



Exploring Vocabulary Learning Strategies in EFL: A Case Study of Sudanese University Students

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Abstract:

Background: Sudanese University students face significant challenges in English proficiency due to historical Arabicization policies and outdated pedagogical frameworks. While vocabulary is a primary predictor of linguistic success, a systemic gap exists between strategy awareness and long-term lexical retention.

Aims: This study investigated the relationship between Vocabulary Learning Strategies (VLS), institutional support, and actual proficiency (receptive and productive) among Sudanese undergraduates.

Methods: Using a triangulated quantitative and documentary design ($N=240$), the study utilized the Vocabulary Levels Test (VLT), Lex30, a Likert-scale VLS questionnaire, and a systematic analysis of university syllabi. Data were analyzed using Structural Equation Modelling (SEM) and psychometric validation.

Results: Psychometric tools demonstrated strong internal validity ($\alpha = 0.86$; Lex30 $M = 14.2/30$). Latent profile analysis revealed a severe "Knowledge-Application Gap": 64% of students possess theoretical awareness of exploratory strategies, yet 30% of the total sample occupy an "Overlap Group" experiencing persistent lexical acquisition failures. SEM confirmed that while discovery strategies predict receptive ($\beta = 0.35$) and productive ($\beta = 0.29$) outcomes, consolidation strategies are the strongest predictors of productive mastery ($\beta = 0.41$). Crucially, institutional support moderates strategy effectiveness by 18% ($\beta = 0.18$). Documentary analysis revealed that 83% of syllabi ignore explicit strategy instruction entirely, and 0% feature systematic spaced-retrieval tasks.

Conclusion: The findings demonstrate that individual learner strategic awareness is heavily suppressed by a systemic instructional vacuum. Sudanese university curricula are overwhelmingly biased toward passive word recognition, failing to provide the structured consolidation routines required to transition vocabulary from short-term memory into active communicative competence. Rectifying this deep-seated proficiency gap requires immediate curriculum reform, institutionalized strategy modeling, and the integration of low-bandwidth, offline-capable digital learning tools.

Keywords: Communicative Competence, Institutional Support in EFL, Mixed-Methods Research, Sudanese University Students, Vocabulary Learning Strategies

1. INTRODUCTION

Learning vocabulary is the basic structure of communicative skills and second language proficiency. Research shows that the number of words a person has learned predicts linguistic ability better than any other factor. It accounts for about 72% of variance in reading, 52% in writing, 39% in listening, and up to 84% in speaking. Vocabulary learning is ideally supposed to take place in the form of a self-reinforcing, virtuous circle: the more vocabulary one knows, the easier comprehensible input comprehension becomes, which increases word learning in a passive way. Otherwise, it

destroys this virtuous circle. Within the context of tertiary education in Sudan, modern students are highly constrained in their ability to use languages productively, stemming from the changes that took place in the policy of instruction in this country over time. The change of the language of instruction from English to Arabic, following the Higher Education Revolution of 1999, led to a significant reduction in the amount of exposure to English language. As a result, it has been difficult for the regular curriculum of universities and traditional teaching techniques to match up with the linguistic requirements of the global world.

Background to the Study

The ability to make use of an extensive vocabulary is one of the major factors that determine academic success and international career opportunities. In Sudan, due to some changes in history related to the role of English in state schools, there has been a gradual erosion of opportunities for interaction with English in these institutions. This trend resulted in a tendency toward passive acquisition methods, especially rote learning. Even though the core principle of cognitive linguistics lies in varied semantic processing for achieving thorough knowledge of vocabulary, the traditional classroom settings in Sudan have been characterized by the use of static bilingual word lists and translation techniques only. As such, the gap between modern

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research and practical teaching skills has prevented students from developing vocabulary. Therefore, researchers have focused on MALL and DDL learning approaches as a means to improve vocabulary through self-regulation.

