operational plans.	4.31	0.69	Very High Extent
2. Existing policies are regularly reviewed and updated to ensure alignment with sustainability goals.	4.33	0.71	Very High Extent
3. School policies and rules promote innovation, foresight, and continuous improvement.	4.41	0.66	Very High Extent
4. Institutional policies promote inclusivity, diversity, and equity among stakeholders.	4.43	0.66	Very High Extent
5. Sustainability objectives are embedded in the School Improvement Plan (SIP) and other planning documents.	4.43	0.66	Very High Extent
6. Mechanisms are in place to monitor, evaluate, and ensure compliance with school policies.	4.40	0.67	Very High Extent
Mean	4.38	0.55	Very High Extent

Table 7 presents the institutional capacity of schools in terms of adequacy of resources and support for Education for Sustainable Development (ESD), with an overall mean of 4.21 (SD = 0.68), interpreted as a very high extent. This indicates that sustainability-oriented governance practices are consistently embedded in school operations, reflecting strong institutional alignment with ESD principles. The result highlights that resource availability is a critical enabling condition for sustaining Futures Thinking and ESD implementation. Adequate financial, material, and organizational support allows instructional leaders to operationalize sustainability initiatives across the five strategic pillars of education. This aligns with the findings of the Second Congressional Commission on Education (EDCOM II), which emphasized that institutional capacity is constrained when basic operational needs are insufficient, limiting leaders' ability to fully exercise foresight in governance. In practice, the findings suggest that while schools demonstrate strong overall resource support, effective institutionalization of ESD requires sustained investment in programs, facilities, and capacity-building initiatives. Gericke et al. (2022) similarly emphasized that resource-enabled environments strengthen long-term planning and institutional foresight in education systems. Nevertheless, the relatively lower ratings in budget allocation and incentive mechanisms indicate areas needing improvement, particularly in ensuring equitable resource distribution and strengthening motivational structures for sustainability-driven initiatives. Addressing these gaps may further enhance the consistency and depth of ESD integration in school governance.

Table 8. Institutional Capacity in School Governance in terms of Degree of Awareness and Competence

	Indicators	M	SD	Verbal Description
1.	Instructional leaders clearly understand the principles and importance of Education for Sustainable Development (ESD).	4.36	0.67	Very High Extent
2.	Teachers are regularly oriented and updated on sustainability concepts and practices.	4.35	0.75	Very High Extent
3.	Staff members demonstrate competence in integrating ESD into school programs and classroom instruction.	4.28	0.74	Very High Extent
4.	Capacity-building activities and training sessions strengthen Futures Thinking and sustainability competencies.	4.33	0.73	Very High Extent
5.	Instructional leaders actively participate in workshops and seminars on foresight and systems thinking.	4.38	0.73	Very High Extent
6.	Competency standards and assessments include sustainability-related knowledge and skills.	4.39	0.68	Very High Extent
	Mean	4.35	0.61	Very High Extent

Table 8 presents the institutional capacity of instructional leaders in terms of awareness and competence in Education for Sustainable Development (ESD) and Futures Thinking. The mean score of 4.35 (SD = 0.61), interpreted as very high, indicates that instructional leaders possess strong knowledge and skills in integrating sustainability and future-oriented practices into school governance. This result underscores that competence is a critical foundation for effective ESD integration in governance systems. It implies that when leaders demonstrate high levels of awareness and capability, sustainability practices are more consistently embedded in institutional processes. This supports Zainal Abidin et al. (2023), who noted that insufficient understanding of ESD weakens implementation fidelity and limits the effectiveness of sustainability initiatives. Further, Balonier and Huber (2025) emphasized that leadership competence is essential for coherent governance and successful ESD implementation, while Kioupi and Voulvoulis (2022) highlighted its role in enabling localized and participatory approaches to sustainability. In the present study, indicators such as leaders' understanding of ESD principles, continuous teacher orientation, and staff engagement in capacity-building activities reflect strong institutional efforts in strengthening knowledge-sharing and professional development systems. Overall, the findings suggest that ESD is not only understood but also actively operationalized across school levels through coordinated leadership and staff participation. The consistently high ratings affirm that awareness and competence function as key drivers of institutional sustainability, consistent with Gorski et al. (2023) and Suhendar et al. (2025), who emphasized the importance of leadership competence in advancing future-ready education systems.

