

Phonemic Awareness Development Framework In The Division Of Nueva Ecija: A Developmental Modeling Of Early Reading Acquisition Among Grade 1 Learners

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ABSTRACT

This study developed and validated a phonemic awareness framework explaining early reading acquisition among Grade 1 learners in the Division of Nueva Ecija. A quantitative, non-experimental explanatory and developmental modeling design integrated descriptive analysis, Pearson correlation, multiple regression, confirmatory factor analysis (CFA), and structural equation modeling (SEM). The source manuscript reports a stratified sample of approximately 220 participants, comprising 160 Grade 1 learners, 40 teachers, and 20 school heads or reading coordinators. Learner assessments, teacher rating scales, classroom observations, school records, and literacy-program documents provided the study data. Grade 1 learners demonstrated high phonemic awareness and phonics skills ($M = 4.01$, $SD = 0.79$) and high early reading performance ($M = 4.06$, $SD = 0.78$). Overall phonemic awareness was strongly related to reading proficiency ($r =$

0.714, $p < .001$). The regression model significantly predicted reading outcomes, $R = 0.836$, $R^2 = 0.699$, adjusted $R^2 = 0.681$, $F = 45.12$, $p < .001$. Sound blending was the strongest significant predictor, whereas rhyming-word recognition was not significant. CFA supported the measurement model, with composite reliability of 0.89, average variance extracted of 0.62, and favorable fit indices. The structural framework also showed significant effects of phonemic awareness, sound blending, letter-sound matching, word segmentation, and the home literacy environment, with good-to-excellent model fit. The findings support systematic phonics instruction, targeted phonological-awareness interventions, teacher capacity building, and sustained home-school literacy support.

Keywords: *phonemic awareness; early reading acquisition; phonics skills; literacy development; reading proficiency; Grade 1 learners; structural equation modeling*

INTRODUCTION

Phonemic awareness - the ability to identify and manipulate individual sounds in spoken words - is a foundational requirement for decoding, word recognition, fluency, and early reading comprehension. Grade 1 is a critical period because learners are beginning to connect oral-language sounds with written symbols and to apply those relationships when reading unfamiliar words.

Learners who develop strong phonological-processing skills are generally better prepared to acquire fluent and meaningful reading.

The source dissertation identifies uneven learner readiness, differing exposure to print and oral language, limited instructional time and resources, large classes, and variable teacher preparation in phonics as continuing challenges in early literacy instruction. These conditions point to the need for systematic instruction, continuous assessment, targeted remediation, engaging sound-manipulation activities, and collaboration between schools and families.

The study was anchored on Phonological Processing Theory, which explains reading acquisition through phonological awareness, phonological memory, and rapid naming (Wagner & Torgesen, 1987). Within the proposed model, beginning- and ending-sound recognition, sound blending, word segmentation, rhyming-word recognition, and letter-sound matching represent core phonemic-awareness indicators that may influence early reading proficiency.

Although research consistently recognizes phonemic awareness as a predictor of reading success, the dissertation noted limited local evidence using CFA and SEM to validate a context-specific developmental model in the Division of Nueva Ecija. The study therefore assessed phonemic awareness and phonics skills, described early reading performance, tested their

relationship, identified significant predictors, validated the measurement model, and evaluated a structural framework for early reading acquisition.

METHODS

Research Design

The study used a quantitative, non-experimental explanatory and developmental modeling design. Descriptive statistics summarized phonemic-awareness, phonics, and reading-performance levels; correlational analysis examined associations; multiple regression identified predictors; CFA tested construct validity and reliability; and SEM evaluated the direct and indirect relationships in the proposed early-reading framework.

Setting, Participants, and Sampling

The research was conducted in public elementary schools within the Division of Nueva Ecija, Philippines. The source manuscript reports stratified random sampling across schools with differing literacy performance and instructional practices. It describes an intended sample of approximately 160 Grade 1 learners, 40 teachers, and 20 school heads or reading coordinators, for approximately 220 participants. Schools served as strata and participants were selected proportionally. The exact final analytic sample should be confirmed from the original statistical data before publication.

Instruments and Data Collection

Age-appropriate diagnostic tasks assessed phoneme identification, blending, segmentation, rhyming, letter-sound correspondence, vowel recognition, sound discrimination, and phonics application. Early reading was assessed through oral reading, word recognition, picture-word association, sentence reading, simple comprehension questions, and teacher ratings. Teacher questionnaires described instructional practices and intervention activities; structured classroom observations documented implementation and learner engagement. School records, reading-screening reports, intervention documentation, lesson plans, phonics modules, and reading guides supplemented the primary data. Multiple indicators were used for the latent constructs included in CFA and SEM.