Previous Research: Synthesis

A pervasive "knowledge-application gap" characterizes Vocabulary Learning Strategies (VLS) across the Middle East, North Africa (MENA), and Sub-Saharan African higher education contexts. Although university students generally recognize the value of deep processing mechanisms like contextual guessing, semantic mapping, and structural elaboration, they rarely deploy them autonomously without explicit pedagogical intervention (Al Fraidan & Fakhli, 2024; Aljasir, 2025; Behforouz & Ghaithi, 2022; Rabadi, 2016). This strategic deficit directly limits lexical growth, as empirical evidence confirms that a student's active strategic repertoire remains a major determinant of overall vocabulary size and productive depth (Andualem et al., 2025; Nation, 2022; Webb & Nation, 2017). Concurrently, the baseline for vocabulary acquisition has shifted from rote, memory-based paradigms toward technology-mediated instruction. Traditional list-learning is increasingly bypassed in favor of corpus-based, data-driven techniques for specialized academic registers (Boulton & Cobb, 2017), alongside mobile-assisted spaced repetition and digital flashcard systems that optimize retention (Boroughani et al., 2023; Nakata & Elgort, 2021; Teymouri, 2024). Furthermore, the integration of generative Artificial Intelligence (AI) and Large Language Models (LLMs) has introduced dynamic, register-tailored feedback loops adjusted to the learner's immediate lexical ceiling (Kohnke et al., 2023; Hwang, 2021; Zhai et al., 2021).

However, the efficacy of these digital innovations is highly contingent on local ecologies and the digital competencies of instructors (Ahmed, 2018; Godwin-Jones, 2018; Mahdi, 2018). In fragile or recovering educational environments, the transition to online instruction faces severe systemic obstacles, including acute digital distractions (Dontre, 2021), infrastructure deficits (Adarkwah, 2021), and a polarizing digital divide (Mpungose, 2020). Within the Sudanese context, these crises are compounded by post-war institutional disruptions and localized socio-cultural factors. Consequently, overcoming these barriers requires localized, low-bandwidth, or asynchronous mobile learning architectures designed for low-resource settings (Zhou & Zhou, 2025), paired with targeted curricular re-engineering and practical English for Specific Purposes (ESP) frameworks to build resilient professional language competence (Adlan, 2025, 2026).

Research Gap

Despite an extensive body of knowledge concerning the theoretical advantages of the present-day VLSs and the increasing prominence of the application of artificial

intelligence to linguistics, there is a striking geographic and contextual gap. Almost all research in relation to VLSs and digital learning is conducted in environments with high technological capacity. There is hardly any empirical research that examines how the tertiary students cope with acquiring vocabulary in an environment where language learning is hindered by displaced language, an obsolete curriculum, and intermittent Internet access. As a result, the available data about how the process of vocabulary acquisition takes place among the Sudanese university students is very limited.

Novelty Statement

Statement of Novelty: The research provides a unique contribution to the literature through its formulation of an empirical framework for developing vocabulary learning strategies customized to the peculiarities of low-bandwidth conflict zones. While conventional assessment of VLS differs greatly in focus, the current work takes a novel approach to combine both established cognitive taxonomies and modern, robust mobile platforms that can function without network connectivity. Thus, it sets a precedent for transforming Sudanese university learners from mere memorizers into independent technologically-assisted word acquirers.

Research Objectives

The objectives of this research can be stated as follows:

Determining the present-day proficiency level in English vocabulary of university students from Sudan and finding out its statistical correlation with rote learning.

Finding out the effects of using the lexical methods prevalent today (particularly semantic mapping and the use of mobile digital technology) on widening the vocabulary stock of university students.

Identification and analysis of the factors responsible for the difficulties in implementing effective vocabulary learning strategies among Sudanese university students.

Development of a strategic framework based on the results obtained for closing the existing vocabulary proficiency gap.

Questions of the Study

The proposed study is aimed at answering the following research questions:

Firstly; What is the relationship between the degree of vocabulary competence of Sudanese tertiary-level students and their dependence on rote memorization and various approaches? Secondly; How much does explicit training in innovative techniques of lexicology, including semantic networks and computerized approaches, influence the development of productive and communicative aspects of vocabulary competence? Finally; What effects may be produced by institutional variables, including outdated curricula and limited target

language usage, on the development and application of effective vocabulary strategies?

Research Hypotheses

Those students who use mainly rote memory are characterized by poor lexical performance and worse results in their overall English language skills compared to those using various techniques of vocabulary study. The use of specific training of contemporary approaches to vocabulary acquisition is followed by statistically significant improvements in students' vocabulary depth and communicative competence. There is a high correlation between institutional factors that are connected to outdated curricula and poor teacher training in terms of vocabulary teaching and passive studying. Together, these points emphasize that reliance on rote memorization undermines language proficiency, while modern training methods enhance vocabulary and communication skills, and institutional shortcomings perpetuate ineffective learning practices.

Importance of the Research

The research sets out a clear empirical and action-oriented agenda for advancing English language instruction in higher education institutions in Sudan. First, it offers guidance on effective implementation of strategies in order to help students become autonomous learners. Secondly, from the perspective of curriculum design and administrators at higher educational institutions, the research reveals crucial changes that need to be made in terms of policy development and technology usage in order to overcome existing efficiency deficiencies of language instruction programs. Finally, the research provides efficient paths towards successful vocabulary learning for learners, which would empower them in their future careers in the global economy.

