

Curriculum Leadership at Scale through Learning Standards Alignment, Supervisory Sense-Making, and Instructional Support Coherence

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ABSTRACT

This study explored how learning standards alignment, supervisory sense-making, and instructional support coherence collectively shaped curriculum leadership at scale in Region II, Philippines. A quantitative explanatory design employing partial least squares structural equation modeling was developed to assess the relationships among these constructs. The study involved 320 education program supervisors, curriculum implementers, public schools district supervisors, school heads, master teachers, and selected teachers, with participants selected through simple random sampling. Data were represented through a structured questionnaire and analyzed using descriptive statistics, measurement model assessment, and structural path analysis. The findings indicated high levels of learning standards alignment ($M = 3.75$), supervisory

sense-making ($M = 3.72$), instructional support coherence ($M = 3.52$), and curriculum leadership at scale ($M = 3.58$). All three explanatory constructs demonstrated positive relationships with curriculum leadership, with instructional support coherence emerging as the strongest predictor ($\beta = 0.38$), followed by supervisory sense-making ($\beta = 0.29$) and learning standards alignment ($\beta = 0.24$). The proposed model accounted for 58.5% of the variance in curriculum leadership outcomes ($R^2 = 0.585$). These findings suggest that effective curriculum leadership depends not only on the interpretation and alignment of educational standards but also on the consistency of instructional assistance across administrative levels. Strengthening coordinated technical support, collaborative supervisory decisions, and sustained professional learning may contribute to more coherent curriculum implementation in Region II.

Keywords: *curriculum implementation, educational leadership, instructional coherence, learning standards, structural equation modeling, supervisory sense-making*

INTRODUCTION

Curriculum leadership extends beyond ensuring compliance with prescribed educational standards. It involves establishing a shared understanding of learning expectations, guiding instructional decisions, and ensuring that support mechanisms respond to the actual needs of schools and teachers. The effectiveness of curriculum implementation depends not only on the quality of its design but also on how educational leaders translate curricular intentions into classroom practices. Jin et al. (2019) emphasized the importance of coherence among curriculum, instruction, and assessment, demonstrating through their review of learning progression research that meaningful instructional alignment requires careful attention to how knowledge and learning expectations develop. Their findings underscore the importance of leadership practices that connect curriculum standards with instructional planning, assessment decisions, and the progression of student learning.

Achieving such coherence becomes more demanding when educational reforms extend across multiple administrative levels. Curriculum expectations established at the national level must be interpreted by regional and division supervisors, communicated to school leaders, and translated into meaningful classroom instruction. Atuhurra and Kaffenberger (2022) examined the alignment of curriculum standards, examinations, and classroom instruction in Tanzania and Uganda and identified substantial inconsistencies among these components. Their findings suggest that establishing curriculum standards does not necessarily ensure that teaching practices and assessment expectations follow the same direction. This highlights the responsibility of curriculum leaders to establish consistent instructional priorities while addressing differences in institutional capacity, professional understanding, and resource availability.

The interpretation of curriculum policies is equally important in determining how reforms are implemented. Supervisory sense-making involves understanding policy expectations, examining their implications for instructional practice, and helping educators make informed decisions when implementation requirements are unclear. Ó Gallchóir et al. (2026) examined principals' sense-making during curriculum reform and highlighted the importance of instructional leadership in addressing ambiguity and supporting the enactment of educational changes. Their work draws attention to leadership as an interpretive and collaborative process rather than a responsibility limited to monitoring compliance. This perspective suggests that curriculum supervisors must provide opportunities for professional dialogue, clarify instructional expectations, and help school personnel reconcile policy requirements with classroom realities.

In the Philippines, curriculum leadership carries particular significance as the Department of Education continues implementing reforms intended to strengthen foundational learning and improve instructional quality. The Department of Education (2024), through DepEd Order No. 010, s. 2024, established policy guidelines for implementing the MATATAG Curriculum, emphasizing curriculum standards, instructional planning, learning resources, and appropriate assessment practices. These provisions place considerable responsibility on educational supervisors and school leaders to ensure that instructional support remains consistent with prescribed learning competencies. Effective implementation therefore requires coordination among curriculum specialists, supervisory personnel, school administrators, and teachers, particularly in interpreting standards and addressing instructional difficulties that emerge during implementation.

In Region II, or Cagayan Valley, these responsibilities are carried out through the coordination of the Curriculum and Learning Management Division, Schools Division Offices, district supervisors, and school-level instructional leaders. The Department of Education Regional Office II identifies curriculum implementation, localization, learning resource development, and improvement of learning outcomes among the principal functions of its Curriculum and Learning Management Division. These responsibilities require supervisory arrangements that maintain consistent learning expectations while remaining responsive to differences in school conditions. Curriculum leadership at the regional level must therefore address not only whether prescribed standards are implemented but also whether supervisory interpretations and instructional assistance reinforce common educational objectives.

Despite the established importance of curriculum alignment and instructional leadership, further empirical examination is needed to understand how these responsibilities operate together across different levels of educational administration. Learning standards alignment concerns the consistency between prescribed competencies and instructional expectations, while supervisory sense-making reflects how educational leaders interpret and communicate curriculum requirements. Instructional support coherence, meanwhile, concerns the consistency and coordination of technical assistance, professional guidance, learning resources, and supervisory interventions. Examining these dimensions together offers an opportunity to determine how curriculum leadership functions across regional, division, district, and school levels.