Table 9. Extent of Institutional Capacity in School Governance

Dimensions	Mean	SD	Verbal Description
Structural Policy	4.38	0.55	Very High Extent
Adequacy of Resource and Support	4.21	0.68	Very High Extent
Degree of Awareness and Competence	4.35	0.61	Very High Extent
Overall Mean	4.31	0.55	Very High Extent

Table 9 presents the institutional capacity of instructional leaders across structural policy, adequacy of resources and support, and awareness and competence, with a composite mean of 4.31 (SD = 0.55), interpreted as very high. This indicates that institutional capacity is consistently embedded in school governance practices. Among the dimensions, structural policy obtained the highest mean, while adequacy of resources and support, though still very high, registered the lowest rating with slightly higher variability. This pattern suggests that while schools have well-established governance frameworks and strong leadership competence, resource constraints remain a relative challenge in sustaining full implementation of institutional goals. The findings imply that coherent policies and high leadership competence serve as core drivers of institutional capacity, enabling the integration of sustainability and Futures Thinking in school governance. This aligns with the Philippine Professional Standards for School Heads (DepEd, 2020), which emphasize policy-driven and competency-based leadership in strengthening school systems. Similarly, Laguda et al. (2025), Gericke et al. (2022), and UNESCO (2023, 2025) highlight leadership competence as essential for translating sustainability policies into practice. However, the comparatively lower rating in resource adequacy reflects persistent gaps in infrastructure, materials, and institutional support, consistent with EDCOM II (2025). This indicates uneven resource distribution that may limit the full operationalization of ESD initiatives. Rhodes (2020) underscores that policy coherence must be matched with implementation capacity, while Bass (2021) notes that transformational leadership can partially address resource limitations through strategic resource mobilization. In general, the results suggest that institutional capacity is strongest when anchored on policy coherence and leadership competence, while sustainability of implementation depends on addressing resource constraints. This supports Suhendar et al. (2025) and Page (2024), who emphasize institutional capacity as a key enabler of adaptive and foresight-oriented governance.

Research Question 3: To what extent is Education for Sustainable Development (ESD) integrated into the strategic pillars of education in the Implementing Units (IUs) in Region XII, particularly in terms of: access, quality, equity, resiliency and well-being, and governance?

Table 10. Education for Sustainable Development (ESD) Integration in Strategic Pillars of Education in terms of Access

Indicators	M	SD	Verbal Description
1. The school promotes education and lifelong learning opportunities as key drivers of sustainable development.	4.55	0.60	Highly Integrated
2. Stakeholders (teachers, learners, community) actively participate in ESD-oriented programs.	4.41	0.68	Highly Integrated
3. School programs and policies ensure inclusive access to quality education for all learners.	4.51	0.62	Highly Integrated
4. Learners are empowered to take active roles in promoting sustainability within the school and community.	4.47	0.66	Highly Integrated
5. The school explores partnerships and funding opportunities (e.g., LGUs, NGOs, grants) to support ESD initiatives.	4.45	0.64	Highly Integrated
6. ESD and sustainability concepts are integrated into co-curricular and extracurricular activities.	4.46	0.61	Highly Integrated
7. Programs are in place to support learners with disabilities and special needs	4.39	0.67	Highly Integrated
Mean	4.45	0.64	Highly Integrated