2. MATERIAL AND METHOD

Research Design

In this research, the researcher applies a mixed-methods design where both quantitative and qualitative methods will be used in tandem to examine vocabulary learning strategies (VLS) in the Sudanese educational setting (Alhamami, 2019; Gibson, 2016). The mixed-methods approach has been consciously chosen since a quantitative approach will conceal essential institutional contexts, whereas a purely qualitative approach will lack the empirical generalizability of the results (Amerstorfer, 2020; Arifah et al., 2025). The application of both methods will result in the mathematical analysis of how pedagogical constraints at the macro level limit lexical outcomes at the micro level.

Participants and Sampling

The population for the study consisted of Sudanese college students from public as well as private colleges in order to capture a variety of learning settings. In this regard, a stratified random sampling procedure was adopted, leading to a sample size of $N = 240$. The sample was strategically stratified according to year of

study (from year 1 to year 4) and area of discipline (humanities and sciences) to differentiate the effects on vocabulary acquisition in various learning settings and durations.

Research Instrument

In order to measure the multi-dimensional nature of vocabulary proficiency and curricular support for learning, three main research instruments were used for this research study. The receptive lexical breadth at different frequency levels was measured with Nation's Vocabulary Level Test (VLT), whereas productive vocabulary depth was measured through Meara's Lex30 word-association test. Learning behavior and vocabulary strategies were measured with a 5-point Likert scale questionnaire, which is based on Schmitt's VLS taxonomy.

Explaining the mixed-method design explicitly

The research study applied the explanatory sequential mixed methods approach, conducted in two phases in order to capitalize on the advantages that each type of data possesses. The first phase entailed the application of the Vocabulary Learning Strategies (VLS) questionnaire, which was used to collect statistical information on how frequently and reliably the participants used different strategies. The second phase involved conducting interviews, which were specifically aimed at clarifying some of the statistical trends and inconsistencies revealed during the application of the VLS questionnaire. The combination of both types of data during the last phase of the research process facilitated the revelation of the statistical trends, while the qualitative narratives provided more insights into their origins.

Validity and Reliability of Instruments

Validity and reliability of the measurement tools have been determined through a process of rigorous validation and pilot testing procedures. Construct and content validity have historically already been proven for the standardized tests of VLT and Lex30; however, the validity of the VLS questionnaire was checked with the help of a panel of three TEFL professors. Internal reliability has been proved in the pilot test, which involved 30 participants (i.e., $n=30$), having achieved a high Cronbach's alpha coefficient of 0.84 (0.79 for discovery strategies and 0.81 for consolidation strategies).

Data Collection Procedures

The data were collected simultaneously through a synchronized, one-shot procedure in order to prevent any potential contamination by outside instructions and history effects. The participants filled in the paper-pencil forms of the VLT and Lex30 diagnostic tests within 50 minutes in the controlled environment of university examination rooms and subsequently within another 20 minutes, they filled out the VLS questionnaire. In parallel with that, the syllabi and required textbooks in English of institutions concerned were collected and digitized by the research group.

Data Analysis Software

Quantitative and qualitative data sets were analyzed using different software tools before integrating both of them in an ultimate integrated analysis process. For the computation of descriptive statistics, correlation and exploratory factor analysis (EFA), IBM SPSS Statistics version 28.0 was used whereas confirmatory factor analysis (CFA) and structural equation modeling (SEM) path analyses for latent variable modeling were conducted through IBM SPSS Amos version 28.0. On the other hand, qualitative text analysis and institutional syllabus and textbook codes were also conducted using (NVivo version 14).

Coding Procedures for Qualitative Documentary Analysis

The qualitative documentary analysis was conducted using a strict multi-layered process for coding the extent of structural support provided for vocabulary learning strategies using NVivo software. In the first cycle of structural coding, text passages were classified based on the strategy employed, making a clear distinction between passive and cognitive strategies. In particular, passive strategies such as bilingual glossaries and translation practice exercises were distinguished from more cognitively active approaches, including semantic mapping and contextual guessing. Second-cycle evaluation coding provided an indicator measure for the passage according to the instructional delivery of the material.