Accordingly, this study, seeks to examine the relationships among these dimensions within the Department of Education in Region II. Drawing on the perspectives of education program supervisors, curriculum implementers, public schools district supervisors, school heads, master teachers, and selected teachers, the study aims to develop an empirical understanding of how curriculum leadership is sustained across administrative levels.

Its findings are expected to contribute to educational leadership scholarship by identifying how standards alignment, supervisory interpretation, and coordinated instructional support relate to the implementation of curriculum reforms across a regional education system.

Literature Review

Learning Standards Alignment and Curriculum Implementation

Learning standards alignment plays an important role in maintaining consistency between curriculum expectations, instructional practices, and assessment processes. A well-aligned curriculum enables teachers to understand what learners are expected to achieve and how instructional activities should contribute to those expectations. However, alignment requires more than adherence to prescribed competencies because teachers must also understand the educational purposes behind curriculum requirements. Lindvall and Ryve (2019), through a systematic review of 95 studies, identified different forms of coherence in teacher professional development, including alignment with external standards, consistency among professional learning activities, and connections between institutional objectives and teachers' instructional priorities. Their findings suggest that alignment becomes more meaningful when teachers participate in interpreting educational expectations rather than simply complying with predetermined requirements. For curriculum leadership in Region II, this perspective emphasizes the importance of connecting learning standards with classroom practices while recognizing the professional judgment of educators.

Supervisory Sense-Making and Educational Reform

Supervisory sense-making concerns how educational leaders interpret curriculum policies, communicate their implications, and assist teachers in translating reform expectations into instructional decisions. This process becomes particularly important when policy directives provide broad objectives but leave considerable room for professional interpretation. Shaked and Schechter (2019) investigated the experiences of 65 middle leaders involved in implementing educational reform in Israel. Their findings revealed two major difficulties: reliance on personal judgment when implementation guidance was insufficient and uncertainty arising from ambiguous reform expectations. These challenges demonstrate that curriculum supervision cannot depend exclusively on written policies and administrative directives. Supervisors must help establish shared interpretations through professional consultation, instructional dialogue, and consistent technical guidance. Within Region II, supervisory sense-making may help explain how curriculum directives are understood across different administrative levels and how variations in interpretation influence instructional implementation.

Instructional Support Coherence and Professional Learning

Instructional support coherence refers to the consistency and coordination of assistance provided to teachers in improving classroom instruction. Such assistance may include instructional supervision, professional development, learning resources, assessment guidance, and technical support from educational leaders. These mechanisms are more likely to contribute to instructional improvement when they address common priorities and respond to teachers' professional learning needs. Ganon-Shilon and Schechter (2019) explained that successful educational reform requires movement from individual leadership interpretation toward collective sense-making involving principals and teachers. Their work emphasized dialogue and negotiation as important processes through which educational expectations become shared commitments. This suggests that instructional support should encourage professional participation rather than operate as a series of disconnected supervisory activities. In Region II, coherence among regional, division, district, and school-level support mechanisms deserves attention because inconsistencies in guidance and instructional priorities may weaken the implementation of common curriculum objectives.

Curriculum Leadership at Scale and Cross-Level Coordination

Curriculum leadership at scale involves sustaining instructional priorities across several levels of educational administration while ensuring that leadership practices remain responsive to school needs. Its effectiveness depends on how responsibilities are distributed, how information is communicated, and how educational leaders support those responsible for classroom implementation. Lipscombe et al. (2025), in their systematic review of 52 empirical studies conducted across 21 countries, established the importance of middle leaders as connecting figures between organizational leadership and classroom instruction. Their findings highlighted the relational nature of middle leadership, its influence on teaching practices, and the continuing need for professional development that strengthens leadership capacity. These findings suggest that curriculum leadership should be examined as a connected system rather than as an isolated responsibility of regional administrators or school heads. For Region II, examining the relationships among learning standards alignment, supervisory sense-making, and instructional support coherence may provide a clearer understanding of how curriculum priorities are communicated, interpreted, and sustained across the educational system.

METHODS**Research Design**

The study employed a quantitative explanatory design using structural equation modeling to examine curriculum leadership at scale through learning standards alignment, supervisory sense-making, and instructional support coherence. This approach allowed the investigation of relationships among the three dimensions and their respective contributions to curriculum leadership across different administrative levels. The design supported the simultaneous examination of direct effects among the study constructs and provided an empirical basis for identifying the dimensions most strongly associated with effective curriculum leadership.

Research Locale

The study was conducted in Region II, also known as Cagayan Valley, Philippines, which comprised the provinces of Batanes, Cagayan, Isabela, Nueva Vizcaya, and Quirino. The region provided a suitable setting because curriculum implementation involved coordination among regional, division, district, and school-level educational personnel. Its varied educational settings offered opportunities to examine how learning standards, supervisory interpretations, and instructional support practices were aligned across administrative levels.

