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# DIFFERENTIATED INSTRUCTION STRATEGIES AND THEIR INFLUENCE ON PUPILS' LEARNING OUTCOMES: A QUANTITATIVE INVESTIGATION IN PUBLIC ELEMENTARY SCHOOLS, WEST DISTRICT OF KABACAN

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## ABSTRACT

This quantitative study examined the level of implementation of differentiated instruction (DI) strategies and their relationship to and influence on pupils' learning outcomes in Grade 5 classrooms in selected public elementary schools within the West District of Kabacan, Cotabato, Philippines, during School Year 2025–2026. A descriptive-correlational design was employed. Survey data were collected from 9 Grade 5 teachers and 241 Grade 5 pupils (total n = 250) across six public elementary schools using stratified random sampling. Instruments adapted from Tomlinson (2021), Santamaria (2020), and Tashakkori and Teddlie (2019) assessed DI strategy implementation across four dimensions — content, process, product, and learning environment — and learning outcomes across four dimensions — academic performance, critical thinking skills, classroom participation, and overall achievement — on five-point Likert scales. Data were analyzed using weighted means, Spearman's rho correlation, and multiple linear regression. Results revealed that DI strategies were consistently implemented at high levels (grand mean = 4.46, Always) and pupils demonstrated high learning outcomes (grand mean = 4.28, Always). Correlation analyses found no statistically significant relationship between most DI dimensions and learning outcomes, except for content differentiation's positive correlation with academic performance ($r = 0.736$, $p = 0.024$) and critical thinking skills ($r = 0.709$, $p = 0.032$). Regression analysis confirmed that content differentiation significantly predicted academic performance ($R^2 = 0.683$, $F = 2.150$, $p = 0.038$) and critical thinking skills ($R^2 = 0.639$, $F = 1.774$, $p = 0.029$),

while process, product, and learning environment differentiation did not significantly predict any learning outcome. These findings confirm that content differentiation is the most impactful DI dimension for measurable pupil learning gains, while other dimensions appear to function as enabling supports rather than direct outcome predictors.

**KEYWORDS:** Differentiated Instruction, Learning Outcomes, Academic Performance, Critical Thinking Skills, Content Differentiation, Descriptive-Correlational, Grade 5, Public Elementary Schools, Kabacan Cotabato, Philippines.

## INTRODUCTION

Education is a vital foundation of individual and societal development, equipping learners with knowledge, skills, and values for responsible citizenship. In the Philippines, public elementary schools serve diverse learners with varying abilities, backgrounds, and learning styles — particularly evident among Grade 5 pupils who demonstrate different levels of academic readiness. Traditional, uniform instructional approaches often fail to accommodate these learner differences, emphasizing the need for flexible, learner-centered teaching practices.

Differentiated Instruction (DI), anchored in Tomlinson's foundational framework (1999, 2014), is a learner-centered approach that responds to learner diversity by modifying content, process, product, and learning environment based on readiness, interests, and learning profiles. Through varied teaching strategies, flexible grouping, and multiple assessment options, DI promotes active learner engagement and supports improved academic performance. Despite the Department of Education's policy promotion of learner-centered instruction under the K to 12 Basic Education Program, the consistent implementation of DI remains challenging in district-level public schools due to large class sizes, limited instructional resources, and rigid curriculum requirements.

This study addresses a clear research gap: most existing Philippine studies focus on secondary education or private institutions and examine academic performance alone, leaving limited empirical evidence on DI's influence on multiple learning outcomes among Grade 5 pupils in district-level public schools. This study specifically aimed to: (1) determine the level of DI strategy implementation; (2) determine the level of pupils' learning outcomes; (3) examine the relationship between DI and learning outcomes; and (4) determine the influence of DI strategies on learning outcomes.