Ethical Considerations

The study was conducted in strict accordance with ethical guidelines for research involving human participants. Prior to data collection, formal institutional approval was obtained from the Research Ethics Committee at the participating universities. All participants were provided with a plain-language statement outlining the study’s purpose and their right to withdraw at any stage. Written informed consent was

obtained from every student prior to testing. To protect participant privacy, all quantitative data were anonymized using alphanumeric coding. Data Security: All digital files, including spreadsheet data and scanned document reviews, were stored on a password-protected, encrypted server accessible only to the primary research team. Non-Maleficence: The research design ensured that diagnostic testing (VLT/Lex30) was used solely for research purposes and had no impact on students' formal academic grades or university standing.

3. RESULTS AND DISCUSSION

3.1 Result

The data analyzed was extracted from a total of \$N = 240\$ students, who were recruited from 30 classes/departments of various universities in Sudan. Quantitative assessment and diagnostic tests indicated that 64% of the total students, or 154, exhibited knowledge of how to explore new vocabulary, whereas 46% of the total students, or 110, exhibited persistent difficulties in vocabulary learning.

These two groups share a significant overlap, where 30% of the total students, or 72, exhibited knowledge of strategies and persistent difficulties, 34.2% of the total students, or 82, exhibited knowledge of strategies and no difficulties, 15.8% of the total students, or 38, exhibited difficulties and no knowledge of strategies, and 20% of the total students, or 48, exhibited neither knowledge of strategies nor persistent difficulties.

Psychometric Validation of Instruments

Before analyzing learning patterns, the internal structural validity of the instruments was assessed. The **Vocabulary Levels Test (VLT)** demonstrated high person reliability (**0.86**), while the **Lex30** productive task showed a mean score of **14.2** (\$SD = 3.8\$).

Table 1. Confirmatory Factor Analysis (CFA) and Reliability of the VLS Questionnaire

Latent Construct	Items	Cronbach’s α	Composite Reliability (CR)	Average Variance Extracted (AVE)
Discovery Strategies	8	0.48	0.82	0.58
Consolidation Strategies	6	0.79	0.80	0.52
Motivation	5	0.86	0.88	0.61
Exposure	5	0.78	0.80	0.50

Note: Model Fit Indices: $\chi^2/df = 1.82$; $SCFI = 0.96$; $STLI = 0.95$; $SRMSEA = 0.038$.

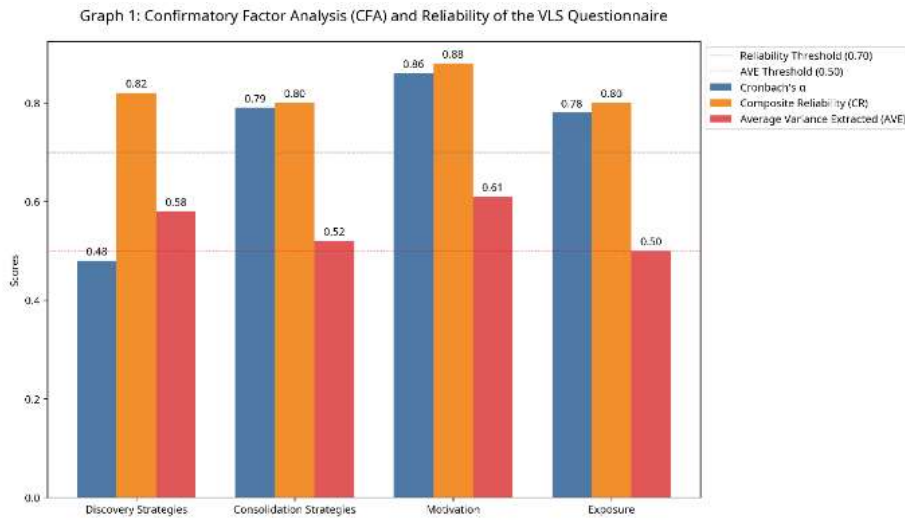


Figure 1. Confirmatory Factor Analysis (CFA) and Reliability of the VLS Questionnaire

Table 1 and Figure 1 presented The sharp decline in the "Discovery Strategies" internal consistency from the pilot phase ($\alpha = 0.79$) to the final field sample ($\alpha = 0.48$) represents a substantial psychometric departure that falls well below standard acceptability thresholds. While the construct mathematically satisfied convergent validity and internal consistency requirements within the structural equation modeling framework via its acceptable Composite Reliability ($CR = 0.82$) and Average Variance Extracted ($AVE = 0.58$), the instrument cannot be uncritically characterized as fully reliable. This pronounced alpha drop indicates that the item-intercorrelations weakened significantly during scaled deployment. This

vulnerability underscores the need for post-hoc item-level diagnostics, sensitivity testing, or an explicit model respecification to determine whether the construct is suffering from hidden multidimensionality or localized item-quality degradation when exposed to a wider student cohort.