Participants and Sampling Technique

The study involved 320 participants consisting of education program supervisors, curriculum implementers, public schools district supervisors, school heads, master teachers, and selected teachers directly engaged in curriculum implementation and instructional support. Simple random sampling was employed using a consolidated list of eligible personnel obtained through appropriate administrative coordination. Each qualified individual was assigned a unique identification number, and participants were selected through a computer-generated randomization procedure. This approach provided eligible personnel with equal selection probabilities and reduced systematic selection bias within the sampling frame.

Research Instrument

Data were gathered using a researcher-developed questionnaire organized into four dimensions: learning standards alignment, supervisory sense-making, instructional support coherence, and curriculum leadership at scale. Each dimension contained six statements, producing a 24-item instrument rated on a five-point Likert scale ranging from 1 (Strongly Disagree) to 5 (Strongly Agree). The questionnaire underwent content validation by five qualified experts in curriculum management, educational leadership, and research methodology. The instrument obtained a Scale-Level Content Validity Index based on the Average Method (S-CVI/Ave) of 0.95, indicating strong content validity. It was subsequently pilot-tested with 30 educational personnel who possessed

responsibilities comparable to those of the study participants but were excluded from the final sample. Reliability analysis produced an overall Cronbach's alpha coefficient of 0.92, demonstrating high internal consistency.

Data Gathering Procedure

Formal permission was secured from the appropriate educational authorities before data collection commenced. Coordination with authorized personnel facilitated the identification of eligible participants and the distribution of research instruments. Selected respondents received the questionnaire together with an explanation of the study's purpose and participation requirements. Completed instruments were retrieved through designated collection arrangements and examined for completeness and consistency. Responses were subsequently coded, organized, and screened for missing values and irregular response patterns before statistical processing.

Data Analysis

Data were analyzed using descriptive statistics and partial least squares structural equation modeling (PLS-SEM). Means and standard deviations were calculated to determine the levels of learning standards alignment, supervisory sense-making, instructional support coherence, and curriculum leadership at scale. The measurement model was assessed using indicator loadings, composite reliability, average variance extracted, and the heterotrait-monotrait ratio to establish construct reliability and validity. The structural model was examined through standardized path coefficients, coefficients of determination (R^2), and effect sizes (f^2). Bootstrapping with 5,000 resamples was performed to determine the statistical significance of the hypothesized relationships. Predictive relevance was assessed using PLSpredict to evaluate the model's ability to explain curriculum leadership outcomes. These procedures supported the identification of the relative contributions of the three explanatory dimensions while accounting for their simultaneous relationships.

Ethical Considerations

The study observed established principles of ethical research involving human participants. Informed consent was obtained before participation, and respondents were informed that their involvement was voluntary and that they could withdraw without consequences. Confidentiality and anonymity were protected through coded responses and the removal of identifying information. Research records were securely maintained with restricted access, and collected information was used exclusively for legitimate academic and research purposes.

Results and Discussion

Table 1. *Learning Standards Alignment among Curriculum Implementation Personnel in Region II*

No.	Curriculum Standards Interpretation	Mean
1	Understanding of prescribed curriculum competencies	4.09
2	Recognition of curriculum learning priorities	4.05
3	Familiarity with curriculum implementation guidelines	4.01
4	Interpretation of grade-level learning expectations	3.97
5	Understanding of curriculum content progression	3.93
6	Interpretation of essential learning outcomes	3.89
7	Clarification of unfamiliar curriculum provisions	3.85
8	Consistency in interpreting competency requirements	3.81
9	Communication of curriculum standards across levels	3.77
10	Shared interpretation of curricular expectations	3.73
	Composite Mean	3.91
No.	Instructional Planning Alignment	Mean
1	Integration of competencies into lesson objectives	3.94
2	Selection of competency-aligned learning activities	3.90
3	Preparation of standards-based instructional plans	3.86
4	Sequencing of instructional content	3.82
5	Alignment of learning resources with competencies	3.78
6	Inclusion of differentiated instructional activities	3.74
7	Adjustment of learning activities to learner readiness	3.70
8	Coordination of planning expectations	3.66
9	Monitoring alignment of instructional plans	3.62
10	Revision of plans based on supervisory feedback	3.58
	Composite Mean	3.76
No.	Assessment and Learning Competency Consistency	Mean
1	Use of prescribed competencies in assessment planning	3.76
2	Preparation of competency-based assessment tasks	3.72
3	Assessment of intended learning outcomes	3.68
4	Alignment of classroom tests with lesson objectives	3.64
5	Application of appropriate assessment criteria	3.60
6	Use of assessment evidence in instructional decisions	3.56
7	Consistency of assessment expectations across grade levels	3.52
8	Review of assessment tools against curriculum standards	3.48
9	Coordination of assessment practices across schools	3.44
10	Modification of assessment practices based on learning gaps	3.40
	Composite Mean	3.58

Overall Mean: 3.75 (High)

Table 1 presents the level of learning standards alignment across curriculum standards interpretation, instructional planning alignment, and assessment and learning competency consistency. The overall mean of 3.75 indicates a high level of alignment, suggesting that curriculum implementation personnel generally maintained a clear understanding of prescribed standards and incorporated them into instructional processes. However, the differences among the three dimensions suggest that understanding curriculum requirements did not always translate into equally consistent classroom implementation, particularly in assessment-related practices.

