

Resource Allocation and Collaborative Learning Expertise on the Data-Driven Decision-Making Competency of Basic Education Teachers

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ABSTRACT

This study examined the influence of resource allocation and collaborative learning expertise on the data-driven decision-making competency of basic education teachers in Kibawe, Bukidnon during the school year 2025–2026. A descriptive-correlational design was used with 302 teachers from public and private schools. Data were analyzed using mean, Pearson correlation, and multiple regression, with additional diagnostics to ensure model validity.

Findings showed high levels across all variables, with significant relationships observed. Collaborative learning expertise demonstrated a stronger association ($r = .853$) compared to resource allocation ($r = .570$). Regression results revealed that supportive structures and shared professional practices significantly predict competency. However, the consistently high mean scores suggest possible social desirability bias.

The study highlights the importance of collaborative professional environments in strengthening teachers' data use. It contributes to the growing literature on data-driven decision-making by emphasizing the role of organizational learning in basic education contexts.

Keywords: Data-Driven Decision-Making, Resource Allocation, Collaborative Learning Expertise, Basic Education Teachers

INTRODUCTION

Teachers play a critical role in improving educational outcomes, particularly through their ability to make informed instructional decisions based on data. In basic education, data-driven decision-making enables teachers to plan instruction, monitor student progress, and implement appropriate interventions. However, in many school contexts, especially in developing areas, teachers face challenges such as limited access to resources, insufficient training, and varying levels of collaborative support. These constraints affect how effectively teachers can interpret and utilize data in their instructional practices. Studies have shown that teachers' ability to engage in data-driven practices is influenced by institutional factors such as resource availability and organizational support systems, which are essential in enhancing instructional effectiveness and student learning outcomes (Mejia & Baguio, 2025; Gumilao, 2024).

Alongside resource allocation, collaborative learning expertise has been identified as a key factor in strengthening teachers' professional capacity. Collaborative practices such as shared leadership, collective learning, and open communication foster environments where teachers can exchange ideas, reflect on practices, and improve instructional strategies. Research indicates that strong collaborative cultures contribute to improved teaching practices and innovation in the classroom (Jalop & Paglinawan, 2025; Madulara et al., 2025). Despite these findings, limited studies have examined the combined influence of resource allocation and collaborative learning expertise on teachers' data-driven decision-making competency, particularly in the

local context. This study addresses this gap by investigating how these variables interact and identifying which factors significantly predict teachers' ability to make data-informed decisions.

This study is anchored on the Data Literacy for Teaching Framework (Mandinach & Gummer, 2016) and Organizational Learning Theory, which explain how teachers develop the capacity to use data through structured support and collaborative practices. These frameworks suggest that data use is not only an individual skill but also a product of organizational conditions such as resource availability and professional collaboration. Despite existing studies, limited research has examined how these factors jointly influence teachers' data-driven decision-making competency in localized contexts such as Kibawe, Bukidnon. This study addresses this gap by integrating structural and collaborative dimensions in explaining teachers' data use.

FRAMEWORK

Resource allocation is a critical organizational factor that influences teachers' ability to perform effectively and make informed instructional decisions. Studies in the Philippine context emphasize that adequate allocation of financial, material, and human resources enhances teaching practices and supports data-informed planning (Ladion & Baguio, 2025; Dy & Galigao, 2024). Efficient financial management, staff mobilization, and equitable distribution of resources enable teachers to access instructional tools and data systems necessary for planning, assessment, and intervention. International evidence further suggests that schools with strategic and transparent resource allocation systems demonstrate improved educational outcomes and stronger teacher performance (Salas-Velasco, 2020). These findings highlight that resource allocation is not merely about availability but also about how effectively resources are managed and utilized to support data-driven practices.