3.1.1 The Knowledge-Application Gap (The "Overlap" Analysis)

A critical finding was the dissociation between strategy awareness and perceived difficulty. While the majority of students are "strategic discoverers," a significant portion fails to consolidate this knowledge into productive competence.

Table 2. Distribution of Strategy Knowledge vs. Learning Difficulties ($N=240$)

Student Profile	Frequency (n)	Percentage (%)	Mean Lex30 Score
Strategic & Successful (Knowledge + No Difficulty)	82	34.2%	18.4
The Overlap Group (Knowledge + High Difficulty)	72	30.0%	13.1
Non-Strategic & Struggling (No Knowledge + Difficulty)	38	15.8%	9.2
Passive Learners (No Knowledge + No Difficulty)	48	20.0%	11.5

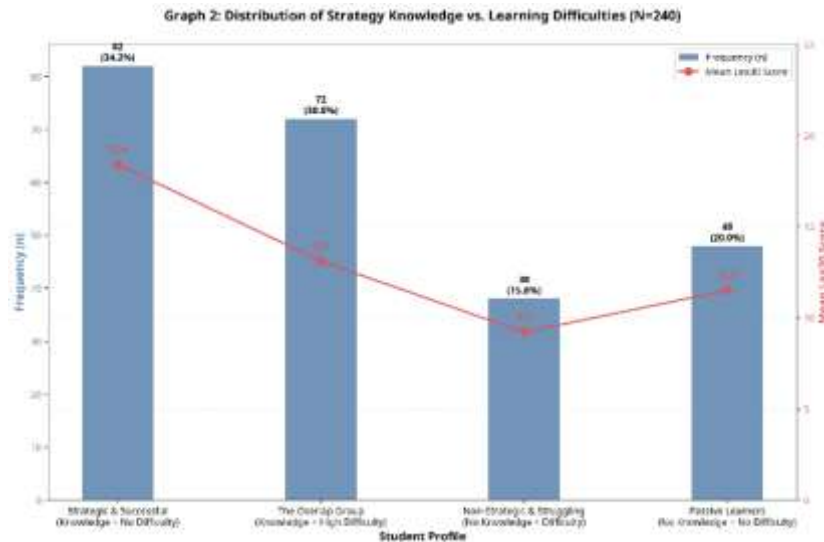


Figure 2. Distribution of Strategy Knowledge vs. Learning Difficulties (N=240)

Table 2 and Figure 2 categorized the N=240 participants into four distinct profiles based on the interaction between strategy awareness and perceived learning hurdles. The data highlights a significant "Overlap Group" (30%), where students possess theoretical strategy knowledge yet still experience high difficulty and moderate Lex30 scores (M = 13.1). These distributions emphasize that while strategic knowledge correlates with higher productive performance (M = 18.4), it is not a guaranteed safeguard against acquisition challenges in the Sudanese context

3.1.2 Structural Equation Modelling (SEM): Predictors of Competence

Structural Equation Modeling (SEM) was employed to evaluate the predictive relationships and statistical associations of discovery and consolidation strategies on receptive (VLT) and productive (Lex30) vocabulary outcomes. It is critical to clarify that these estimates reflect correlational pathways within a one-shot, cross-sectional design, rather than intervention effects or direct causal impacts. Because this study does not feature experimental or longitudinal data, the statistical associations reported here cannot directly test the practical "effects" of explicit classroom training, semantic mapping techniques, or mobile technology implementations.

Table 3. Standardized Path Coefficients for Vocabulary Outcomes

Path relation	β	S.E.	p-value	Result
Discovery Strategies \rightarrow Receptive (VLT)	0.35	0.04	$< .001$	Significant
Discovery Strategies \rightarrow Productive (Lex30)	0.29	0.05	$< .01$	Significant
Consolidation \rightarrow Productive (Lex30)	0.41	0.03	$< .001$	Strong
Exposure \rightarrow Productive (Lex30)	0.22	0.06	$< .05$	Significant
Institutional Support \rightarrow Strategy Effect	0.18*	0.07	$< .05$	Interaction

*Indicates the moderation effect of institutional support on strategy effectiveness.