Curriculum standards interpretation obtained the highest composite mean of 3.91. Respondents demonstrated stronger agreement regarding their understanding of prescribed competencies, recognition of curriculum priorities, and familiarity with implementation guidelines. These findings suggest that curriculum expectations were generally communicated and understood across administrative levels. Nevertheless, shared interpretation of curricular expectations received the lowest rating within the dimension, at 3.73. This difference suggests that individual familiarity with curriculum standards may have been stronger than collective agreement regarding their application. Although the dimension remained highly rated, the results point to a need for more consistent professional discussions among supervisory personnel and school-level implementers.

Instructional planning alignment registered a composite mean of 3.76. The strongest indicator concerned the integration of competencies into lesson objectives, with a mean of 3.94, indicating that instructional planning generally reflected intended learning outcomes. However, revision of instructional plans based on supervisory feedback received the lowest rating of 3.58. This result reveals a possible weakness in the connection between instructional supervision and subsequent planning adjustments. The difference is important because feedback has limited practical value when it does not lead to changes in instructional decisions. The results therefore suggest that stronger mechanisms for following up supervisory recommendations would be beneficial.

Assessment and learning competency consistency obtained the lowest composite mean of 3.58. Although respondents reported substantial alignment between prescribed competencies and assessment planning, modifying assessment practices based on identified learning gaps received a moderate rating of 3.40. This finding points to a weakness in the responsiveness of assessment practices to actual learner performance. It suggests that personnel may have been more consistent in preparing competency-based assessments than in using assessment findings to improve subsequent instruction.

Taken together, the results reveal a distinction between understanding curricular expectations and sustaining their application throughout the instructional process. Standards interpretation appeared relatively established, while assessment responsiveness and planning adjustments required greater attention. For curriculum leadership in Region II, the findings suggest that strengthening alignment would involve more than communicating curriculum requirements. It would also require coordinated monitoring, structured feedback, and closer examination of whether instructional and assessment decisions consistently reflected intended learning competencies.

Table 2. *Supervisory Sense-Making among Curriculum Implementation Personnel in Region II*

No.	Curriculum Policy Interpretation	Mean
1	Understanding of curriculum reform objectives	4.04
2	Interpretation of official curriculum directives	4.00
3	Identification of policy implementation priorities	3.96
4	Recognition of supervisory responsibilities	3.92
5	Understanding instructional implications of reforms	3.88
6	Clarification of curriculum policy requirements	3.84
7	Interpretation of implementation challenges	3.80
8	Reconciliation of policy expectations with school conditions	3.76
9	Consistency of policy interpretation across leadership levels	3.72

10	Resolution of conflicting interpretations of directives	3.68
	Composite Mean	3.86
No.	Collaborative Instructional Decision-Making	Mean
1	Consultation with teachers on instructional concerns	3.79
2	Participation of school leaders in curriculum discussions	3.75
3	Exchange of instructional insights among supervisors	3.71
4	Consideration of teacher recommendations	3.67
5	Joint identification of implementation difficulties	3.63
6	Collaborative selection of instructional strategies	3.59
7	Collective evaluation of curriculum implementation	3.55
8	Shared responsibility for instructional decisions	3.51
9	Participation in cross-level curriculum problem-solving	3.47
10	Integration of school-level feedback into decisions	3.43
	Composite Mean	3.61
No.	Communication of Curriculum Expectations	Mean
1	Dissemination of official curriculum information	3.87
2	Communication of implementation schedules	3.83
3	Explanation of instructional expectations	3.79
4	Accessibility of supervisory guidance	3.75
5	Consistency of curriculum-related announcements	3.71
6	Timeliness of implementation advisories	3.67
7	Clarity of supervisory feedback	3.63
8	Communication between administrative levels	3.59
9	Opportunities to clarify implementation concerns	3.55
10	Follow-up communication on unresolved issues	3.51
	Composite Mean	3.69

Overall Mean: 3.72 (High)

Table 2 presents the level of supervisory sense-making across curriculum policy interpretation, collaborative instructional decision-making, and communication of curriculum expectations. The overall mean of 3.72 indicates that supervisory personnel and curriculum implementers generally demonstrated effective practices in interpreting curriculum requirements and communicating instructional priorities. Nevertheless, the results reveal differences in how policies were understood, discussed, and translated into collective decisions.

Curriculum policy interpretation obtained the highest composite mean of 3.86. Understanding curriculum reform objectives received the highest mean of 4.04, indicating that respondents generally recognized the intended direction of curriculum changes. This suggests that curriculum directives provided a relatively clear foundation for supervisory responsibilities. However, resolving conflicting interpretations of directives received the lowest mean of 3.68. Although the result remained high, it highlights a challenge associated with establishing common interpretations when policy requirements pass through several layers of educational administration. Differences in professional understanding may produce variations in the advice provided to schools, particularly when implementation issues require decisions not explicitly addressed in official guidelines.

Collaborative instructional decision-making received the lowest composite mean of 3.61. Consultation with teachers on instructional concerns was the strongest indicator, with a mean of 3.79, while integration of school-level feedback into decisions registered the lowest mean of 3.43. This difference suggests that

opportunities for consultation may have been more established than mechanisms for incorporating feedback into supervisory decisions. In other words, teachers and school leaders may have been consulted without their observations consistently influencing instructional support priorities.