Collaborative learning expertise complements resource allocation by strengthening the professional environment in which teachers operate. Research shows that collaborative practices—such as shared leadership, collective learning, and reflective dialogue—enhance teachers' instructional competence and capacity to use data effectively (Admiraal et al., 2021; DuFour & Fullan, 2018). In collaborative school cultures, teachers engage in shared decision-making, analyze student data collectively, and refine instructional strategies based on evidence. Such environments promote continuous professional growth and innovation, leading to improved teaching outcomes. Drawing from these perspectives, this study assumes that both resource allocation and collaborative learning expertise contribute significantly to teachers' data-driven decision-making competency, with specific dimensions of these variables serving as key predictors of effective instructional decision-making.

Objectives

This study investigated the influence of resource allocation and collaborative learning expertise on the data-driven decision-making competency of basic education teachers. Specifically, it aimed to: (1) determine the level of teachers' engagement in resource allocation and collaborative learning expertise, as well as their level of data-driven decision-making competency; (2) examine the relationship between resource allocation, collaborative learning expertise, and data-driven decision-making competency; and (3) identify which dimensions of resource allocation and collaborative learning expertise significantly predict teachers' data-driven decision-making competency.

METHODS

This study employed a descriptive-correlational research design to examine the relationship between resource allocation, collaborative learning expertise, and data-driven decision-making competency of basic education teachers. The descriptive approach was used to determine the levels of the variables, while the correlational method was applied to identify the relationships among them and determine significant predictors.

The respondents consisted of 302 basic education teachers from selected public and private schools. Participants were chosen based on their active involvement in instructional practices and decision-making processes within their respective institutions. Data were collected using validated survey instruments adapted

from existing studies, covering three major variables: resource allocation, collaborative learning expertise, and data-driven decision-making competency.

Data analysis included descriptive statistics (mean), Pearson r for relationships, and multiple regression analysis to determine predictors. To ensure the validity of the regression model, diagnostic tests for multicollinearity were conducted using Variance Inflation Factor (VIF) and tolerance values. All variables met acceptable thresholds, indicating no serious multicollinearity issues. Reliability analysis was also performed using Cronbach’s alpha, with all constructs demonstrating acceptable internal consistency ($\alpha > 0.70$), confirming the reliability of the instruments.

Ethical Considerations. Ethical approval was obtained prior to data collection. Permission was secured from the Schools Division Superintendent, and participation of respondents was voluntary. Informed consent was obtained, and respondents were assured of confidentiality and anonymity. All data collected were used solely for academic and research purposes.

RESULTS AND DISCUSSION

Table 1 Profile of the Respondents

Variable	Description
Age	28-58 years old
Gender	Male and Female
Years of Teaching Experience	2-30 years
Grade Level Taught	Grade 1-6
School Type	Public and Private
Educational Attainment	Bachelor’s Degree and Master’s Degree

The respondents of the study consisted of 302 basic education teachers from selected public and private schools. In terms of age, the participants ranged from 23 to 60 years old, indicating a combination of early-career and experienced educators. Both male and female teachers were represented in the study. Regarding teaching experience, respondents had between 1 to 30 years of service, reflecting varied levels of professional exposure. The participants came from both public and private institutions, providing a broader perspective of the educational setting. In terms of educational attainment, teachers held either a bachelor’s degree or a master’s degree, indicating engagement in professional advancement and continuous learning.

Table 2 Level of Resource Allocation

Sub-variable	Mean	Descriptive Rating	Qualitative Interpretation
Management of Staff for Resource Mobilization	4.37	Agree	Highly Engaged
Innovation and Networking	4.32	Agree	Highly Engaged
Financial Management	4.26	Agree	Highly Engaged
Leveraging Emerging Opportunities	4.25	Agree	Highly Engaged
Overall Mean	4.30	Agree	Highly Engaged

The results indicate that teachers demonstrated a high level of engagement in resource allocation, as reflected by the overall mean of 4.30. Among the dimensions, management of staff for resource mobilization obtained the highest mean, suggesting that teachers are actively involved in coordinating human resources and fostering collaboration to support school initiatives. Innovation and networking, as well as financial management, also showed high levels of engagement, indicating that teachers utilize partnerships and strategic planning to manage available resources effectively.