Table 10 displays the integration of Education for Sustainable Development (ESD) into the strategic pillar of access, with a mean of 4.45 (SD = 0.64) interpreted as Highly Integrated. This result indicates that ESD practices are consistently and fully integrated across the five pillars of education, particularly in

ensuring inclusive access, stakeholder participation, and learner empowerment. Statistically, the high mean values across all indicators reflect a strong institutional commitment to embedding sustainability in access-related governance. At the same time, the relatively low standard deviation suggests uniformity in practices across schools. Inclusive access to quality education and learner empowerment in promoting sustainability also scored highly, reflecting schools' commitment to equity and participatory governance. These findings resonate with Leicht (2018), who argued that ESD is not only about imparting knowledge but also about driving social transformation by empowering learners to act responsibly toward sustainability. The statistical implication is that schools are effectively embedding equity and empowerment into their governance structures, ensuring that all learners, including those with disabilities and special needs, are included in sustainability initiatives. Stakeholder participation and partnerships with external organizations highlight the importance of collaborative governance in sustaining ESD programs. This aligns with Suhendar et al. (2025), who found that schools with strong community and stakeholder engagement were more successful in cultivating futures-thinking competencies. The integration of sustainability concepts into co-curricular and extracurricular activities, despite the unusually high variability, indicates that while most schools embed ESD into holistic learning experiences, some institutions may differ in the extent of implementation, pointing to opportunities for further standardization. All things considered, the statistical implications of Table 12 are that schools demonstrate strong and consistent integration of ESD within the pillar of access, ensuring inclusivity, equity, and empowerment. The mean indicates that sustainability practices are not only present but also systematically embedded in governance, while the slight variability in certain indicators suggests areas for further harmonization. These findings strengthen the argument that ESD integration enhances institutional foresight and resilience, supporting Gericke et al. (2022), who demonstrated that ESD fosters long-term planning and scenario analysis in schools.

Table 11. Education for Sustainable Development (ESD) Integration in Strategic Pillars of Education in terms of Quality

	Indicators	M	SD	Verbal Description
1.	Teachers systematically integrate ESD concepts into lesson plans and instruction.	4.32	0.68	Highly Integrated
2.	Continuous professional learning is encouraged to enhance teacher competence in sustainability.	4.46	0.64	Highly Integrated
3.	Skills development programs support lifelong learning and future-readiness.	4.44	0.67	Highly Integrated
4.	The school integrates sustainable infrastructure and innovation within teaching and learning environments.	4.36	0.70	Highly Integrated
5.	Partnerships with industries and communities foster sustainable practices in education.	4.35	0.70	Highly Integrated
	Mean	4.39	0.57	Highly Integrated

Table 11 presents the integration of Education for Sustainable Development (ESD) into the strategic pillar of quality, with a mean of 4.39 (SD = 0.57), interpreted as highly integrated. This indicates that ESD practices are consistently embedded in teaching, professional development, infrastructure, and partnerships, contributing to strengthened educational quality. The low standard deviation further suggests a relatively uniform implementation across schools, reflecting a coherent and systematic approach to sustainability integration. The highest-rated indicator, continuous professional learning for teacher competence in sustainability, underscores the central role of sustained capacity-building in enhancing instructional quality. This supports Gericke et al. (2022) and UNESCO (2023), who emphasized that teacher development is critical for embedding sustainability in pedagogy and strengthening future-oriented competencies. Likewise, indicators on curriculum integration, future-readiness skills, sustainable infrastructure, and partnerships with industries and communities reflect strong institutional commitment to transformative education, consistent with Gorski et al. (2023) and Leicht (2018), who highlighted ESD's role in fostering systems thinking, innovation, and community engagement. Despite these strengths, existing literature points to persistent implementation challenges. Laurie et al. (2016), Xu and Huang (2024), and Hung and Pan (2025) reported issues in teacher preparedness, curriculum alignment, and institutional support in various contexts. This contrast suggests that while the current findings reflect strong and consistent integration, sustaining and scaling ESD implementation remains a broader systemic challenge that requires continued investment in capacity-building and institutional support.