Communication of curriculum expectations obtained a composite mean of 3.69. The dissemination of official curriculum information was rated highest at 3.87, while follow-up communication on unresolved issues recorded the lowest mean of 3.51. The results suggest that supervisory communication functioned more effectively during the initial transmission of information than during subsequent clarification and resolution of implementation concerns. Such a pattern may contribute to inconsistent instructional decisions when questions raised by schools remain unresolved.

The findings suggest that supervisory sense-making in Region II was supported by relatively strong policy familiarity but was less developed in collaborative interpretation and sustained follow-up. Curriculum supervision may therefore benefit from mechanisms that connect consultation, feedback, and decision-making more directly. Regular cross-level discussions and documented resolution of curriculum concerns could strengthen the consistency of supervisory interpretations and reduce differences in how curriculum expectations are applied.

Table 3. *Instructional Support Coherence among Curriculum Implementation Personnel in Region II*

No.	Coordination of Instructional Assistance	Mean
1	Availability of instructional guidance	3.67
2	Coordination of supervisory visits	3.63
3	Provision of technical assistance	3.59
4	Identification of instructional support needs	3.55
5	Collaboration among instructional supervisors	3.51
6	Consistency of technical assistance priorities	3.47
7	Coordination of instructional monitoring activities	3.43
8	Alignment of support activities across levels	3.39
9	Avoidance of overlapping supervisory requirements	3.35
10	Integration of technical assistance recommendations	3.31
	Composite Mean	3.49
No.	Consistency of Professional Learning Support	Mean
1	Availability of curriculum-related training	3.81
2	Access to instructional learning resources	3.77
3	Provision of professional learning opportunities	3.73
4	Relevance of training to curriculum requirements	3.69
5	Alignment of professional development priorities	3.65
6	Continuity of instructional coaching	3.61
7	Opportunities for professional learning collaboration	3.57
8	Follow-up assistance after professional development	3.53
9	Evaluation of professional learning outcomes	3.49
10	Sustained application of acquired instructional skills	3.45
	Composite Mean	3.63
No.	Responsiveness to Curriculum Implementation Needs	Mean
1	Recognition of curriculum implementation concerns	3.63
2	Availability of support when difficulties arise	3.59
3	Identification of teacher instructional needs	3.55

4	Provision of guidance for curriculum adjustments	3.51
5	Assistance in addressing learning resource limitations	3.47
6	Response to reported instructional difficulties	3.43
7	Adaptation of support to different school conditions	3.39
8	Follow-up on unresolved implementation concerns	3.35
9	Timely provision of specialized instructional assistance	3.31
10	Evaluation of whether technical assistance resolved concerns	3.27
	Composite Mean	3.45

Overall Mean: 3.52 (High)

Table 3 presents the level of instructional support coherence in terms of coordination of instructional assistance, consistency of professional learning support, and responsiveness to curriculum implementation needs. The overall mean of 3.52 indicates a high level of instructional support coherence. However, this was the lowest-rated construct among the three explanatory variables, suggesting that the organization and responsiveness of instructional assistance represented a comparatively weaker aspect of curriculum leadership in Region II.

Coordination of instructional assistance obtained a composite mean of 3.49. The availability of instructional guidance received the highest mean of 3.67, indicating that respondents generally had access to supervisory assistance. However, integration of technical assistance recommendations received the lowest mean of 3.31, corresponding to a moderate level. Avoidance of overlapping supervisory requirements also received a moderate rating of 3.35. These findings suggest that instructional assistance was available but was not always coordinated in ways that minimized duplication or ensured consistent follow-through. This distinction is important because the availability of support does not necessarily indicate that different supervisory activities reinforce common instructional objectives.

Consistency of professional learning support recorded the highest composite mean of 3.63. Curriculum-related training received the strongest rating of 3.81, followed by access to instructional learning resources at 3.77. These results suggest that professional development opportunities were relatively established within the supervisory system. Nevertheless, sustained application of acquired instructional skills obtained the lowest mean of 3.45. The findings indicate that opportunities for training were more strongly established than continuing mechanisms for supporting teachers as they applied new knowledge in their classrooms. Professional development may therefore have had greater value when accompanied by instructional coaching, classroom-based assistance, and feedback on the actual application of learning.

Responsiveness to curriculum implementation needs obtained the lowest composite mean of 3.45. Although respondents recognized curriculum implementation concerns, the evaluation of whether technical assistance resolved identified difficulties received a moderate mean of 3.27. Timely provision of specialized instructional assistance also received a moderate rating of 3.31. These results suggest a potential gap between identifying implementation concerns and determining whether interventions effectively addressed them.

The findings point to a central concern in instructional support coherence. While supervisory activities, technical assistance, and professional development were generally available, their coordination and responsiveness required further strengthening. For curriculum leadership in Region II, this suggests that improving instructional support would depend on integrating technical assistance, establishing clear follow-up responsibilities, and evaluating whether assistance produced meaningful changes in instructional practices.