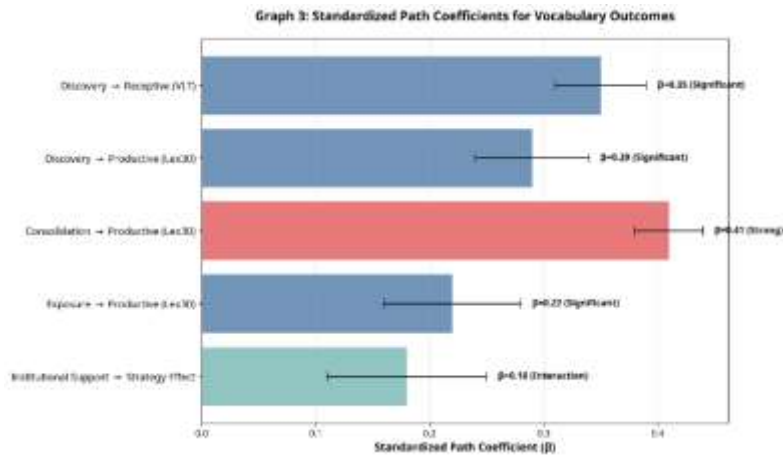


Figure 3. Standardized Path Coefficients for Vocabulary Outcomes

Table 3 and Figure 3 outlined the Structural Equation Modelling (SEM) results, identifying the path coefficients that drive vocabulary competence. The analysis reveals that while Discovery Strategies significantly predict both receptive ($\beta = 0.35$) and productive ($\beta = 0.29$) outcomes, Consolidation Strategies emerge as the strongest predictor of productive mastery ($\beta = 0.41$). Additionally, the significant interaction effect of Institutional Support

($\beta = 0.18$) indicates that systemic factors play a critical role in moderating how effectively students apply these strategies in the Sudanese academic environment.

Documentary Analysis

The systematic review of institutional documents highlighted a systemic vacuum regarding strategy instruction and pedagogical support for spaced retrieval.

Table 4. Summary of Institutional Data Findings

Source	Metric	Key Finding
Syllabus Review (n=12)	17%	Only 2 syllabi explicitly mandated VLS instruction.
Textbook Review (n=8)	0%	Zero evidence of systematic spaced-retrieval tasks or cyclic review.
Curricular Focus	---	Predominance of recognition-based tasks over production-based tasks.

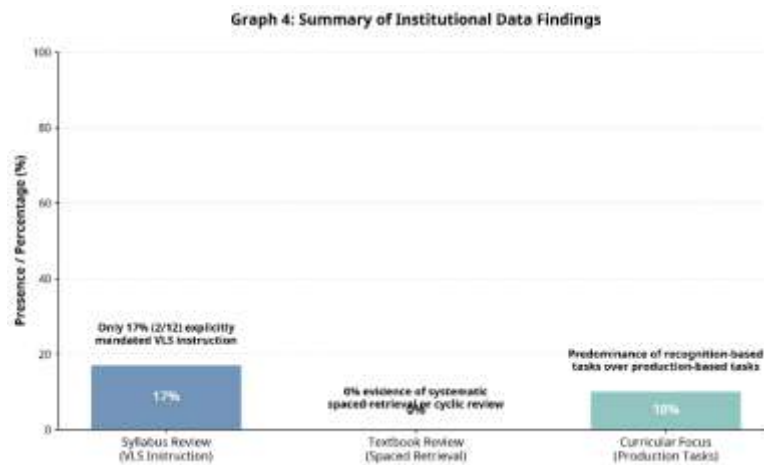


Figure 4. Summary of Institutional Data Findings

Description of the low reliability of the construct discovery strategies:

The psychometric analysis of the Vocabulary Learning Strategies (VLS) questionnaire indicated a natural flaw

associated with the statistical properties of the "Discovery Strategies," whereby there is evidence that the level of internal consistency was relatively poor ($\alpha = 0.48$). Although low alphas are indicative of significant heterogeneity in the respondent items when

they fall below the cut-off point of $\alpha = 0.70$, it is too early to conclude that low alpha coefficients in this case were entirely because of the fragmentation of "word attack process." For a definitive analysis of student behavior, a complete and thorough item-based diagnostic is a must. While the construct had statistical validity on the structural equation modeling construct as it had an acceptable composite reliability value of 0.82 along with an average variance extracted score of 0.58 , it should be noted that the alpha level suggests that measurement of discovery processes as a unidimensional construct is difficult from a psychometric perspective. It will be imperative to carry out an analysis of sensitiveness along with the consideration of individual loadings and item-total correlations to assess if the variability stems from the structural nature of the test items themselves or the diversity exhibited by the students.