Table 12. Education for Sustainable Development (ESD) Integration in Strategic Pillars of Education in terms of Equity

Indicators	M	SD	Verbal Description
1. The school recognizes and addresses disparities in access and participation across genders and communities.	4.35	0.68	Highly Integrated
2. Gender equality and inclusivity are actively promoted in all learning environments.	4.47	0.61	Highly Integrated
3. Policies ensure equitable, safe, and inclusive education opportunities.	4.48	0.61	Highly Integrated
4. Infrastructure development is guided by principles of equity and sustainability.	4.35	0.69	Highly Integrated
5. Contingency and resilience planning ensure inclusive participation in all school programs.	4.40	0.65	Highly Integrated
6. Equity-related data and indicators are monitored and reported regularly.	4.37	0.66	Highly Integrated
Mean	4.40	0.54	Highly Integrated

Table 12 summarizes the integration of Education for Sustainable Development (ESD) into the strategic pillar of equity, with an overall mean of 4.40 (SD = 0.54), interpreted as highly integrated. This indicates that equity-oriented practices are consistently embedded in school governance and instructional processes, reflecting strong institutional commitment to inclusive and fair educational opportunities. The findings emphasize that equity in ESD goes beyond access, requiring targeted support, affirmative action, and context-responsive interventions for marginalized learners, as highlighted by Bayudan-Dacuyucuy et al. (2024). This aligns with UNESCO (2023), which underscores equitable access as a core principle of sustainable education, and Leicht (2018), who emphasized equity as a driver of social transformation through inclusive learning systems. The highest-rated indicator ensuring safe, equitable, and inclusive learning environments—reflects strong institutional prioritization of fairness and learner protection. Supporting indicators on gender equality, inclusivity, contingency planning, and equity monitoring further demonstrate proactive governance and accountability mechanisms. These findings are consistent with Gericke et al. (2022), who noted that ESD strengthens inclusivity and foresight, and Gorski et al. (2023), who emphasized that sustainable systems enhance both equity and educational quality. As a whole, the results indicate strong equity integration in ESD implementation; however, sustaining and scaling these practices requires continued strengthening of policy coherence, resource allocation, and system-wide implementation to ensure long-term impact across diverse educational contexts.

Table 13. Education for Sustainable Development (ESD) Integration in Strategic Pillars of Education in terms of Resiliency and Well-being

Indicators	M	SD	Verbal Description
1. The school incorporates resilience principles into infrastructure and community planning.	4.45	0.64	Highly Integrated
2. Stakeholders are encouraged to adopt resilient and sustainable approaches in their activities.	4.43	0.65	Highly Integrated
3. Resource management practices are adaptable to environmental and contextual changes.	4.40	0.66	Highly Integrated
4. Green and resilient infrastructure supports disaster risk reduction.	4.39	0.64	Highly Integrated
5. Regular safety and emergency drills strengthen preparedness.	4.50	0.61	Highly Integrated
6. Emotional and social resilience are fostered through values education.	4.47	0.60	Highly Integrated
7. The schools incorporated resilience principle (e.g., redundancy, flexibility, adaptability into infrastructure (e.g., building design, water management system and community planning (e.g., emergency response plans and community gardens).	4.41	0.69	Highly Integrated
8. Emotional and social resilience are fostered through values education (e.g., empathy, self-awareness, conflict resolution) and activities (e.g., peer support programs, mindfulness exercise and community service projects).	4.44	0.65	Highly Integrated
Mean	4.44	0.51	Highly Integrated