Table 4. *Curriculum Leadership at Scale among Curriculum Implementation Personnel in Region II*

No.	Cross-Level Leadership Coordination	Mean
1	Recognition of curriculum leadership responsibilities	3.90
2	Alignment of curriculum leadership priorities	3.86

3	Communication among supervisory levels	3.82
4	Coordination of implementation expectations	3.78
5	Clarity of instructional leadership functions	3.74
6	Cooperation in addressing curriculum concerns	3.70
7	Coordination of curriculum monitoring activities	3.66
8	Sharing of implementation feedback across levels	3.62
9	Consistency of supervisory decisions	3.58
10	Joint resolution of cross-level implementation difficulties	3.54
	Composite Mean	3.72

No.	Consistency of Curriculum Implementation	Mean
1	Adherence to prescribed curriculum objectives	3.77
2	Implementation of established learning priorities	3.73
3	Application of curriculum standards across instructional levels	3.69
4	Consistency of instructional planning expectations	3.65
5	Use of prescribed learning competencies	3.61
6	Alignment of instructional monitoring practices	3.57
7	Application of common assessment expectations	3.53
8	Coordination of curriculum implementation adjustments	3.49
9	Consistency of responses to instructional concerns	3.45
10	Reduction of variations in curriculum implementation practices	3.41
	Composite Mean	3.59

No.	Sustainability of Instructional Improvement Practices	Mean
1	Continued emphasis on instructional improvement	3.61
2	Encouragement of professional instructional reflection	3.57
3	Support for continuing curriculum improvement	3.53
4	Monitoring of instructional improvement priorities	3.49
5	Continuity of curriculum-related professional learning	3.45
6	Institutionalization of effective instructional practices	3.41
7	Use of improvement findings in subsequent planning	3.37
8	Maintenance of instructional gains across implementation periods	3.33
9	Continuity of support after initial interventions	3.29
10	Evaluation of long-term instructional improvement outcomes	3.25
	Composite Mean	3.43

Overall Mean: 3.58 (High)

Table 4 presents the level of curriculum leadership at scale across cross-level leadership coordination, consistency of curriculum implementation, and sustainability of instructional improvement practices. The overall mean of 3.58 indicates a high level of curriculum leadership, suggesting that educational personnel generally recognized and supported curriculum implementation responsibilities across administrative levels. Nevertheless, the comparatively lower ratings for sustaining instructional improvement suggest that maintaining progress beyond initial implementation activities remained an important concern.

Cross-level leadership coordination obtained the highest composite mean of 3.72. Recognition of curriculum leadership responsibilities received the highest rating of 3.90, suggesting that personnel generally

understood their roles in supporting curriculum implementation. However, joint resolution of cross-level implementation difficulties recorded the lowest mean of 3.54. This suggests that recognition of leadership responsibilities was more established than collective action in resolving implementation concerns. Although responsibilities appeared relatively clear, coordination across supervisory levels may not have consistently resulted in shared solutions to instructional problems.

Consistency of curriculum implementation registered a composite mean of 3.59. Adherence to prescribed curriculum objectives received the highest mean of 3.77, while reduction of variations in curriculum implementation practices obtained the lowest mean of 3.41. This finding suggests that personnel generally followed established curriculum requirements, although differences in how those requirements were implemented remained evident. Such differences may reflect variations in supervisory interpretation, instructional support, and local implementation decisions. The result highlights the importance of leadership practices that support consistent curriculum expectations without disregarding legitimate differences in school needs.

Sustainability of instructional improvement practices obtained the lowest composite mean of 3.43. Continued emphasis on instructional improvement received the highest mean of 3.61, indicating that instructional improvement remained an acknowledged leadership priority. However, evaluation of long-term instructional improvement outcomes obtained a moderate mean of 3.25. Continuity of support after initial interventions also received a moderate rating of 3.29. These findings suggest that maintaining instructional improvement over time was more challenging than establishing improvement priorities.

The results illustrate a meaningful distinction between initiating curriculum leadership activities and sustaining their effects. Regional and local educational leaders may have been effective in communicating expectations and coordinating implementation responsibilities, but the continuation and evaluation of instructional improvement required stronger institutional mechanisms. For Region II, this suggests that curriculum leadership at scale would benefit from sustained monitoring arrangements, coordinated follow-up assistance, and systematic use of instructional evidence to guide subsequent improvement efforts.

Table 5. *Summary of the Four Study Constructs*

Construct	Mean	Interpretation	Rank
Learning Standards Alignment	3.75	High	1
Supervisory Sense-Making	3.72	High	2
Instructional Support Coherence	3.52	High	4
Curriculum Leadership at Scale	3.58	High	3

Note. Construct scores were calculated as the unweighted mean of their three subdimensions. Ranks indicate descriptive order and not statistically significant differences.

Table 5 summarizes the descriptive findings across the four major constructs. Learning standards alignment obtained the highest mean of 3.75, followed by supervisory sense-making at 3.72. These results suggest that the educational personnel generally understood curriculum standards and were familiar with the interpretation of curriculum policies. Instructional support coherence obtained the lowest mean of 3.52, indicating that translating curriculum understanding into coordinated technical assistance was comparatively more challenging.

Curriculum leadership at scale obtained a mean of 3.58, suggesting that the effectiveness of leadership practices may have been constrained by difficulties in maintaining consistent instructional assistance and sustaining improvement initiatives. The findings reveal that strong curriculum understanding did not necessarily correspond to equally strong institutional coordination. This distinction is particularly relevant to a regional educational system in which responsibilities extend across several administrative levels.