Data Analysis

Means, standard deviations, and percentage distributions described performance. Pearson product-moment correlation tested relationships at the .05 significance level. Multiple regression estimated the individual and combined contribution of phonemic-awareness components. CFA evaluated standardized factor loadings, error variance, composite reliability, average variance extracted, and goodness-of-fit indices. SEM estimated direct and indirect paths and assessed model fit using chi-square/df, GFI, AGFI, CFI, TLI, and RMSEA. The manuscript indicates that SPSS and AMOS, or similar software, were used.

Ethical Considerations

The manuscript states that approval was obtained from the Division of Nueva Ecija and participating school heads. Parents or legal guardians provided informed consent, and age-appropriate learner assent was obtained. Participation was voluntary; codes or pseudonyms protected identities; findings were reported in aggregate; and digital and printed records were stored securely. Assessments were administered in a supportive, non-stigmatizing environment using age-appropriate activities.

RESULTS AND DISCUSSION

Phonemic Awareness and Phonics Skills

Learners demonstrated high phonemic awareness and phonics skills overall ($M = 4.01$, $SD = 0.79$). Beginning-sound identification obtained the highest mean and was the only indicator rated Very High. Matching sounds to letters and demonstrating overall phonemic awareness were also comparatively strong. Sound discrimination and word segmentation received the lowest means, although both remained within the High range.

Table 1. Phonemic awareness and phonics skills of Grade 1 learners

Indicator	Mean	SD	Description
Identifying beginning sounds	4.21	0.71	Very High
Identifying ending sounds	4.08	0.76	High
Blending sounds correctly	3.96	0.81	High
Segmenting words into sounds	3.88	0.84	High
Recognizing rhyming words	4.02	0.79	High
Matching sounds to letters	4.15	0.74	High
Recognizing vowel sounds	3.91	0.82	High
Distinguishing similar sounds	3.84	0.86	High
Applying phonics in reading	3.97	0.80	High
Overall phonemic awareness	4.11	0.75	High
Composite	4.01	0.79	High

Note. Scale: 4.21-5.00 = Very High; 3.41-4.20 = High; 2.61-3.40 = Moderate; 1.81-2.60 = Low; 1.00-1.80 = Very Low.

The results indicate that learners had generally established the sound-awareness foundations needed for beginning reading. However, the relatively lower scores for sound discrimination and segmentation suggest that targeted oral-language exercises, phoneme manipulation, and guided decoding remain necessary. These skills support learners in separating, comparing, and recombining sounds during word reading.

Early Reading Performance

Early reading performance was high overall ($M = 4.06$, $SD = 0.78$). Familiar-word recognition received the highest mean and was rated Very High. Picture-word association and accurate reading of simple words were also strong. Text comprehension and reading speed obtained the lowest means, pointing to a need to extend instruction beyond word recognition toward connected-text fluency and comprehension.

Table 2. Early reading performance of Grade 1 learners

Indicator	Mean	SD	Description
Reads simple words accurately	4.16	0.75	High
Recognizes familiar words	4.24	0.70	Very High

Indicator	Mean	SD	Description
Reads with appropriate speed	3.89	0.84	High
Understands words	4.02	0.79	High
Answers simple questions	4.08	0.76	High
Associates pictures with words	4.18	0.73	High
Reads short sentences	3.94	0.82	High
Comprehends text	3.87	0.85	High
Uses phonics in reading	4.05	0.77	High
Overall reading ability	4.12	0.74	High
Composite	4.06	0.78	High

Note. The same five-level descriptive scale was used as in Table 1.

Relationship Between Phonemic Awareness and Reading Proficiency

All reported bivariate relationships were positive and statistically significant. Overall phonemic awareness had a strong relationship with reading proficiency ($r = 0.714$, $p < .001$). Letter-sound matching and sound blending produced the strongest component-level

correlations, showing that the ability to connect symbols with sounds and combine phonemes into words is closely associated with successful reading.

Table 3. Correlations between phonemic-awareness components and reading proficiency

Variable	r	p	Interpretation
Beginning-sound recognition	0.648	< .001	Significant positive
Sound blending	0.671	< .001	Significant positive
Word segmentation	0.603	.001	Significant positive
Rhyming-word recognition	0.548	.003	Significant positive
Letter-sound matching	0.692	< .001	Significant positive
Overall phonemic awareness	0.714	< .001	Strong significant

Predictors of Reading Outcomes

The regression model was statistically significant, $R = 0.836$, $R^2 = 0.699$, adjusted $R^2 = 0.681$, $F = 45.12$, $p < .001$. Thus, the included phonemic-awareness variables accounted for approximately 69.9% of the reported variance in reading outcomes. Sound blending had the largest standardized coefficient, followed by beginning-sound recognition and letter-sound matching. Rhyming-

word recognition was not a significant predictor after the other variables were considered.