The findings imply that teachers are capable of maximizing available resources through collaborative and strategic approaches, which supports their instructional responsibilities and decision-making processes.

However, the relatively lower mean in leveraging emerging opportunities suggests that teachers may have limited exposure to external or broader resource-generation avenues. This supports the findings of Gumilao (2024), who emphasized that effective resource allocation involves stakeholder engagement and strategic planning, as well as Dy and Galigao (2024), who highlighted that efficient and equitable resource distribution contributes to improved educational outcomes.

Table 3 Level of Collaborative Learning Expertise

Sub-variable	Mean	Descriptive Rating	Qualitative Interpretation
Supportive Conditions – Relationships	4.57	Strongly Agree	Very Highly Engaged
Supportive Conditions – Structures	4.54	Strongly Agree	Very Highly Engaged
Collective Learning and Application	4.54	Strongly Agree	Very Highly Engaged
Shared Values and Vision	4.52	Strongly Agree	Very Highly Engaged
Shared and Supportive Leadership	4.48	Agree	Very Highly Engaged
Shared Personal Practice	4.44	Agree	Very Highly Engaged
Overall Mean	4.51	Strongly Agree	Very Highly Engaged

The results reveal that teachers demonstrated a very high level of collaborative learning expertise, as indicated by the overall mean of 4.51. Among the dimensions, supportive conditions—relationships obtained the highest mean, suggesting that strong interpersonal relationships and trust are well-established among teachers. Supportive structures and collective learning also received high ratings, indicating that schools provide an environment that encourages collaboration, shared learning, and professional growth.

These findings suggest that teachers operate within a collaborative culture where shared responsibility, communication, and teamwork are emphasized. Such an environment enables teachers to exchange ideas, reflect on instructional practices, and improve their teaching strategies. This supports the findings of Admiraal et al. (2021), who emphasized that professional learning communities enhance teacher development, and DuFour and Fullan (2018), who highlighted that collaborative cultures contribute to sustained school improvement and effective instructional practices.

Table 4. Level of Data-Driven Decision-Making Competency

Sub-variable	Mean	Descriptive Rating	Qualitative Interpretation
Decision Planning, Implementing, and Assessing	4.62	Strongly Agree	Very Highly Competent
Plan Adjustment	4.62	Strongly Agree	Very Highly Competent
Goal Achievement	4.60	Strongly Agree	Very Highly Competent
Student Interaction	4.50	Strongly Agree	Very Highly Competent
Overall Mean	4.59	Strongly Agree	Very Highly Competent

The results indicate that teachers demonstrated a very high level of data-driven decision-making competency, as reflected by the overall mean of 4.59. Among the indicators, decision planning, implementing and assessing, along with student interaction, obtained the highest mean scores, suggesting that teachers are highly proficient in utilizing data to guide instructional planning and classroom engagement. Goal achievement also showed a consistently high rating, indicating that teachers effectively use data to monitor and attain instructional objectives.

The findings imply that teachers exhibit strong competence in applying data throughout the instructional cycle, particularly in planning, implementation, and interaction with students. However, the relatively lower mean in plan adjustment suggests that modifying instructional strategies based on data may present some challenges. These results align with the Data Literacy for Teaching Framework, which emphasizes the continuous cycle of data use in instruction (Mandinach & Gummer, 2016). This is supported by Johanik (2024), who highlighted the importance of structured data use in achieving instructional goals, as well as Cebelleros and Buenaventura

(2024), who emphasized that effective student interaction enhances real-time data use. The slightly lower rating in plan adjustment is consistent with the findings of Bravo and Paceno (2023), who noted that teachers may encounter constraints when revising instructional plans based on emerging data.