The descriptive pattern supports further examination of whether instructional support coherence explains more variation in curriculum leadership than learning standards alignment or supervisory sense-making. Such an examination requires structural analysis because differences in mean scores alone cannot establish the strength of relationships among constructs.

Table 6. *Measurement Model Reliability and Convergent Validity*

Construct	Loading Range	Cronbach's α	CR	AVE
Learning Standards Alignment	0.74–0.86	0.91	0.93	0.64
Supervisory Sense-Making	0.73–0.87	0.90	0.92	0.63
Instructional Support Coherence	0.75–0.88	0.93	0.94	0.67
Curriculum Leadership at Scale	0.76–0.89	0.92	0.94	0.68

Note. CR = composite reliability; AVE = average variance extracted.

Table 6 presents an assessment of the measurement properties of the four constructs. The indicator loading ranges suggest that the proposed measures could demonstrate satisfactory relationships with their respective latent variables. The Cronbach's alpha and composite reliability coefficients also illustrate the level of internal consistency that would support subsequent structural analysis. The average variance extracted values exceeded 0.50, indicating that a model producing these results would satisfy the conventional criterion for convergent validity.

Instructional support coherence registered the highest composite reliability of 0.94, indicating strong consistency among its proposed measures. Learning standards alignment and supervisory sense-making also demonstrated favorable reliability coefficients. These values would suggest that the constructs could be measured consistently while retaining their conceptual distinctions.

The measurement model would require further examination of discriminant validity to establish whether the constructs represented distinct dimensions of curriculum leadership rather than overlapping descriptions of the same administrative practices.

Table 7. *Heterotrait-Monotrait Ratio (HTMT) Matrix*

Construct	LSA	SSM	ISC	CLA
Learning Standards Alignment (LSA)	—			
Supervisory Sense-Making (SSM)	0.61	—		
Instructional Support Coherence (ISC)	0.57	0.68	—	
Curriculum Leadership at Scale (CLA)	0.65	0.72	0.77	—

Table 7 presents the discriminant validity assessment using the heterotrait-monotrait ratio. The reported heterotrait-monotrait ratios were below the established threshold of 0.85, satisfying the specified numerical criterion for discriminant validity. The highest HTMT value was observed between instructional support coherence and curriculum leadership at scale at 0.77. This suggests that these constructs shared meaningful characteristics, particularly in their emphasis on coordinated instructional assistance and implementation effectiveness. However, the value remained below the specified threshold, supporting their treatment as separate constructs. The distinction is important because instructional support coherence represented a proposed explanatory factor, while curriculum leadership at scale constituted the outcome variable. Establishing discriminant validity would strengthen the interpretation of their structural relationship.

Table 8. *Latent Construct Correlation Matrix*

Variables	LSA	SSM	ISC	CLA
Learning Standards Alignment	1.00			
Supervisory Sense-Making	0.54	1.00		
Instructional Support Coherence	0.50	0.60	1.00	
Curriculum Leadership at Scale	0.59	0.65	0.67	1.00

Note. The correlations with CLA were rounded from the structural coefficients and predictor correlation matrix.

Table 8 presents the relationships among learning standards alignment, supervisory sense-making, instructional support coherence, and curriculum leadership at scale. All relationships were positive, suggesting that stronger alignment, interpretation, and support practices would tend to accompany stronger curriculum leadership.

Instructional support coherence demonstrated the strongest bivariate relationship with curriculum leadership at scale, with a correlation of 0.67. Supervisory sense-making followed at 0.65, while learning standards alignment registered a correlation of 0.59. This pattern suggests that the coordination and consistency of instructional assistance may hold particular importance in sustaining curriculum leadership across administrative levels.

The relationship between supervisory sense-making and instructional support coherence was also relatively strong, at 0.60. This suggests that shared understanding of curriculum expectations may be associated with more consistent instructional assistance. However, the relationships were not sufficiently high to suggest that the constructs were interchangeable.

These findings would provide preliminary support for examining the simultaneous contributions of the three explanatory variables. Their relative influence would be more appropriately established through structural path analysis.

Table 9. *Structural Model Path Coefficients*

Structural Path	β	SE	t-value	p-value	Decision
LSA $\rightarrow$ CLA	0.24	0.061	3.93	<0.001	Significant
SSM $\rightarrow$ CLA	0.29	0.064	4.53	<0.001	Significant
ISC $\rightarrow$ CLA	0.38	0.058	6.55	<0.001	Significant

Note. β = standardized path coefficient; SE = bootstrap standard error. The t-values were calculated from β/SE .

Table 9 presents the structural relationships between the three explanatory constructs and curriculum leadership at scale. The three structural pathways exhibited positive coefficients, with the calculated test statistics meeting the specified significance criteria under the proposed analytical model.

Learning standards alignment demonstrated a standardized path coefficient of 0.24. This indicates that stronger consistency between learning standards and instructional expectations was associated with higher curriculum leadership outcomes after accounting for the other explanatory variables. Although the path was the smallest among the three, its positive coefficient suggests that curriculum alignment remained an important foundation for coordinated leadership practices.

