An Empirical Evaluation of Reading Skill Hierarchy and Academic Performance in English Among Undergraduate Students in Tamil Nadu

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Abstract:

English reading proficiency is a critical foundation for academic success, cognitive development and cross-disciplinary knowledge in higher education. This study examines the hierarchical structure of English reading skills (Elementary, Inspectional, Analytical and Synoptical) and their empirical relationship with academic performance of first-degree Arts and Science college students affiliated to Manonmaniam Sundaranar University, Tirunelveli, Tamil Nadu. This study used a quantitative descriptive correlational research design with a sample of N=462 undergraduate students from government, government-aided and self-financing institutions via multistage stratified random sampling technique. The standard diagnostic assessment tools were designed, verified and administered to measure the student performance at all the four levels of the reading skills, along with the official marks of the end semester university examinations in General English. Descriptive statistics showed a significant decrease in student competency at each level. Students had high competency at the Elementary Reading level (M = 42.54, SD = 6.12 out of 50), moderate competency at the Inspectional level (M = 31.86, SD = 5.48), low competency at the Analytical level (M = 21.58, SD = 4.82), and very low competency at the Synoptical level (M = 11.72, SD = 3.91). Pearson's correlation coefficient (r) was used for inferential analysis and showed a substantial, statistically significant positive association between overall reading skill competency and academic success ($r=0.59$, $p<0.01$). Specifically, Elementary ($r=0.50$, $p<0.01$) and Analytical reading skills ($r=0.50$, $p<0.01$) identified as the primary drivers of examination results. However, the skills of Synoptical reading showed little correlation with examination marks ($r=0.02$, $p>0.05$). This demonstrates a structural mismatch between the cognitive literacy demands of tertiary level study and the traditional university assessment model that rewards single text recall rather than a multi text synthesis. Subgroup analysis of ANOVA and independent samples t-test results demonstrated significant differences in performance among academic disciplines, types of institutions, and educational mediums of teaching. It concludes that present postsecondary training is routinely failing to grow higher-order comparative synthesis, although it successfully cultivates lower-order decoding. Such changes include, for example, explicit strategy training, changing university test rubrics to value synoptical literacy, and institutionalising bridging courses.

Keywords: Reading skill hierarchy; analytical reading; synoptic literacy; academic achievement; tertiary English language teaching.

INTRODUCTION

Reading is a fundamental cognitive activity that changes the way we think and is crucial for meeting scholastic requirements and developing intellectual independence. English is the dominant language of instruction, academic debate and international communication in contemporary higher education, particularly in multilingual countries such as India. Thus the student's capacity to communicate, comprehend and critically assess English texts will directly affect his academic progress. Reading is not a single mechanical decoding process. It is a dynamic, multi-layered cognitive hierarchy that extends from simple letter-sound identification to complicated comparative synthesis across various information sources.

The shift from secondary to tertiary education in Arts and Science colleges in Tamil Nadu would be a big change for undergraduate students in terms of the amount of reading, the difficulty of the texts and the level

of analysis expected. Students from different socio-economic and educational backgrounds, including vernacular-medium (Tamil) and English-medium education. Many learners develop a basic level of functional literacy in their education, but higher education involves sophisticated reading skills such as skimming structural frameworks, probing author assumptions, and synthesising divergent theoretical perspectives from a variety of academic sources.

The research is based on the basic four level structure of reading skills initially developed by Mortimer Adler and Charles Van Doren:

Basic Reading: The ability to interpret written language, recognise terminology, and understand explicit surface-level statements.

Inspectional Reading: The capacity to scan and skim quickly under time pressure to determine the structure, primary ideas, and general purpose.

Analytical reading is reading actively. Active reading means that the reader is involved in a process of critical reading which involves doing a sentence-by-sentence analysis, evaluating logical claims, making inferences, and critiquing the structure.

Synoptical Reading: The highest level of reading literacy, in which a reader compares, contrasts, and synthesises ideas from several sources on a common subject, so as to build distinct conceptual frameworks.

The significance of these levels of reading is well recognised; yet, empirical studies on the impact of proficiency at each of these individual levels on the results of official university exams are rare when considering the higher education in regional India. This study seeks to fill this empirical gap by investigating the performance of undergraduate students in the four reading skill domains and its direct contribution to the academic achievement in English.

2. LITERATURE REVIEW

Models such as the Simple View of Reading (Gough and Tunmer, 1986) are at the heart of the theoretical basis of reading acquisition. The Simple View of Reading asserts that reading comprehension is the outcome of decoding mechanics and linguistic comprehension. Stanovich's (1980) Interactive-Compensatory Model further highlights that readers compensate for weaknesses in one area (e.g., lack of vocabulary) by using strengths in another (e.g., background schema). The demands of reading at the higher education level shift markedly from bottom-up to top-down critical involvement (Grabe, 2009).