Table 13 illustrates the integration of Education for Sustainable Development (ESD) into the strategic pillar of resiliency and well-being, with an overall mean of 4.44 ($SD = 0.51$), interpreted as highly integrated. This indicates that resiliency and well-being principles are consistently embedded in school governance and instructional systems, with relatively low variability suggesting uniform implementation across schools. This finding aligns with Casugbo (2024), who emphasized that resilient school leaders sustain instructional quality and institutional performance despite external pressures, underscoring resilience as a key determinant of effective governance. Similarly, UNESCO (2023) highlighted that preparedness and resilience are essential components of sustainable education systems, while Page (2024) stressed that foresight strengthens institutional capacity to anticipate and respond to crises. The highest-rated indicator—regular conduct of safety and emergency drills—reflects strong institutional emphasis on disaster preparedness. Related indicators on emotional and social resilience, values education, and stakeholder engagement demonstrate a holistic approach to well-being. These findings are consistent with Gericke et al. (2022), who noted that ESD enhances inclusive and values-driven education, and Gorski et al. (2023), who emphasized that sustainable infrastructure supports resilience and safe learning environments. Likewise, the integration of psychosocial support initiatives, such as peer programs and mindfulness activities, aligns with Leicht (2018), who underscored ESD's role in strengthening both individual and community resilience. However, despite these positive results, international studies highlight persistent implementation gaps. Laurie et al. (2016), Xu and Huang (2024), and Hung and Pan (2025) report uneven integration of resilience-focused ESD due to resource limitations, fragmented policies, and weak psychosocial support systems. These findings suggest that while participating schools demonstrate strong integration, sustaining and scaling resilience and well-being practices require continued investment in resources, coherent policy frameworks, and strengthened institutional support systems.

Table 14. Education for Sustainable Development (ESD) Integration in Strategic Pillars of Education in terms of Governance

	Indicators	M	SD	Verbal Description
1.	ESD principles are embedded in the school's governance and leadership practices.	4.39	0.65	Highly Integrated
2.	Policies and programs that promote ESD are implemented and monitored effectively.	4.36	0.67	Highly Integrated
3.	Governance processes uphold inclusivity, equity, and transparency.	4.38	0.68	Highly Integrated
4.	School leaders address local and global sustainability challenges in decision-making.	4.38	0.67	Highly Integrated
5.	Partnerships with government and community stakeholders strengthen ESD implementation.	4.40	0.63	Highly Integrated
6.	Digital infrastructure and innovative governance tools support sustainability goals.	4.42	0.63	Highly Integrated
	Mean	4.39	0.66	Highly Integrated

Table 14 presents the integration of Education for Sustainable Development (ESD) into governance, with a mean of 4.39 ($SD = 0.66$), interpreted as highly integrated. This indicates that governance practices are systematically aligned with ESD principles, with sustainability consistently embedded in leadership, policy formulation, and decision-making processes. The highest-rated indicator—the use of digital infrastructure and innovative governance tools, highlights the growing role of technology in strengthening sustainable governance practices. This supports Teves (2023), who emphasized that digital innovation enhances institutional effectiveness and responsiveness in educational governance. Similarly, Duran and Mariñas (2023) found that institutional and technological support strengthens educators' commitment to integrating sustainability into school systems. The findings further imply that participating in schools have developed governance structures that support sustainability-oriented leadership and decision-making. Strong integration across governance indicators reflects institutional efforts to align policies, programs, and management practices with long-term sustainability goals. However, existing literature points to continuing implementation challenges in broader educational contexts. Laurie et al. (2016) reported inconsistencies in governance practices, particularly in monitoring and accountability systems. These contrasting findings indicate that while participating schools demonstrate strong governance integration, sustaining and scaling governance-focused ESD practices require continuous policy alignment, effective monitoring mechanisms, and strengthened institutional coherence across educational systems.

Table 15. Extent of Education for Sustainable Development (ESD) Integration in the Strategic Pillars of Education in Region XII

Indicators	M	SD	Verbal Description
Access	4.46	0.60	Highly Integrated
Quality	4.39	0.57	Highly Integrated
Equity	4.40	0.54	Highly Integrated
Resiliency and Well-being	4.44	0.51	Highly Integrated
Governance	4.39	0.66	Highly Integrated
Overall Mean	4.42	0.58	Highly Integrated