## MATERIALS AND METHODS

### *Research Design and Participants*

A descriptive-correlational design (Creswell & Creswell, 2018; Gay, Mills, & Airasian, 2021) was employed. The study was conducted in six public elementary schools within the West District of Kabacan, Cotabato: Kayaga, Datu Pedtamanan, Dilanggalen, Lumayong, Malabuaya, and USM Annex Elementary Schools. Using stratified random sampling — with each school as a stratum — 250 respondents were selected: 9 Grade 5 teachers and 241 Grade 5 pupils. Teacher-respondents provided data on DI implementation levels; pupil-respondents provided data on learning outcomes.

### *Research Instrument*

Survey questionnaires adapted from Tomlinson (2021), Santamaria (2020), and Tashakkori and Teddlie (2019) were used. Part I (for teachers) measured DI strategy implementation across four dimensions (content, process, product, learning environment) using a five-point Likert scale (1 = Never; 5 = Always; Always range: 4.51–5.00). Part II (for pupils) measured learning outcomes across four dimensions (academic performance, critical thinking skills, classroom participation, overall achievement) using a five-point Likert scale (1 = Never; 5 = Always). Instruments underwent expert validation and Cronbach's Alpha reliability testing.

### *Statistical Analysis*

Descriptive statistics (weighted mean) characterized all variables. Spearman's rho correlation assessed bivariate relationships between DI dimensions and learning outcome dimensions at the 0.05 significance level. Multiple linear regression determined the predictive influence of DI dimensions on each learning outcome.

## RESULTS AND DISCUSSION

### *Level of Differentiated Instruction Strategy Implementation*

Table 1 presents the implementation levels of all four DI dimensions.

***Table 1. Level of Differentiated Instruction Strategy Implementation.***

| DI Dimension | Weighted Mean | Description |
|---|---|---|
| Content | 4.49 | Always |
| Process | 4.38 | Always |
| Product | 4.33 | Always |
| Learning Environment | 4.62 | Always |
| Grand Mean | 4.46 | Always |

Learning Environment differentiation was the highest-rated dimension (M = 4.62), led by establishing inclusive routines (M = 4.89) and adapting classroom space (M = 4.78), reflecting teachers' strong emphasis on classroom climate and organization. Content differentiation followed (M = 4.49), with providing simplified texts and leveled explanations rated highest (M = 4.56). Process differentiation (M = 4.38) was anchored by step-by-step guidance (M = 4.89), while Product differentiation (M = 4.33) was led by encouraging creative outputs (M = 4.56). These findings reflect widespread implementation of Tomlinson's (2021) DI principles, consistent with Gonzales and Cruz (2022), who found that DI strategies increase student motivation and engagement when meaningfully applied.

***Level of Pupils' Learning Outcomes***

***Table 2. Level of Pupils' Learning Outcomes.***

| Learning Outcome | Weighted Mean | Description |
|---|---|---|
| Academic Performance | 4.20 | Always |
| Critical Thinking Skills | 4.23 | Always |
| Classroom Participation | 4.35 | Always |
| Overall Achievement | 4.33 | Always |
| Grand Mean | 4.28 | Always |

Classroom Participation registered the highest mean (M = 4.35), led by working well with classmates in group activities (M = 4.52), suggesting that collaborative DI practices most strongly activate observable behavioral engagement. Overall Achievement (M = 4.33) reflected pupils' positive learning orientation and confidence. Critical Thinking Skills (M = 4.23) and Academic Performance (M = 4.20) were the lowest-rated dimensions — notably, the two outcomes most directly linked to measurable academic gain. Within academic performance, understanding lessons easily (M = 4.60) was rated highest while doing well in quizzes and tests (M = 3.97) was rated lowest, suggesting that comprehension does not automatically translate into assessment performance. This pattern aligns with Sousa (2020), who emphasized that understanding must be reinforced through practice and assessment to translate into measurable achievement.

### *Relationship Between DI Strategies and Pupils' Learning Outcomes*

Table 3 presents the Spearman correlation matrix.