Empirical investigations have always established a substantial positive association between general English reading skill and academic success, both in international and Indian contexts (Alderson, 2000; Pretorius, 2000). Sharma and Gupta (2015) found that undergraduate students who scored high on reading comprehension achieved considerably higher overall Grade Point Averages (GPAs). Similarly, Stoffelsma and Spooren (2018) noted that early English reading proficiency among multilingual university learners was a significant predictor of both immediate first-year academic standing and long-term graduation results.

However, detailed research that distinguishes at least some reading levels exposes important instructional gaps:

Elementary and Inspectional Domains: Nation (2001) and Rasinski (2004) noted that fluency and word recognition are fundamental pre-conditions for understanding. However, studies of Indian university students by Nagaraj (2014) and Singh (2017) suggest that while most first year undergraduates possess functional inspectional scanning skills, they tend to employ them passively rather than strategically to cope with heavy academic demands.

Analytical Domain: According to Kintsch's Construction-Integration Model (1988), deeper comprehension of the text needs readers to develop a scenario model by making inferences about implicit meanings and assessing the logic of the text. In Tamil Nadu Ramakrishnan and Rajasekaran (2017) and Anbalagan and Sundararajan (2020) have shown that rural undergraduate cohorts struggle with analytical reading, mostly due to their continued dependence on rote-memorisation pedagogies that have endured from secondary schools.

Synoptical Domain: The most demanding frontier in academic literacy is higher-order multi-text synthesis (Perfetti, Rouet and Britt, 1999; Rouet, 2006). Braten, Stromso and Samuelstuen (2003) found that undergraduates who read actively and comparatively synoptically performed better than their peers on research-based tasks. However, synoptic literacy is almost completely absent from the regular undergraduate English language curriculum of regional Indian colleges, and students are thus not trained to undertake independent research, as Rajasekaran (2018) points out.

3. RELEVANCE OF STUDY

The study provides important empirical insights for educational policy makers, university course designers, and English Language Teaching (ELT) practitioners. The research disaggregates general reading ability into four quantifiable cognitive levels, pinpointing the specific level at which student comprehension bottlenecks happen. In addition, the relationship between these levels of skill and the official scores on the university examinations reveals potential structural mismatches between classroom teaching, cognitive literacy expectations, and formal university evaluation methods. The results give empirical information that can drive action in revising curricula, diagnostic testing, and targeted remedial reading interventions in associated colleges.

4. OBJECTIVES OF THE STUDY

To assess and evaluate the level of competency in four tiers of English reading skills (Elementary, Inspectional, Analytical and Synoptical) of the students of first degree Arts and Science colleges.

To study the frequency distribution and cognitive attrition patterns of students across the four reading competence levels.

To investigate the relationship between achievement in each tier of reading competence and total achievement in university English end-semester exams.

To examine the extent to which advanced reading skills (Analytical & Synoptical) are better predictors of academic achievement than basic reading skills.

To find out the difference in the competency of reading skills in relation to demographic and educational background characteristics (academic stream, type of institution and medium of instruction of the school).

5. RESEARCH HYPOTHESES

H1: There is a statistically significant positive correlation between students' overall English reading skill competency and their academic achievement in university English tests.

H2: Students with strong skills in Analytical and Synoptical reading tend to score far higher on academic performance than those with only Elementary or Inspectional reading skills.

H3: The proportion of undergraduate students proficient at the Elementary and Inspectional reading levels is much lower than the proportion of undergraduate students proficient at the Analytical and Synoptical reading levels.

H4: Educational background characteristics (school media of instruction, academic stream) are significantly related to student performance across the levels of reading skills.

6. METHODS

6.1 Research Design

The study used a descriptive correlational research design. The descriptive component methodically describes student achievement in the four reading tiers, and the correlational component assesses the statistical relationships between the four reading tiers and the official end-semester university examination marks.

6.2 Population and Sample

The study population consisted first year degree students (B.A., B.Sc., B.Com., B.B.A., B.C.A.) studying in the arts and science colleges under the Manonmaniam Sundaranar University, Tirunelveli, Tamil Nadu. A stratified random sampling approach was utilised in multistage. The colleges were classified on the basis of kind of funding (Government, Government Aided, Self-financing) and location (Urban, Rural). The initial sample consisted of 500 students who responded to the survey and, following rigorous screening for incomplete replies, a viable final sample of N=462 participants was kept.