Table 15 shows the extent of Education for Sustainable Development (ESD) integration across the five strategic pillars: access, quality, equity, resiliency and well-being, and governance. The overall mean of 4.42 (SD = 0.58), interpreted as highly integrated, indicates that ESD practices are consistently embedded within school systems, reflecting strong institutional commitment to sustainability. The findings demonstrate a high level of alignment between governance structures, instructional practices, and sustainability goals. The strong integration across all pillars indicates that schools are effectively embedding sustainability principles into policies, programs, and operational practices, thereby enhancing the quality, inclusivity, and responsiveness of education. The results further imply that participating in schools are developing institutional conditions supportive of future-ready learning environments. Through sustained integration of ESD, schools are better positioned to equip learners with the knowledge, skills, and values necessary to address emerging social, environmental, and educational challenges. At the same time, maintaining this level of integration requires continuous monitoring, innovation, and professional development to ensure that sustainability practices remain adaptive and responsive to changing societal demands. These findings align with UNESCO (2023, 2025), which emphasizes that effective ESD implementation requires a whole-school approach encompassing access, quality, equity, resiliency, and governance. Similarly, Department of Education sustainability frameworks promote systematic integration of ESD across educational systems. Suhendar et al. (2025) further noted that strong ESD integration enhances organizational coherence, innovation, and institutional resilience, while Miller (2021) emphasized that sustainability-oriented education strengthens futures thinking and institutional adaptability in complex and evolving environments.

Research Question 4: To what extent do the futures thinking capacities of instructional leaders in the Implementing Units (IUs) significantly influence the ESD integration in strategic pillars of education?

Table 16. Multiple Linear Regression Analysis on the Influence of Futures Thinking Capacities of Instructional leaders on ESD Integration in the Strategic Pillars of Education

Predictors	Estimate	SE	95% Confidence Interval		t	p
			Lower	Upper		
Intercept	2.007	0.1616	1.690	2.324	12.422	< .001
Trend Analysis	0.0146	0.0454	-0.075	0.104	0.321	0.748
Foresight	0.0908	0.0481	-0.004	0.185	1.887	0.060
Systems Thinking	0.119	0.0482	0.024	0.214	2.467	0.014
Backcasting	0.3368	0.0467	0.245	0.429	7.208	< .001

Notes: $R^2 = .39$, $Adj R^2 = .386$, $F(4, 462) = 103.00$, $p < .001$

The multiple linear regression analysis revealed that Futures Thinking capacities significantly predict the integration of Education for Sustainable Development (ESD) across the strategic pillars of education, $F(4, 462) = 103.00$, $p < .001$, with an adjusted $R^2 = .386$. This indicates that 38.6% of the variance in ESD integration is explained by the combined influence of trend analysis, foresight, systems thinking, and backcasting. Hence, the null hypothesis stating that Futures Thinking capacities do not significantly influence ESD integration is rejected. The model demonstrates that Futures Thinking functions as a

meaningful governance capability in advancing sustainability-oriented educational practices. Among the predictors, backcasting emerged as the strongest contributor ($B = 0.3368$, $SE = 0.0467$, $t = 7.208$, $p < .001$, 95% CI [0.245, 0.429]). This highlights the importance of leadership approaches that connect long-term sustainability goals with present strategic actions. Leaders who can define preferred future conditions and align current governance practices toward those outcomes appear more capable of institutionalizing ESD within school systems. The finding aligns with established literature on backcasting as a transformative planning approach that operationalizes desired future outcomes by working backward to identify strategic present actions (Ziegler & Porto de Oliveira, 2022). Systems thinking also significantly predicted ESD integration ($B = 0.119$, $SE = 0.0482$, $t = 2.467$, $p = .014$, 95% CI [0.024, 0.214]). This underscores the value of holistic leadership perspectives in addressing interconnected educational challenges. School leaders who recognize the relationships among governance, instruction, resources, and sustainability outcomes are more likely to implement integrated and adaptive ESD practices. The result supports Churches and McAleavy (2022) and Levenchuk (2023), who emphasized systems thinking as essential for sustainability-oriented governance and informed decision-making in complex educational environments. In contrast, trend analysis ($B = 0.0146$, $p = .748$, 95% CI [-0.075, 0.104]) and foresight ($B = 0.0908$, $p = .060$, 95% CI [-0.004, 0.185]) did not significantly predict ESD integration. Although these dimensions contribute to anticipatory leadership, their limited direct influence indicates that awareness of trends and future possibilities alone may not be sufficient to translate sustainability goals into institutional practice. This distinction highlights the difference between predictive awareness and implementation capacity. In practical terms, school governance appears to benefit more from competencies that guide strategic action and systems integration than from future-oriented analysis alone. Collectively, the findings indicate that Futures Thinking contributes to ESD integration when it is applied through action-oriented and systems-based leadership practices. For public secondary schools in Region XII, this emphasizes the importance of strengthening backcasting and systems thinking through leadership development initiatives, professional learning programs, and governance planning mechanisms. The results align with Suhendar (2025), who emphasized the role of Futures Thinking competencies in addressing sustainability challenges, and with Balonier and Huber (2025), who highlighted strategic and systems-oriented leadership as central to translating sustainability goals into concrete educational practices.

