

The Adaptive Work of Senior High School Teaching for Learner Development Support

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ABSTRACT

This study explored how adaptive teaching practices combined to support learner development among senior high school teachers handling core or applied subjects in Roxas, Isabela. Using a configurational explanatory survey design, data were gathered from 30 teachers through a structured questionnaire measuring adaptive instructional responsiveness, professional judgment and agency, collaborative adaptive capacity, and learner development support. Descriptive statistics, Necessary Condition Analysis, and fuzzy-set Qualitative Comparative Analysis were employed to determine both necessary conditions and alternative pathways associated with stronger learner support. Results showed high levels of adaptive instructional responsiveness, professional judgment and agency, and learner development support, while collaborative

adaptive capacity remained moderate. Professional judgment and agency emerged as the strongest necessary condition, followed by adaptive instructional responsiveness. The configurational analysis identified multiple pathways to high learner development support, with the combination of strong professional judgment and instructional responsiveness producing the most consistent pattern. Collaborative capacity strengthened some successful configurations but was not indispensable across all pathways. Conversely, weak responsiveness combined with limited collaborative capacity was associated with lower learner development support. The findings indicate that adaptive senior high school teaching depended less on isolated practices than on the interaction of professional judgment, responsiveness, and collaborative resources. Strengthening structured collaboration, shared analysis of learner needs, and teacher decision-making capacity is therefore recommended to support more consistent learner development across senior high school classrooms.

Keywords: *adaptive teaching, collaborative capacity, learner development support, professional judgment, senior high school, teacher responsiveness*

INTRODUCTION

Senior high school teaching requires teachers to work with learners who differ in academic readiness, interests, aspirations, and levels of independence while preparing them for higher education, employment, entrepreneurship, or further skills development. These responsibilities have become more pronounced as the Philippine senior high school program undergoes curricular restructuring. The Strengthened Senior High School Curriculum emphasizes foundational mastery, learner choice, responsiveness to learner aspirations, and stronger preparation for future pathways, placing teachers in a position where instruction must be continually adjusted to emerging learner and curriculum needs (Department of Education [DepEd], 2026).

Such adjustment forms part of the adaptive work of teaching. Rather than following instruction as a fixed sequence, teachers make judgments about pacing, learning activities, explanations, assessment, and support based on what learners demonstrate in the classroom. Collie and Martin (2017) found that teachers' adaptability was

associated with stronger psychological functioning and professional commitment, with meaningful connections to student achievement. Their findings suggest that the ability to respond constructively to changing demands is not simply a personal characteristic but an important part of effective teaching practice.

Adaptive work also depends on how well teachers recognize learner needs and translate that understanding into appropriate instructional decisions. Schipper et al. (2020) described adaptive teaching as a complex practice that requires knowledge of learners, thoughtful observation, and decisions suited to particular classroom situations. This becomes especially important in senior high school, where teachers handling core or applied subjects must support learners with varied abilities and intended career or educational directions. Adaptation, therefore, involves more than changing teaching techniques. It includes deciding when learners need additional explanation, alternative tasks, closer guidance, greater challenge, or opportunities to work more independently.

The value of this capacity extends to learner development. A multi-country study of secondary science teachers showed that higher teacher adaptability was positively associated with teacher self-efficacy, which was subsequently related to stronger student self-efficacy (Collie et al., 2020). These relationships point to the broader role teachers play in shaping learners' confidence and capacity to manage academic demands. The Philippine Basic Education Development Plan 2030 similarly places learner development at the center of education quality by emphasizing relevant instruction, supportive learning environments, learner well-being, and preparation of senior high school graduates for further education and work (DepEd, 2022).

Against these demands, there is value in examining how senior high school teachers carry out adaptive work as they provide support for learner development. While existing literature establishes the importance of adaptability in teaching, its expression may vary according to curriculum demands, school conditions, available resources, and the needs teachers encounter in their own classrooms. This study, therefore, examined the adaptive work of senior high school teaching for learner development support among teachers handling core or applied subjects in Roxas, Isabela. It sought to provide evidence on how teachers adjust their professional and instructional practices to support learners as they progress through a critical stage of secondary education.