6.3 Instruments for data collection

Standardised Reading Ability Assessment Package: This tool was developed and validated for the current study. It measures four levels of reading through the following sections:

Elementary Reading Test 50 marks (Vocabulary, literal comprehension, main idea, sequencing)

Inspectional Reading Test: 50 points (Structural scanning, rapid skimming, author's intent)

Analytical Reading Test – 50 Marks (Inference, critical evaluation, logic analysis, contextual vocabulary)

Synoptic Reading Test 50 marks (comparison of texts, synthesis across texts, comparative judgement) (Total Assessment Score = 200 Marks, scaled to %).

Instrument Validation: The test battery was pretested (N=50). Item difficulty indices were determined (0.60p0.82) and the internal consistency reliability of Cronbach's alpha was found at =0.84.

Academic Performance Records: Institutional records were used to obtain official end-semester examination percentages in General English, with the approval of both students and administration.

7. DATA INTERPRETATION AND DISCUSSION

The collected data were coded and analysed using SPSS (Version 26.0). We accepted statistical significance at P = 0.05.

7.1 Demographic and Descriptive Characteristics

Table 1 shows the demographic distribution and overall mean scores of reading skills in the valid sample (N=462).

Table 1: Demographic Distribution and Overall Reading Performance Statistics

Demographic Variable	Sub-Category	Sample Count (n)	Percentage (%)	Mean Reading Score (out of 200)	Mean Score (%)
Gender	Female	258	55.84%	106.80	53.40%
	Male	204	44.16%	108.90	54.45%
Institution Type	Government	54	11.69%	108.56	54.28%
	Government-Aided	170	36.80%	107.83	53.92%
	Self-Financing	238	51.51%	107.46	53.73%
Location	Rural	78	16.88%	108.94	54.47%
	Urban	384	83.12%	107.47	53.74%
Academic Stream	Arts	108	23.38%	108.94	54.47%
	Science	354	76.62%	107.35	53.68%
Total Valid Sample	**N = 462**	**462**	**100.0%**	**107.70**	**53.85%**

Interpretation: The sample is well balanced in terms of funding types and disciplines. Overall reading skill scores are closely grouped in the 53–54% range across all sub-categories, which suggests a stable, moderate baseline reading ability across demographic groups.

7.2 Average Performance by Hierarchical Reading Skill Tiers

Table 2. Distribution of students' performance across the four specialised reading skills categories.

Table 2: Descriptive Statistics for Hierarchical Levels of Reading Skill

Reading Skill Domain	Max Marks	Mean Score (M)	Standard Deviation (SD)	Percentage Mean (%)	Performance Tier Level
Elementary Reading	50	42.54	6.12	85.08%	Advanced / Proficient
Inspectional Reading	50	31.86	5.48	63.72%	Proficient / Functional
Analytical Reading	50	21.58	4.82	43.16%	Developing / Basic
Synoptical Reading	50	11.72	3.91	23.44%	Severe Deficit
Total Reading Skills	**200**	**107.70**	**14.25**	**53.85%**	**Moderate Overall**

Interpretation: The data demonstrate a clear and severe drop in performance as cognitive tasks change from lower-order decoding to higher-order processing. At the Elementary level, students are highly proficient (85.08%), which will satisfy basic literal comprehension needs. Inspectional reading lowers to 63.72%. Moderate scanning ability. But the scores decline in Analytical Reading (43.16 per cent) and collapse in Synoptical Reading (23.44 per cent). This validates Hypothesis H3, showing that undergraduate proficiency is virtually exclusively concentrated on lower-tier decoding levels, with significant impairments in comparative multi-text synthesis.

7.3 Correlational Analysis: Reading Levels and Academic Achievement

To examine Hypotheses H1 and H2, Pearson's correlation coefficient (r) was estimated between student scores in each tier of reading, their total reading score and their end semester university English examination grades.

Table 3: Pearson Correlation Matrix for Reading Tiers and Academic Scores (N=462)

Variables	Elementary	Inspectional	Analytical	Synoptical	Total Score	Academic Exam (%)
Elementary Reading	1.000	0.132*	0.274**	0.102*	0.621**	0.502**
Inspectional Reading	—	1.000	0.104*	0.071	0.723**	0.251**
Analytical Reading	—	—	1.000	0.141**	0.572**	0.504**
Synoptical Reading	—	—	—	1.000	0.171**	0.021 (N.S.)
Total Reading Score	—	—	—	—	1.000	0.593**
Academic Exam (%)	0.502**	0.251**	0.504**	0.021	0.593**	1.000

*Correlation is significant at the 0.05 level (2-tailed).

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

N.S. Not significant NS = Not Statistically Significant

Analysis:

Total Predictability (r=0.593, p<0.01) a substantial positive and statistically significant connection exists between total reading skill competency and academic examination achievement, fully supporting Hypothesis H1.

Two Drivers (r=0.502 and r=0.504): Elementary and Analytical reading skills are strongly and equally positively correlated with examination marks (p<0.01). Examination success is directly attributable to functional decoding and analytical reasoning.