Research Question 5: Does the institutional capacity of the Implementing Units (IUs) significantly influence ESD integration within the strategic pillars of education?

Table 17. Multiple Linear Regression Analysis on the Influence of Institutional Capacity of Implementing Units on ESD Integration in the Strategic Pillars of Education

Predictors	Estimate	SE	95% Confidence Interval		t	p
			Lower	Upper		
Intercept	1.264	0.1002	1.068	1.461	12.62	< .001
Structural Policy	0.238	0.0309	0.177	0.298	7.69	< .001
Adequacy of Resources and Support	0.14	0.0267	0.088	0.193	5.26	< .001
Degree of Awareness and Competence	0.349	0.0318	0.287	0.412	10.96	< .001

Notes: $R^2 = .625$, $Adj R^2 = .624$, $F(3,643) = 358.00$, $p < .001$

Table 17 presents the regression analysis examining the influence of institutional capacity on the integration of Education for Sustainable Development (ESD) across the strategic pillars of education. The regression model was statistically significant, $F(3,643) = 358.00$, $p < .001$, with an adjusted $R^2 = 0.624$, indicating that institutional capacity variables explained 62.4% of the variance in ESD integration. This substantial explanatory power highlights institutional capacity as a major factor in strengthening sustainability-oriented governance in schools. The rejection of the null hypothesis confirms that structural policy, adequacy of resources and support, and degree of awareness and competence significantly contribute to ESD integration. Among the predictors, degree of awareness and competence emerged as the strongest contributor ($B = 0.349$, $p < .001$), emphasizing the central role of leadership knowledge and professional capability in sustaining ESD practices. The result reinforces the argument of Gericke et al. (2022) and UNESCO (2023) that sustainability initiatives become more effective when instructional leaders and teachers possess strong competence in futures thinking and sustainability-oriented governance. High levels of awareness enable leaders to translate sustainability principles into concrete policies, instructional practices,

and institutional programs. Structural policy also significantly predicted ESD integration ($B = 0.238$, $p < .001$), indicating that coherent governance frameworks and aligned institutional policies strengthen the institutionalization of sustainability practices. This supports Rhodes (2020), who emphasized that policy coherence enhances governance effectiveness, particularly in complex educational systems. The finding further reflects the Philippine Professional Standards for School Heads (DepEd, 2020), which advocate anticipatory leadership and strategic policy alignment in school governance. Adequacy of resources and support, although the weakest predictor, remained statistically significant ($B = 0.140$, $p < .001$). This indicates that funding, instructional materials, infrastructure, and institutional support systems continue to facilitate ESD implementation, although resources alone do not guarantee sustainability integration. The comparatively lower coefficient implies that institutional effectiveness depends more heavily on leadership competence and policy coherence than on material support alone. Bass (2021) similarly argued that transformational leadership can compensate for limited resources through innovation, collaboration, and strategic mobilization of support systems. Taken together, the findings affirm that ESD integration is strengthened when schools combine competent leadership, coherent governance structures, and supportive institutional systems. The results align with Suhendar et al. (2025) and Page (2024), who emphasized that institutional capacity enhances adaptive governance and organizational resilience. Nevertheless, persistent systemic constraints remain evident. Laurie et al. (2016) observed that ESD implementation often becomes inconsistent despite existing policy frameworks, while EDCOM II (2025) reported continuing shortages in teachers, classrooms, and learning resources in Philippine schools. These challenges indicate that sustaining ESD integration requires not only strong institutional capacity but also long-term investments in educational systems and equitable resource distribution.