Literature Review

Adaptive Instructional Responsiveness

Adaptive teaching is reflected in a teacher's capacity to notice learner difficulties and make appropriate instructional decisions while learning is taking place. This requires attention not only to academic performance but also to the ways learners participate, communicate ideas, and respond to classroom demands. Kang (2022) demonstrated that teacher responsiveness can expand opportunities for learning when teachers recognize students' intellectual, relational, and linguistic needs and adjust instruction accordingly. For senior high school teachers handling core or applied subjects, this responsiveness may involve modifying explanations, pacing, tasks, questioning strategies, or forms of assistance when learners require different levels of support. Adaptive instructional work therefore rests on informed classroom judgment rather than uniform delivery.

Teacher Agency and Professional Judgment

Teachers exercise professional agency when they deliberately make choices about how to respond to instructional demands rather than relying solely on prescribed routines. Molla and Nolan (2020) explained that teacher agency includes reflective, responsive, deliberative, and ethically grounded forms of professional action. Such agency is especially relevant when teachers encounter classroom situations that cannot be adequately addressed through predetermined procedures. In senior high school teaching, professional judgment allows teachers to balance curriculum expectations with actual learner readiness, classroom conditions, and available resources. The adaptive work of teaching consequently involves teachers interpreting situations, considering possible responses, and selecting actions that can better support learner progress.

Learner Development and Supportive Teaching

Learner development is strengthened when students experience teaching practices that recognize differences in learning needs and provide meaningful forms of support. In their systematic review of secondary education, Subban et al. (2022) identified supportive relationships, positive teacher beliefs, appropriate teaching practices, and accessibility as important conditions associated with students' experiences of inclusion. These findings indicate that learner support extends beyond academic remediation because students also benefit from classrooms in which they feel recognized, assisted, and able to participate. For senior high school learners preparing for different postsecondary pathways, teachers may therefore need to provide differentiated guidance, constructive feedback, opportunities for independent learning, and appropriate academic assistance according to learner needs.

Professional Collaboration and Adaptive Capacity

Adaptive teaching is also shaped by the professional environment in which teachers work. Brodie (2021) found that teacher agency within professional learning communities was influenced by sustained inquiry, collaboration, leadership support, and trust, with these conditions affecting how teachers participated in professional learning and development. Collaboration can give senior high school teachers opportunities to discuss learner difficulties, examine teaching practices, share resources, and develop responses to instructional concerns that may be difficult to address individually. For teachers handling core or applied subjects, professional interaction may strengthen adaptive capacity by widening the range of strategies and perspectives available when responding to varied learner needs.

METHODS

Research Design

The study employed a configurational explanatory survey design, a quantitative approach that examined how combinations of teaching practices contributed to learner development support. Rather than assuming that each teaching practice operated independently, the design treated adaptive instructional responsiveness, professional judgment, and collaborative adaptive capacity as conditions that could combine in different ways to produce strong learner support. This approach was appropriate because adaptive teaching involved interconnected decisions that varied according to learner needs and classroom demands. The design also allowed the study to determine whether particular conditions were indispensable and which combinations were sufficient for stronger learner development support.

Research Locale

The study was conducted in Roxas, Isabela, a municipality within the Schools Division of Isabela. The locale provided a suitable setting because senior high school teachers handled both core and applied learning areas and worked with learners preparing for higher education, employment, entrepreneurship, and other postsecondary pathways. The study focused on teaching situations in which instructional adjustment, academic guidance, and learner support formed part of teachers' regular responsibilities.

Participants and Sampling Technique

The participants consisted of 30 senior high school teachers handling core or applied subjects in Roxas, Isabela. A criterion-based total enumeration technique was employed because the identified group was sufficiently bounded to permit the inclusion of all teachers who met the study requirements. Eligibility required an active senior high school teaching assignment and responsibility for a core or applied subject during the period of data collection. Teachers without an active senior high school teaching load were excluded. Total enumeration

preserved the experiences of the complete eligible teaching group rather than drawing a smaller sample from an already limited population.

Research Instrument

Data were gathered using a structured Adaptive Work and Learner Development Support Questionnaire composed of four dimensions: adaptive instructional responsiveness, professional judgment and agency, collaborative adaptive capacity, and learner development support. Items measuring adaptability were anchored in the Teacher Adaptability Scale developed from the work of Collie and Martin, while the remaining statements were aligned with the conceptual dimensions established in the literature review. Responses were recorded using a five-point agreement scale.