Table 4. Multiple regression of phonemic-awareness components on reading outcomes

Predictor	B	SE	Beta	p	Decision
Beginning-sound recognition	0.338	0.082	0.301	<.001	Significant
Ending-sound recognition	0.214	0.085	0.187	.014	Significant
Sound blending	0.361	0.081	0.326	<.001	Significant
Word segmentation	0.248	0.084	0.219	.004	Significant
Rhyming-word recognition	0.106	0.086	0.089	.221	Not significant
Letter-sound matching	0.319	0.083	0.287	<.001	Significant

Note. Reported model summary: $R = 0.836$; $R^2 = 0.699$; adjusted $R^2 = 0.681$; $F = 45.12$; $p < .001$.

Confirmatory Factor Analysis

The CFA results supported the construct validity and internal consistency of the phonemic-awareness measurement model. Standardized loadings ranged from 0.72 to 0.86. Composite reliability was 0.89 and average

variance extracted was 0.62, meeting the acceptance criteria reported in the source manuscript. Sound blending and letter-sound matching had the strongest loadings.

Table 5. CFA loadings and measurement-model fit

Indicator	Loading	Error variance	Interpretation
Beginning-sound recognition	0.81	0.34	Acceptable
Ending-sound recognition	0.77	0.41	Acceptable
Sound blending	0.86	0.26	Acceptable
Word segmentation	0.79	0.38	Acceptable
Rhyming-word recognition	0.72	0.48	Acceptable
Letter-sound matching	0.84	0.29	Acceptable

Composite reliability = 0.89; AVE = 0.62. Fit indices: chi-square/df = 1.68; GFI = 0.95; AGFI = 0.92; CFI = 0.97; TLI = 0.96; RMSEA = 0.039.

Structural Framework for Early Reading Acquisition

The proposed SEM identified significant direct effects of phonemic awareness, sound blending, letter-sound matching, and word segmentation, as well as a significant indirect effect of the home literacy environment. Phonemic awareness produced the strongest

standardized path to early reading acquisition. These findings indicate that successful early reading is supported both by learners' sound-processing skills and by literacy experiences that reinforce those skills beyond the classroom.

Table 6. Reported structural paths in the early-reading framework

Structural path	Estimate	SE	CR	Effect
Phonemic awareness -> early reading acquisition	0.82	0.06	11.84	Significant direct
Sound blending -> reading acquisition	0.74	0.07	9.72	Significant direct
Letter-sound matching -> reading proficiency	0.71	0.07	9.15	Significant direct
Word segmentation -> reading fluency	0.63	0.08	7.81	Significant direct
Home literacy environment -> reading acquisition	0.58	0.09	6.43	Significant indirect

All reported paths had $p < .001$. Structural-model fit: $\chi^2/df = 1.74$; $GFI = 0.96$; $AGFI = 0.93$; $CFI = 0.98$; $TLI = 0.97$; $RMSEA = 0.037$.

Taken together, the descriptive, correlational, regression, CFA, and SEM findings support a developmental sequence in which sound awareness and phonics competencies contribute to word recognition, decoding, fluency, and early comprehension. The findings also support instruction that is explicit, playful, developmentally appropriate, and reinforced through home-school collaboration.

CONCLUSION AND RECOMMENDATIONS

Grade 1 learners demonstrated strong foundational phonemic-awareness and phonics skills and satisfactory early reading performance. Phonemic awareness was significantly associated with reading proficiency, and most phonemic-awareness components significantly predicted reading outcomes. Sound blending, beginning-sound recognition, and letter-sound matching were particularly influential. The CFA results supported the measurement model, while the SEM results indicated that phonemic awareness and a supportive literacy environment jointly contribute to early reading acquisition.

Schools should maintain structured phonemic-awareness and phonics programs and provide targeted remediation for learners experiencing difficulty in sound

discrimination, segmentation, fluency, and comprehension. Teachers should intensify blending, beginning-sound, segmentation, and letter-sound activities using developmentally appropriate tasks, guided reading, games, songs, and decoding exercises. School leaders should strengthen teacher training, assessment systems, and literacy-intervention support. Parents and caregivers should reinforce learning through shared reading, storytelling, sound games, and access to age-appropriate reading materials. Future studies should verify the model with exact final sample information, additional contextual variables, longitudinal data, and independent replication.

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