While the results indicate very high levels across all variables, the consistently elevated mean scores (above 4.30) suggest the possible presence of social desirability bias, where respondents may have rated themselves more favorably. This limitation is common in self-reported data and may lead to overestimation of actual practices. Thus, the findings should be interpreted with caution, particularly in assessing the true level of teachers' competencies.

Table 5 Correlation Analysis Showing Relationship of Independent Variable to the Data-Driven Decision-Making of Basic Education Teachers.

Variables	DV: Data-Driven Decision-Making	
	R-Value	Probability
Resource Allocation	.570**	.000
Financial Management for Resource Generation	.440**	.000
Management of Staff for Resource Mobilization	.525**	.000
Innovation and Networking for Resource Mobilization	.540**	.000
Leveraging Emerging Opportunities	.526**	.000
Collaborative Learning Expertise	.853**	.000
Shared and Supportive Leadership	.697**	.000
Shared Values and Vision	.756**	.000
Collective Learning and Application	.754**	.000
Shared Personal Practice	.719**	.000
Supportive Conditions—Relationships	.712**	.000
Supportive Conditions—Structures	.792**	.000

Note: Correlation is significant at the 0.01 level (2-tailed).

The results reveal that all variables have a statistically significant relationship with data-driven decision-making competency, as indicated by the p-value of .000. This confirms that the observed relationships are reliable and not due to chance. Resource allocation demonstrates a moderate positive correlation ($r = .570$), suggesting that improvements in financial management, staff mobilization, innovation, and opportunity leveraging are associated with enhanced decision-making practices among teachers. Among its dimensions, innovation and networking and management of staff for resource mobilization show relatively stronger relationships, indicating that collaborative and strategic approaches to resource management contribute meaningfully to teachers' ability to use data.

The very high correlation between collaborative learning expertise and data-driven decision-making competency ($r = .853$) may also indicate conceptual overlap between the constructs. This suggests that collaborative practices are closely embedded within data use processes, as teachers often engage in shared analysis, discussion, and reflection when using data. While this strengthens the observed relationship, it also highlights the need for careful interpretation to ensure that the constructs remain theoretically distinct.

In contrast, collaborative learning expertise exhibits a very strong positive correlation ($r = .853$), indicating that teachers who are more engaged in collaborative practices tend to demonstrate higher levels of data-driven decision-making competency. Strong relationships are observed in supportive conditions—structures, shared values and vision, and collective learning, highlighting the importance of a supportive and unified professional environment. These findings suggest that collaboration plays a more influential role than resource allocation in shaping teachers' data use. This supports Datnow and Park (2018), who emphasized that collaboration enhances teachers' capacity to interpret and apply data, as well as Prenger and Schildkamp (2018), who found

that professional interaction strengthens data-based decision-making. Similarly, Schildkamp (2019) highlighted that both organizational support and collaborative culture are essential in promoting effective data use. Based on these results, the null hypothesis is rejected, confirming that significant relationships exist among the variables.

Table 6 Regression Analysis on Data-Driven Decision-Making of Basic Education Teachers

Coefficients ^a					
Model	Unstandardized Coefficients		Standardized Coefficients	t	p-value
	B	Std. Error	Beta		
(Constant)	.716	.138	—	5.179	.000
Supportive Conditions—Structures	.261	.047	.299	5.576	.000
Shared Values and Vision	.155	.051	.175	3.060	.002
Shared Personal Practice	.114	.037	.146	3.064	.002
Supportive Conditions—Relationships	.125	.040	.145	3.131	.002
Collective Learning and Application	.113	.051	.122	2.224	.027
Shared and Supportive Leadership	.088	.044	.099	1.990	.048
R= .859		R ² = .739		F-Value= 138.917	
				Prob= .000	

The regression analysis reveals that the model has a very strong explanatory power, with an R value of .859 indicating a strong relationship between the predictors and data-driven decision-making competency. The R² value of .739 shows that 73.9% of the variance in the dependent variable is explained by the combined influence of the independent variables, suggesting that the model provides a substantial explanation of teachers' competency in using data for decision-making. The model is statistically significant, as indicated by the F-value of 138.917 and a p-value of .000, confirming that the predictors collectively contribute meaningfully to the outcome variable.