Synoptical Anomaly (r=0.021, p>0.05) Synoptical reading skills correlate zero with the marks in university exams. This points to a key paradox of assessment where the highest cognitive literacy skill, synoptic reading, is neither measured or rewarded in tertiary university examinations, as they reward single-text recall and routine analytical questions.

7.4 Disaggregated Analysis of Subgroups of Educational Variables

Independent samples t-tests were used to analyse subgroup performance on school media of instruction and academic streams to test hypothesis H4.

Table 4: Performance by Subgroup by Medium of Instruction and Academic Stream of School

Subgroup Variable	Category	n	Elementary Mean	Analytical Mean	Synoptical Mean	Academic Exam (%)	t-value	p-value
Medium of Instruction	Tamil Medium	284	40.12	19.35	10.82	49.85	6.42	< 0.001
	English Medium	178	46.40	25.14	13.16	62.40		
Academic Stream	Arts	108	43.07	22.09	11.80	56.12	2.18	0.030
	Science	354	42.43	21.45	11.70	53.15		

Interpretation: The mean scores of English medium school students were significantly higher (p<0.001) than those of vernacular medium students in all reading levels and academic examination marks (H4). Arts students also did somewhat better than Science students on the analytical reading and examination tests (p=0.030) which may be due to more exposure to textual analysis in the humanities.

8. RESULTS

Hierarchy of Competency: Undergraduate students have a high level of mastery in elementary reading of the lower order (85.08%) and a moderate competency in Inspectional Reading (63.72%). However, Analytical Reading shows a sharp performance decrease (43.16%) and Synoptical Reading shows a severe performance decrease (23.44%).

Total reading skill competency has predictive strength for academic success of university in English (r=0.593, p<0.01).

Skill Determinants Basic decoding (r=0.502) and Analytical evaluation (r=0.504) are the main determinants of grades in the current university curriculum.

Structural Assessment Misalignment: Synoptical reading ability is not statistically related to (r=0.021) university examination results, showing the inability of contemporary tertiary assessment systems to measure or reward cross-textual synthesis.

Medium Disparity Previous schooling in English medium offers a statistically significant advantage over vernacular-medium backgrounds across all reading levels and academic outcomes ($p<0.001$).

9. DISCUSSION

The empirical data validate the multi-layered nature of reading competency as suggested by Adler and Van Doren, but also point to serious instructional problems in tertiary level English language education. The good performance seen at the Elementary level is consistent with the findings of Nation (2001), which indicate that basic decoding is well established during secondary education. Likewise, moderate Inspectional reading scores mean that children can read through text layouts and pick out essential terms (Grabe, 2009).

But the sharp fall in performance at the Analytical level and the almost total failure at the Synoptical level point to systemic weaknesses. These findings are similar to those found by Ramakrishnan and Rajasekaran (2017) in Tamil Nadu where tertiary learners have challenges when they are needed to assess implicit logical structures or compare different source materials. The rote-learning habits gained from schools in the secondary years promote passive reading rather than active investigation.

The most important contribution of this research is to identify the divergence between synoptical literacy and university examination performance (r=0.021). The key criterion of academic literacy, defined in theoretical literature as synoptical synthesis (Perfetti et al., 1999; Rouet, 2006), is mostly tested by university examination papers at affiliated institutions as literal recall and comprehension of isolated texts. Hence, no explicit grade incentive exists for pupils with excellent synoptical skills within the current assessment system.

10. RECOMMENDATION AND RECOMMENDATIONS

Curricular Reform. University English syllabi have to move beyond single-text literary anthologies and include paired multi-perspective text modules that require, explicitly, comparative synthesis.

Explicit Strategy Instruction: Lecturers should incorporate metacognitive strategy training, such as comparative charting, synthesising matrices and critical questioning into the regular classroom teaching.

Assessment Alignment: University semester test question papers need to be revised to include multi-text comparison synthesis problems so as to link formal grades with higher order literacy goals.

Introduce specialised English for Academic Purposes (EAP) bridge courses of analytical reading for first-year undergraduates coming from vernacular-medium schools, as a targeted remedial support, and institutionalise it.

11. CONCLUSION

The present study reveals that undergraduate students of connected Arts and Science colleges have strong basic decoding skills but their higher order analytical and synoptical reading skills are significantly lacking. The strong general relationship between reading competency and academic achievement emphasises the value of reading as an academic engine. But, the lack of link between synoptical reading and examination marks indicates a fundamental mismatch of university assessment structures. There is a need for pedagogical innovations that foster multi-text synthesis to bridge this gap so that tertiary graduates are equipped with the critical literacy required for global educational and professional success.

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