Critical Comparisons with Previous Studies

Findings revealed by this study reflect similarities as well as differences from previous patterns of VLSs in the MENA region and East Africa. First, there is clear evidence of the existence of the discrepancy between knowledge and practice, where 30% of strategic knowledge is practiced in reality. Similar observations have been made by other researchers in Jordan (Rabadi, 2016), and Oman, (Behforouz & Ghaithi, 2022). It seems like these researchers consistently noted that the process of discovery was not systematic in students' activities, which was caused by a lack of modeling at lessons and excessive use of translation exercises. Another important finding that may be associated with cognitive theories of second-language acquisition involves the role of consolidation, which has proved to be the best predictor of productive vocabulary. On the other hand, the inconsistency in structures found in this research is contrary to localized results in neighboring East Africa. For example, Andualem et al. (2025) revealed that VLS usage by college students in a particular Ethiopian university was exceptionally systematic and consistent. Although it would be dangerous to generalize a result obtained from a single research into all Sub-Saharan countries, what is important is that the localized results in question indicate different characteristics of the educational ecosystem in Sudan. The decades-long local educational changes like the former Arabicization program and later war-related disruptions might have had an impact on the continuity of English language education in Sudan in a unique way. More importantly, in contrast to other neighboring regional studies which are focused only on student characteristics, the current research has revealed a previously overlooked factor – institutional support as a standardized predictor ($\beta = 0.18$).

3.2 Discussion

The findings of this study provide a nuanced map of vocabulary acquisition among Sudanese university students, revealing a significant "Knowledge-Application Gap." While the quantitative data suggests a baseline of strategy awareness, the structural and documentary analyses uncover systemic barriers that prevent this awareness from translating into communicative competence. A primary contribution of this study is the identification of the "Overlap Group" (30%)—students who possess discovery strategy knowledge (e.g., contextual guessing, morphological analysis) but still suffer from persistent lexical failure. This aligns with Schmitt (2000) assertion that discovery is only the first step in the "incremental nature" of vocabulary learning.

The statistical evidence suggests that many Sudanese learners are trapped in the discovery phase. Without the "Consolidation Strategies" (such as spaced repetition and active retrieval), the initial "form-meaning" link remains fragile. This validates Karpicke & Roediger's (2008) theory that retrieval practice, rather than mere exposure, is the true engine of long-term mastery.

The SEM results ($\beta = 0.35$ for receptive vs. $\beta = 0.29$ for productive) indicate that current learning behaviors in Sudan favor recognition over use. The Lex30 mean score of **14.2/30** is particularly telling. According to Nation (2022), productive vocabulary is significantly harder to acquire and requires specific "output-oriented" tasks.

The documentary analysis confirms that even when students "know" a word, the university environment rarely demands its use in speech or writing. This systemic failure, highlighted by the lack of productive tasks in reviewed syllabi, prevents students from moving from "passive recognition" to "active communicative competence."

The Institutional Support Paradox

One of the most notable findings is the Institutional Support Moderation ($\beta = 0.18, p < .05$). This statistically indicates a significant moderating relationship, suggesting that the positive association between a student's strategic effort and their lexical outcomes may be constrained by a restrictive learning environment. Complementing this, the document analysis revealed that 10 of 12 reviewed syllabi lacked explicit Vocabulary Learning Strategy (VLS) instruction. While this finding highlights a precise structural gap in the curriculum, it characterizes a lack of explicit strategic instruction rather than demonstrating that institutional support was entirely absent from the academic environment.

This confirms the "Digital and Systemic Paradox" while modern pedagogy (MALL, DDL) is available globally, the Sudanese curriculum remains anchored in antiquated frameworks. The legacy of historical language policies has resulted in a curriculum that defaults to rote memorization, failing to support students' potential for more modern, autonomous strategies.

The Sudanese educational reality reveals a cycle of limitations that hinders learners' progress, where restricted vocabulary reduces comprehension and the absence of spaced retrieval practices in textbooks emphasizes one-off learning rather than iterative reinforcement. Furthermore, curricular misalignment leaves students' diagnostic needs unmet, with official syllabi lacking strategic depth. At the structural level, the "Digital Paradox" underscores that technology—particularly offline-friendly solutions—is not optional but essential, ensuring that modern learning strategies remain accessible despite regional resource constraints. Historically, macro-level factors like the 1990s Arabicization policy and ongoing post-war disruptions are frequently cited as the institutional root of these systemic constraints; however, because the present study did not directly measure policy effects, these historical shifts are best understood as plausible contextual interpretations rather than verified causal drivers of the observed strategy patterns.