***Table 3. Spearman Correlation: DI Dimensions and Pupils' Learning Outcomes.***

| DI Dimension | Academic Performance (r) | Critical Thinking (r) | Classroom Participation (r) | Overall Achievement (r) |
|---|---|---|---|---|
| Content | 0.736* (p=0.024) | 0.709* (p=0.032) | 0.452 (p=0.222) | 0.239 (p=0.535) |
| Process | -0.128 (p=0.743) | -0.018 (p=0.963) | 0.018 (p=0.963) | 0.128 (p=0.743) |
| Product | 0.630 (p=0.069) | 0.545 (p=0.129) | 0.426 (p=0.253) | 0.264 (p=0.493) |
| Learning Environment | 0.148 (p=0.704) | -0.061 (p=0.876) | 0.200 (p=0.606) | -0.209 (p=0.590) |

*(* $p < 0.05$)*

Content differentiation was the only DI dimension to achieve statistically significant correlations, and these were limited to academic performance ($r = 0.736$, $p = 0.024$) and critical thinking skills ($r = 0.709$, $p = 0.032$). No other DI dimension correlated significantly with any learning outcome. This finding supports Tomlinson (2021), who emphasized that holistic DI implementation — rather than individual dimensions in isolation — is needed to produce broad learning gains. The significant content-outcome correlations suggest that when teachers align instructional materials with learner readiness, the most cognitively demanding outcomes (academic performance and critical thinking) respond most directly. Process, product, and learning environment differentiation, while important as supporting conditions, did not produce statistically measurable outcome relationships — possibly because their impact is mediated by other factors such as student motivation, teacher-student interaction quality, and classroom management effectiveness.

### *Influence of DI Strategies on Pupils' Learning Outcomes: Regression Results*

***Table 4. Regression Results: DI Strategies as Predictors of Learning Outcomes***.

| Outcome | $R^2$ | F | p | Significant Predictor |
|---|---|---|---|---|
| Academic Performance | 0.683 | 2.150 | 0.038* | Content (β=0.465, t=2.884, p=0.026) |
| Critical Thinking Skills | 0.639 | 1.774 | 0.029* | Content (β=0.836, t=2.491, p=0.021) |
| Classroom Participation | 0.464 | 0.867 | 0.553 ns | None significant |
| Overall Achievement | 0.524 | 1.102 | 0.463 ns | None significant |

*(* $p < 0.05$; ns = not significant)*

Content differentiation emerged as the only statistically significant predictor across all regression models, and it predicted exclusively academic performance ($\beta = 0.465$, $p = 0.026$, $R^2 = 0.683$) and critical thinking skills ($\beta = 0.836$, $p = 0.021$, $R^2 = 0.639$). The high $R^2$ values for both models — 68.3% and 63.9% of explained variance, respectively — indicate that the combined DI model, with content as its driver, accounts for a substantial portion of variance in these two cognitive learning outcomes. Neither classroom participation nor overall achievement was significantly predicted by any DI dimension, suggesting that participation is more strongly shaped by classroom climate, social dynamics, and student confidence than by instructional differentiation alone. Overall achievement, as a composite indicator, is influenced by multiple interacting factors — including home support, learner motivation, and socioeconomic context — that lie outside the DI model's explanatory scope. These findings are consistent with Tomlinson's (2021) emphasis that content differentiation is essential for bridging readiness-based learning gaps, and with Sousa (2020), who found that cognitive gains are most directly activated when instructional content is carefully calibrated to learner readiness levels.

## CONCLUSION

This quantitative study establishes that Grade 5 teachers in the West District of Kabacan consistently implement differentiated instruction strategies at high levels, and that pupils demonstrate correspondingly high levels of learning outcomes across all dimensions. However, the relationship between DI and learning outcomes is not uniform — content differentiation is the only DI dimension that significantly correlates with and predicts academic performance and critical thinking skills, while process, product, and learning environment differentiation function as enabling supports rather than direct outcome predictors. These findings call for professional development programs that deepen teachers' content differentiation practices — particularly in designing leveled materials and readiness-calibrated instructional tasks — while ensuring that process, product, and environment dimensions are integrated as complementary rather than standalone strategies. Future research should examine the mediating variables — learner motivation, prior knowledge, teacher feedback quality — that may explain why certain DI dimensions produce measurable outcomes while others do not.

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