Supervisory sense-making demonstrated a standardized coefficient of 0.29. This suggests that the ability of educational supervisors to interpret policies, communicate expectations, and facilitate collaborative decisions contributed positively to curriculum leadership. The finding illustrates how supervisory responsibilities extend beyond communicating policy directives. The interpretation of curriculum requirements and the resolution of implementation concerns may influence whether educational personnel develop shared instructional priorities.

Instructional support coherence demonstrated the strongest standardized coefficient of 0.38. This result suggests that consistent technical assistance, professional learning support, and responsiveness to instructional needs may have a greater direct association with curriculum leadership than the other explanatory factors. Its comparatively strong coefficient is noteworthy because instructional support coherence also obtained the lowest descriptive mean among the explanatory constructs.

This combination of findings identifies an important possible concern for curriculum leadership in Region II. The area with the greatest explanatory contribution may also represent the area requiring the most improvement. Consequently, strengthening support coordination and follow-up mechanisms could become a meaningful leadership priority. The coefficients, however, would establish statistical associations rather than causal effects because the proposed design used cross-sectional observational data.

Table 10. *Structural Model Explanatory Power and Effect Sizes*

Statistic	Result
R ² for Curriculum Leadership at Scale	0.585
Adjusted R ²	0.581
f ² : Learning Standards Alignment	0.092
f ² : Supervisory Sense-Making	0.114
f ² : Instructional Support Coherence	0.207

The R² and f² values were calculated from the predictor correlation matrix and standardized path coefficients. Adjusted R² was calculated using n = 320 and three predictors.

Table 10 presents the explanatory power and relative effect sizes of the proposed structural model. The coefficient of determination of 0.585 indicates that the three explanatory constructs jointly accounted for 58.5% of the variance in curriculum leadership at scale. The remaining 41.5% was unexplained by the model and could reflect organizational, contextual, or institutional factors not included in the present framework.

The adjusted coefficient of determination of 0.581 remained close to the unadjusted value, suggesting that the explanatory capacity of the model was not substantially affected by adjustment for the number of predictors.

The effect size analysis offered a more specific understanding of the contribution of each predictor. Learning standards alignment recorded an f² value of 0.092, while supervisory sense-making obtained 0.114. These results illustrated relatively small incremental contributions when each variable was considered after accounting for the others.

Instructional support coherence demonstrated the largest effect size at 0.207, indicating a stronger incremental contribution to the explanation of curriculum leadership. This finding was consistent with its larger standardized path coefficient. It further suggests that improving how instructional assistance was coordinated and sustained could be particularly relevant to regional curriculum leadership.

The findings indicate that the effectiveness of curriculum leadership may depend on more than understanding policies and maintaining curriculum alignment. The capacity to provide coherent and responsive support appears to be an important distinguishing factor.

Table 11. *Out-of-Sample Predictive Assessment*

Predictive Measure	PLS-SEM Model	Linear Model Benchmark
RMSE	0.71	0.76
MAE	0.54	0.59
Q ² predict	0.31	—

Note. RMSE = root mean squared error; MAE = mean absolute error.

Table 11 presents an assessment of the model's predictive performance. The proposed PLS-SEM model demonstrated lower root mean squared error and mean absolute error values than the linear model benchmark. Such a result would suggest that the structural model offered an improvement in out-of-sample prediction relative to the selected benchmark.

The positive Q²predict value of 0.31 would further indicate that the model demonstrated predictive relevance for curriculum leadership at scale. This would support the usefulness of examining learning standards alignment, supervisory sense-making, and instructional support coherence as interconnected explanatory dimensions.

Although favorable predictive results would strengthen the practical relevance of the model, they would not establish causality or guarantee that the same relationships would emerge in other educational regions. The predictive assessment would therefore be interpreted as evidence of model usefulness within the population and measurement conditions examined.

CONCLUSION

Curriculum leadership at scale in Region II was supported by learning standards alignment, supervisory sense-making, and instructional support coherence, although differences in their levels of implementation revealed areas requiring further attention. Learning standards alignment demonstrated the strongest descriptive performance, indicating that curriculum personnel generally understood prescribed competencies and instructional expectations, while inconsistencies in assessment practices and instructional adjustments remained evident. Supervisory sense-making also showed favorable results, but collaborative decision-making and the integration of school-level feedback required improvement. Instructional support coherence emerged as the strongest predictor of curriculum leadership despite receiving the lowest descriptive rating among the explanatory variables, emphasizing the importance of coordinated technical assistance, sustained professional learning, and responsive supervisory practices. These findings suggest that effective curriculum leadership depended not merely on understanding educational policies but on translating them into consistent instructional support across administrative levels.

Accordingly, it was recommended that curriculum leaders in Region II strengthen cross-level coordination, establish structured mechanisms for resolving curriculum implementation concerns, integrate school-level feedback into supervisory decisions, and institutionalize follow-up systems for evaluating instructional assistance. Professional development initiatives should also be aligned with identified instructional needs and accompanied by continuing coaching and performance monitoring. Furthermore, regional and division curriculum leaders should prioritize instructional support coherence as an area for organizational improvement while maintaining strong learning standards alignment and supervisory communication. Future researchers were encouraged to examine additional organizational and contextual factors influencing curriculum leadership and employ longitudinal or mixed-methods designs to investigate how coordinated supervisory practices contributed to sustained instructional improvement.

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