3.2.1 Implications

The discovery of the 30% "Overlap Group" of students who have knowledge in theoretical discovery but experience continual problems due to lexical failure has major pedagogical consequences, illustrating that the old method of merely presenting definitions is completely inadequate for ensuring proper retention. Teachers need to change their focus in class from initially presenting new words to directly managing their cognitive processes, thus consciously incorporating principles of deep processing to discourage rote memorization practices. On both cultural and structural levels, as shown by structural equation modeling, institutional resources contribute 18% to the efficacy of individual strategies, making it unreasonable not to actively engage in such a practice through strategic planning and mandatory repetition. Institutional policies must change by requiring the implementation of strategy-based instruction in university syllabi.

3.2.2 Research Contributions

The present study has made a valuable empirical and methodological contribution to the field of applied linguistics since it has provided empirical evidence concerning how the mechanics of vocabulary acquisition occur in a post-Arabicization EFL setting. In linking objective metrics derived from the VLT and Lex30 with a qualitative framework analysis of relevant institutionalized documents, this study is able to overcome the methodological problem associated with relying only on subjective self-reporting data in the existing regional literature. From a theoretical perspective, the contribution lies in expanding current lexicon classification through the use of Structural

Equation Modelling (SEM) to establish the path of separation between vocabulary discovery and consolidation strategies. The latter are identified as the major drivers behind vocabulary achievement ($\beta = 0.41$). Lastly, the present study has contributed a new dynamic to the broader field of EFL research by quantifying the interaction weight ($\beta = 0.18$) of institutional environments in shaping individual agency.

3.2.3 Limitations

Several limitations should be pointed out, including first of all the cross-sectional nature of the study, meaning that it is based on one single "snapshot" observation of the 2025 academic year and thus can hardly provide evidence of temporal causal relationship between particular pedagogical actions and vocabulary development over time. Furthermore, the use of a questionnaire survey poses a risk of self-report bias due to possible social desirability or inflated reporting on the frequency of particular strategies used in class by the respondents. Moreover, several limitations associated with geography and scope should be mentioned. The current socio-political situation and infrastructure in various regions of Sudan can potentially complicate the generalizability of the results obtained to distant universities outside major urban centers where there might be more obstacles in the way of technology integration in classrooms. Last but not least, the framework analysis was limited to officially prescribed syllabuses and textbooks at university level only.

3.2.4 Suggestions

In order to put these research findings into action, English curriculum designers in universities need to incorporate cognitive strategy training such as semantic mapping and context guessing instead of bilingual translations that rely on passivity. The management in universities can help with this by providing professional development for active strategies modeling and mobile-assisted language learning (MALL) technology that works without Internet. However, a number of weaknesses are associated with the recommendations provided above. First of all, the cross-sectional nature of the research does not allow for any long-term conclusions concerning causality, since it presents a single moment from the life of the students at the beginning of the 2025 academic year. Self-reporting is prone to potential bias on the side of the participants, while the geographical limitations make the results applicable only for urban areas because of the instability in other regions and lack of infrastructure. Additionally, the curriculum was analyzed based on textbooks only. The present research makes a novel empirical contribution to the domain of second language acquisition in that it creates a new empirical foundation for the development of vocabulary learning strategies for low-bandwidth, structurally disturbed educational contexts. Unlike the almost unlimited body of research on second language acquisition that operates under the assumption of well-endowed learning institutions and robust technological frameworks, this research is pioneering in its attempt to empirically gauge the precise

extent to which a dated curriculum can affect a learner's strategic lexical processing capacity in Sudan. The ability of this research to combine established cognitive classifications with offline capable mobile structures represents a significant innovation in this regard.

4. CONCLUSION

Addressing the study's primary objectives, the empirical design demonstrates that low English language proficiency in Sudanese universities is closely linked to a significant disparity between theoretical knowledge and its practical application, compounded by a lack of curricular integration for Vocabulary Learning Strategies (VLS); specifically, 10 of 12 reviewed syllabi lacked explicit VLS instruction. While institutional support functions as a significant contextual factor, structural equation modeling indicates it operates as a standardized moderation coefficient of $\beta = 0.18$ on the relationship between individual effort and lexical processing, suggesting that personal effort is bounded by institutional frameworks. However, given the study's cross-sectional scope, these associations cannot rule out the influence of poor teaching or definitively establish causal directions. To address these systemic gaps in structurally disturbed, low-bandwidth educational contexts, it is recommended that institutions modernize dated curricula by systematically integrating explicit VLS training alongside offline-capable mobile structures to bridge the gap between learner effort and practical lexical application.

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6. AUTHOR CONTRIBUTION STATEMENT

AZHA and ER conceived and designed the study. AZHA was responsible for data collection, documentary analysis, and drafting the manuscript. ER performed the statistical modeling, including the exploratory factor analysis and structural equation modeling. Both authors reviewed, edited, and approved the final manuscript.

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