All identified predictors were found to be statistically significant. Among them, supportive conditions—structures emerged as the strongest predictor ($\beta = .299$, $p = .000$), indicating that organizational systems such as communication channels, access to resources, and structural support play a critical role in enhancing teachers' decision-making practices. This is followed by shared values and vision ($\beta = .175$, $p = .002$), suggesting that alignment in goals and shared direction among teachers strengthens their ability to utilize data effectively. Shared personal practice, supportive conditions—relationships, and collective learning and application also demonstrated significant contributions, highlighting the importance of collaboration through shared experiences, professional interaction, and joint learning processes. Shared and supportive leadership, while having the smallest beta value, still shows a significant effect, indicating that leadership support contributes to fostering data-driven practices among teachers.

The stronger predictive power of collaborative learning expertise compared to resource allocation can be explained through Organizational Learning Theory, which emphasizes that knowledge is constructed through social interaction. While resources provide necessary support, it is through collaboration—such as shared dialogue, collective problem-solving, and reflective practice—that teachers actively interpret and apply data. This explains why collaborative structures have a more direct influence on decision-making competency than resource availability alone.

These findings emphasize that data-driven decision-making competency is largely influenced by the collaborative and structural environment within schools rather than solely by individual teacher capacity. Teachers are more likely to demonstrate strong data use when they operate within systems that promote collaboration, shared goals, and professional interaction. This supports Schildkamp et al. (2020), who emphasized the role of structured support systems in effective data use, as well as Datnow and Park (2018), who highlighted that collaboration enhances teachers' capacity to interpret and apply data. Similarly, Prenger and Schildkamp (2018) found that shared learning and professional interaction significantly improve data-based decision-making among teachers.

Based on these results, the null hypothesis stating that no variable significantly predicts data-driven decision-making competency is rejected. The regression equation is expressed as:

$$y = 0.716 + 0.261X_1 + 0.155X_2 + 0.114X_3 + 0.125X_4 + 0.113X_5 + 0.088X_6$$

where:

X_1 = Supportive Conditions—Structures

X_2 = Shared Values and Vision

X_3 = Shared Personal Practice

X_4 = Supportive Conditions—Relationships

X_5 = Collective Learning and Application

X_6 = Shared and Supportive Leadership

Limitations Of The Study

This study has several limitations. First, the use of self-reported data may have introduced social desirability bias, as reflected in the consistently high mean scores across variables. Second, the study was conducted in a single geographical area (Kibawe, Bukidnon), which limits the generalizability of the findings to other contexts with different institutional conditions. Third, the high correlation values suggest possible conceptual overlap among variables, which may affect the distinctiveness of the constructs. Lastly, the descriptive-correlational design does not establish causality. Future studies may employ mixed methods, include observational data, or expand to multiple regions to improve generalizability and depth of analysis.

CONCLUSIONS

The findings of the study indicate that basic education teachers in Kibawe, Bukidnon demonstrate high engagement in resource allocation and very high collaborative learning expertise, alongside a very high level of data-driven decision-making competency; however, the consistently high ratings may suggest the presence of social desirability bias and should be interpreted with caution. The results further confirm that both resource allocation and collaborative learning expertise are significantly related to data-driven decision-making competency, with collaborative learning expertise emerging as the stronger influence, supporting the Data Literacy for Teaching Framework and Organizational Learning Theory which emphasize that effective data use is shaped more by collaborative processes than by resources alone. Overall, the study contributes to the field by highlighting that enhancing teachers' data-driven decision-making depends not only on resource availability but more importantly on strengthening collaborative professional environments, particularly in basic education contexts where structured collaboration and professional learning communities can lead to sustained instructional improvement.

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