Ethical Considerations

This study was conducted in accordance with the fundamental ethical principles of respect, justice, and integrity. Ethical clearance was obtained from the appropriate institutional ethics review board prior to data collection, ensuring full compliance with established research ethics protocols. Informed consent was secured from all participants after they were fully informed of the study's purpose, procedures, potential risks, and benefits. Participation was entirely voluntary, and respondents were free to withdraw from the study at any time without penalty or adverse consequences. The study strictly adhered to the provisions of the Republic Act No. 10173, otherwise known as the Data Privacy Act of 2012, and its latest Implementing Rules and Regulations (IRR), including relevant issuances of the National Privacy Commission (NPC). Accordingly, the confidentiality and privacy of participants were safeguarded through anonymization of data, secure storage systems, and restricted access limited only to authorized personnel. A risk–benefit assessment was conducted to ensure that potential risks were minimized and outweighed by the anticipated benefits of the study. Participant selection followed the principle of justice, ensuring fair, equitable, and non-discriminatory inclusion of respondents. The study further upheld scientific integrity by ensuring accuracy, honesty, and transparency in all phases of the research process, including data collection, analysis, and reporting, while strictly prohibiting fabrication, falsification, and plagiarism. Additional safeguards were implemented for vulnerable populations to ensure their rights, dignity, and welfare were fully protected throughout the study.

Conclusion

Instructional leaders in DepEd Region XII demonstrate a very high level of Futures Thinking capacities and institutional capacity, supporting strong integration of Education for Sustainable Development (ESD) in school governance. Institutional capacity is likewise very high in terms of structural policy, awareness and competence, and resource adequacy. ESD is very highly integrated across the five strategic pillars: access, quality, equity, resiliency and well-being, and governance. Findings further show that Futures Thinking capacities and institutional capacity significantly influence ESD integration, although variations exist across specific dimensions. These results indicate a generally strong capacity for ESD implementation within the identified schools in Region XII. However, the findings should be interpreted within the contextual boundaries of the study, which is limited to selected public schools in Region XII and relies on self-reported data from instructional leaders. These limitations suggest that the results may not be fully generalizable to other regions or educational contexts without caution. Overall, while the schools demonstrate strong readiness for ESD integration, continuous enhancement in strategic planning, resource optimization, and futures-oriented practices is still necessary to sustain and further strengthen implementation.

Recommendations

Instructional leaders are encouraged to participate in structured capacity-building programs on strategic planning, forecasting, and backcasting, with outputs such as school-based futures action plans

aligned with Education for Sustainable Development (ESD) targets. At the school level, concrete implementation of these competencies should be institutionalized through planning workshops and coaching sessions that translate foresight tools into operational decision-making. Schools should strengthen resource allocation systems by prioritizing investments in ICT infrastructure, digital learning tools, and ESD-related instructional materials. This should be supported by a structured budgeting mechanism that explicitly allocates funds for sustainability initiatives and continuous professional development of personnel. To ensure consistency in implementation, standardized ESD monitoring and evaluation tools should be adopted, including equity-focused indicators, sustainability performance measures, and tracking systems for co-curricular and extracurricular programs. Regular quarterly reviews and feedback mechanisms should be established to monitor progress and ensure accountability. At the governance level, DepEd divisions and school leaders are encouraged to institutionalize systems thinking and participatory foresight through structured collaborative planning sessions. These should emphasize strengthening trend analysis, data interpretation, and evidence-based planning to improve strategic responsiveness in school governance. Evidence-based decision-making should be reinforced through the use of data-driven planning outputs and stakeholder consultations during school improvement planning processes to ensure inclusive and context-responsive governance. Finally, future research may extend the scope of this study by including students, parents, and community stakeholders, and by employing participatory and mixed-method foresight approaches to deepen understanding of Futures Thinking and ESD integration in diverse educational contexts.

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