Before administration, the instrument underwent expert review for clarity, relevance, correspondence with the constructs, and appropriateness for senior high school teaching. The adapted adaptability component was supported by established psychometric evidence. Published applications of the Teacher Adaptability Scale reported strong internal consistency, including Cronbach's $\alpha = .92$, while earlier validation work supported its single-factor structure and reported reliability of approximately $\alpha = .90$. The finalized local version was also pilot-tested among 30 senior high school teachers outside Roxas, Isabela who possessed characteristics comparable with the intended participants. Item analysis, internal consistency testing, and content-validity checking were completed before full administration.

Data Gathering

Permission to conduct the study was secured from the appropriate education authorities before data collection. After approval, eligible teachers were informed of the purpose of the research, the voluntary nature of participation, and the procedures for accomplishing the questionnaire. Informed consent was obtained before the instrument was distributed. Completed questionnaires were checked for completeness without attaching personally identifying information to the analytic dataset. Responses were encoded, screened, and prepared for configurational analysis after collection.

Data Analysis

The data were examined through Necessary Condition Analysis (NCA) combined with fuzzy-set Qualitative Comparative Analysis (fsQCA). Descriptive statistics first summarized the four study dimensions. NCA was used to determine whether adaptive instructional responsiveness, professional judgment and agency, or collaborative adaptive capacity constituted a necessary condition for high learner development support. Effect sizes and permutation tests were examined to establish the relevance of necessary conditions.

For fsQCA, raw scores were transformed into fuzzy-set membership scores and calibrated into degrees of membership ranging from 0 to 1. A truth table was then constructed to identify combinations of adaptive-work conditions associated with high learner development support. Configurations were evaluated using consistency and coverage, with a consistency benchmark of .80 and proportional reduction in inconsistency considered during solution refinement. Parsimonious and intermediate solutions were examined to distinguish core and contributing conditions. This procedure allowed the study to identify more than one pathway through which teachers' adaptive work supported learner development, providing a more suitable analysis than examining isolated predictor effects alone.

Ethical Considerations

The study observed voluntary participation, informed consent, confidentiality, and the right to withdraw without penalty. No personally identifying information was included in the analytical files or reported findings. Data were used solely for research purposes, stored securely, and presented in aggregate form to protect the privacy and professional standing of the participants.

RESULTS AND DISCUSSION

Table 1. *Levels of Adaptive Work and Learner Development Support*

Dimension	Mean	SD	Interpretation
Adaptive Instructional Responsiveness	3.78	0.42	High
Professional Judgment and Agency	3.86	0.39	High
Collaborative Adaptive Capacity	3.31	0.51	Moderate
Learner Development Support	3.69	0.44	High
Overall Adaptive Work	3.65	0.44	High

Table 1 presents the levels of adaptive work and learner development support among senior high school teachers. Professional judgment and agency obtained the highest mean of 3.86, indicating that teachers generally exercised confidence in modifying instruction, deciding when additional assistance was needed, and responding to classroom situations that could not be addressed by routine procedures. Adaptive instructional responsiveness was likewise high at 3.78. The pattern suggests that teachers were capable of adjusting their own practice when learners showed difficulty or required alternative forms of support. This reflects the view of adaptive expertise as a form of professional action grounded in teachers' interpretations of classroom events and their capacity to depart from fixed routines when circumstances require it (Männikkö & Husu, 2019).

A different pattern appeared for collaborative adaptive capacity, which registered the lowest mean at 3.31 and was interpreted as moderate. Teachers appeared more capable of making adjustments individually than of consistently drawing on collaborative planning, shared analysis of learner difficulties, or coordinated instructional responses. Learner development support remained high at 3.69, but its lower value relative to professional judgment suggests that sound teacher decisions did not always translate into equally strong or sustained support across all learners. The descriptive results therefore revealed a central concern of the study: adaptive work was evident, but it was more strongly developed at the individual teacher level than through collective professional practice.

Table 2. *Necessary Condition Analysis for High Learner Development Support*

Condition	NCA Effect Size (<i>d</i>)	Permutation <i>p</i> -value	Effect Magnitude	Necessity Result
Adaptive Instructional Responsiveness	0.176	.018	Medium	Necessary
Professional Judgment and Agency	0.231	.006	Medium	Necessary
Collaborative Adaptive Capacity	0.094	.081	Small	Not Necessary

Table 2 shows that professional judgment and agency produced the largest NCA effect size, $d = 0.231$, $p = .006$, followed by adaptive instructional responsiveness, $d = 0.176$, $p = .018$. Both conditions exhibited meaningful ceiling zones and statistically supported necessity effects. This means that stronger learner development support could not be reached when teachers lacked sufficient professional judgment or responsiveness, even when another favorable teaching condition was present. NCA distinguishes such conditions from ordinary predictors because a necessary condition places a constraint on how high the outcome can become rather than merely increasing its average value (Dul, 2016).

Collaborative adaptive capacity yielded a smaller effect of $d = 0.094$ and did not reach statistical significance, $p = .081$. Collaboration therefore functioned as a potentially beneficial resource but not as an indispensable condition by itself. The finding points to an important distinction in senior high school teaching. Teachers may still provide meaningful learner support through strong classroom judgment and responsive instruction even when systematic collaboration is limited. However, this does not indicate that collaboration is unimportant. Instead, its contribution appears to depend on how it combines with other elements of adaptive teaching.

Table 3. *Bottleneck Requirements for Increasing Levels of Learner Development Support*

Desired Level of Learner Development Support	Adaptive Instructional Responsiveness	Professional Judgment and Agency	Collaborative Adaptive Capacity
60%	29%	34%	0%
70%	41%	48%	0%
80%	53%	60%	21%
90%	65%	72%	36%
100%	78%	84%	50%

Table 3 further clarifies the necessity findings by identifying the minimum levels of each condition required to reach progressively stronger learner development support. Achieving a 90% outcome level required 65% adaptive instructional responsiveness and 72% professional judgment and agency, while the required collaborative adaptive capacity was only 36%. For the maximum outcome level, professional judgment required the highest bottleneck value at 84%, followed by instructional responsiveness at 78%.

The result indicates that professional judgment became increasingly important as the desired level of learner support rose. Basic learner assistance could still occur under modest adaptive conditions, but highly developed support required teachers who could interpret learner difficulties, select appropriate responses, and modify instruction with confidence. The bottleneck pattern also showed why generally acceptable teaching practices did not automatically guarantee the strongest learner support. Teachers who remained constrained in their professional decision-making faced a ceiling on how far learner development support could advance, regardless of strengths elsewhere.

Table 4. *Necessity Consistency and Coverage for High Learner Development Support*

Condition	Consistency	Coverage
Adaptive Instructional Responsiveness	.887	.842
Absence of Adaptive Instructional Responsiveness	.514	.622
Professional Judgment and Agency	.895	.826
Absence of Professional Judgment and Agency	.471	.603
Collaborative Adaptive Capacity	.742	.716
Absence of Collaborative Adaptive Capacity	.586	.648

Table 4 presents the fsQCA necessity assessment. Professional judgment and agency recorded the highest consistency at .895, followed closely by adaptive instructional responsiveness at .887. Neither crossed the stricter .90 benchmark for a single necessary set. Collaborative adaptive capacity showed a lower consistency of .742. The fsQCA results therefore reinforced the idea that learner development support could not be explained adequately by one condition acting alone.

The slight difference between the NCA and fsQCA necessity findings was analytically useful rather than contradictory. NCA examined whether deficiencies in a condition restricted the achievable level of the outcome, while fsQCA assessed whether membership in a condition was consistently present among cases displaying the outcome. Their combined use therefore offered complementary evidence about necessity. Such integration is appropriate in configurational research because fsQCA emphasizes causal combinations, asymmetry, and equifinality rather than assuming that isolated variables exert uniform effects across cases (Pappas & Woodside, 2021).

Table 5. *Configurational Pathways to High Learner Development Support*

Condition	Pathway 1: Judgment-Responsive	Pathway 2: Collaborative Reinforcement	Pathway 3: Individual Compensation
Adaptive Instructional Responsiveness	●	•	●
Professional Judgment and Agency	●	●	●
Collaborative Adaptive Capacity		●	⊗
Raw Coverage	.470	.360	.290
Unique Coverage	.130	.080	.060
Consistency	.923	.904	.886
Overall Solution Coverage = .730			
Overall Solution Consistency = .901			

Note. ● = core presence; • = peripheral presence; ⊗ = peripheral absence; blank = condition not decisive.

Table 5 reveals three configurations associated with high learner development support. The first and strongest pathway combined core adaptive instructional responsiveness with core professional judgment and agency. Its consistency of .923 indicated that teachers who were both responsive to learners and confident in making instructional decisions were highly consistent in producing strong learner support. Collaborative adaptive capacity was not decisive in this configuration, suggesting that effective learner support could be sustained by strong classroom-level adaptive work.

The second pathway showed a different route. Professional judgment and collaborative adaptive capacity appeared as core conditions, while instructional responsiveness played a peripheral role. This configuration suggests that collaboration strengthened learner support when teachers possessed sufficient professional discretion to convert shared ideas into classroom action. The finding is compatible with research showing that collaborative professional work can support changes in instruction when teachers move beyond simple exchange of materials toward shared improvement of practice (Nguyen & Ng, 2020).

The third pathway provides an especially important finding. Strong instructional responsiveness and professional judgment produced high learner development support even when collaborative adaptive capacity was comparatively weak. This individual-compensation pathway had lower consistency than the first two configurations, but its presence confirmed that teachers were sometimes compensating for limited professional collaboration through their own adaptive effort. The overall solution coverage of .730 indicated that the three configurations accounted for a substantial portion of cases displaying strong learner development support, while the solution consistency of .901 demonstrated a coherent relationship between the identified configurations and the outcome. The finding supports the principle of equifinality because high learner support was reached through more than one combination of teaching conditions.

Table 6. *Configurational Pathways to Low Learner Development Support*

Condition	Pathway 1: Limited Responsiveness	Pathway 2: Adaptive Resource Deficit
Adaptive Instructional Responsiveness	⊗	•
Professional Judgment and Agency		⊗
Collaborative Adaptive Capacity	⊗	⊗
Raw Coverage	.490	.380
Unique Coverage	.220	.110
Consistency	.914	.887

Overall Solution Coverage = .640

Overall Solution Consistency = .896

Note. ⊗ = core absence; • = peripheral presence; blank = condition not decisive.

Table 6 identifies the configurations linked with weak learner development support and makes the problem in the study more visible. The first pathway combined weak instructional responsiveness with weak collaborative adaptive capacity and produced a consistency of .914. Professional judgment did not compensate for this joint deficiency. When teachers neither adjusted instruction sufficiently nor had strong collaborative resources to draw upon, learner development support was consistently constrained.

The second pathway combined weak professional judgment with weak collaborative adaptive capacity even where some instructional responsiveness remained. This means that willingness to modify instruction was not enough when teachers lacked the professional discretion and collaborative resources required to determine what adjustment would be appropriate. Secondary teachers have been found to experience difficulty in translating knowledge of learner differences into differentiated classroom responses, particularly when learner needs are complex and continuous assessment is required (Smets et al., 2022). The present pattern therefore suggests that adaptive teaching should not be treated simply as flexibility. Effective adaptation required responsive action supported by sound judgment, with collaboration serving as an important reinforcement mechanism.

Taken together, the results showed that the strongest foundation for learner development support was the combination of professional judgment and adaptive instructional responsiveness. Collaborative adaptive capacity strengthened this relationship but remained the least developed component of teachers' adaptive work. The central problem was therefore not an absence of teacher adaptability. Rather, adaptive practice appeared uneven, with teachers relying heavily on individual judgment while collective structures for diagnosing learner needs, designing responses, and sharing instructional responsibility remained less established. Strengthening collaborative adaptive work may consequently reduce dependence on individual teacher effort and produce more consistent learner development support across senior high school classrooms.

CONCLUSION

Learner development support in senior high school was strengthened when teachers demonstrated strong professional judgment and adaptive instructional responsiveness, while collaborative adaptive capacity remained comparatively less developed. The configurational findings showed that effective learner support did not depend on a single teaching condition but on combinations of adaptive practices, with professional judgment emerging as the most critical foundation across successful pathways. Although teachers were generally able to adjust instruction and respond to learner needs, limited collaboration reduced opportunities for shared problem solving and coordinated instructional support. It is therefore recommended that senior high school programs strengthen structured teacher collaboration through regular case discussions, joint lesson planning, peer consultation, and shared analysis of learner difficulties. School leaders should also provide teachers with sufficient professional discretion, relevant training on adaptive instructional decision making, and accessible learner support resources. Future studies may examine these adaptive-work configurations using larger samples, multiple localities, and longitudinal or mixed-method approaches to determine how they develop over time and influence learner outcomes.

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