Research Journal in Translation, Literature, Linguistics, and Education (RJTLLE)
https://scientific-board.com/rjtlle Volume 2, Issue 3, 2026
https://doi.org/10.64120/cef99540

CASE STUDY ARTICLE **Section:** *Education & Applied Pedagogy*

Published by **Scientific-Board LLC** in the Research Journal in Translation, Literature, Linguistics, and Education (RJTLLE). **Volume 2, Issue 3, 2026**.

ISSN: *3067-6290 (Online)*
3068-8450 (Print)

Article Details
Received: 15 March 2026
Revised: 01 May 2026
Accepted: 27 May 2026
Published: 07 July 2026

Conflict of Interest: The author/s declared no conflict of interest.

VoxLit: A computational tool with literary data for active and passive voice mastery at Eastern University, Sri Lanka

Mahalingasivam Somathasan[1]*
[1]Eastern University, Sri Lanka
https://orcid.org/0009-0008-8214-2737
***Correspondence:** *somathasanm@esn.ac.lk*

Abstract
Proficiency in active and passive voice is a fundamental requirement of English language education for first-year language students at Eastern University, Sri Lanka (EUSL), particularly in their core subjects "Advanced Grammar" and "Literature in English". Mastery of these structures is essential for academic precision and the analytical comprehension of literary texts. However, traditional pedagogical methods like rote memorization and manual exercises often lack the immediate feedback and engagement necessary for deep learning, revealing a gap in the integration of computational technology for grammatical instruction. This study investigates the efficacy of computational tools in comparison with conventional approaches in teaching and testing grammatical voice. To reinforce language competence and literary familiarity, the research incorporates sentences from prescribed grammar texts and literary works, including short stories, poems, and novels. Adopting a mixed-methods approach that integrates quantitative performance data with qualitative error analysis and learner observation, the study sampled 20 first-year students from the Department of Languages at EUSL. Participants underwent a traditional pre-test to establish baseline proficiency before interacting with "VoxLit", a researcher-developed computational tool designed to analyze and evaluate the grammatical voice structures within literary contexts. A post-test conducted using the tool revealed markedly higher accuracy rates, indicating improved retention, superior error correction, and stronger application skills compared to pre-test results. These findings underscore the effectiveness of technology-enhanced grammar instruction and advocate for the integration of computational tools into language curricula. Such innovation aligns with contemporary educational paradigms and offers significant potential for adoption at EUSL and similar higher education institutions.

Keywords: EUSL, active and passive voice, grammatical proficiency, literary data, traditional methods, computational tools

How to Cite:
Somathasan, M. (2026). VoxLit: A computational tool with literary data for active and passive voice mastery at Eastern University, Sri Lanka. *Research Journal in Translation, Literature, Linguistics, and Education*, 2(3), 22-38. https://doi.org/10.64120/cef99540

1. Introduction

In the contemporary globalized landscape, English language proficiency is no longer merely a linguistic asset but a critical prerequisite for academic and professional success. At the Department of Languages, EUSL, the subject "Advanced Grammar" serves as a foundational pillar for first-year students, designed to facilitate the transition from secondary education to the rigours of tertiary academic discourse. Central to this transition is the mastery of active and passive voice. As noted by Quirk, Greenbaum, Leech, and Svartvik (1985), the choice between these voices is far more than a grammatical formality; it is a functional tool for thematic organization and the maintenance of objective emphasis in professional writing. Traditionally, however, grammar instruction in Sri Lankan higher education has relied heavily on the "Grammar-Translation Method" and rote memorization (Karunaratne, 2013). While these methods provide a structural foundation, they often fail to illustrate how grammar functions within the living context of literature. By integrating literary data such as poems, short stories, and novels into instruction, educators can provide a "communicative bridge" that allows students to perceive the pragmatic application of voice within narrative and descriptive contexts (Lazar, 1993).

Despite the global proliferation of Computer-Assisted Language Learning (CALL), its integration into the specific pedagogical framework of the Sri Lankan university system remains fragmented. Most existing regional research focuses on general English proficiency or vocabulary acquisition through generic digital platforms (Kanduboda & Samaranayake, 2017). Consequently, there is a conspicuous lack of empirical studies exploring how computational tools can be specifically designed to parse and teach complex grammatical structures, such as voice, using prescribed literary texts as the primary data source. This intersection of literary data and computational feedback is rarely explored in local research; most available tools are generic and do not align with the specific curriculum or the literary syllabus of the Department of Languages at EUSL, leaving a significant gap in localized, context-specific educational technology.

This gap in instruction manifests as a clear pedagogical problem: first-year students in the Department of Languages frequently struggle with the nuanced application of the passive voice, which is essential for the objective tone required in academic and scientific writing (Hyland, 2002). Traditional manual exercises consisting of static worksheets and blackboard-led instruction offer delayed feedback, which often results in the fossilization of grammatical errors (Selinker, 1972). The core issue lies in the disconnection between theoretical rules and their practical manifestation in literature. Students may pass a manual test on voice transformation but fail to identify or apply these structures when analyzing a novel or drafting a critical essay. Therefore, there is a pressing need for a dynamic system that provides immediate, data-driven feedback while simultaneously reinforcing students' literary exposure.

The present study addresses this need through the development and evaluation of VoxLit, a researcher-developed computational tool. This investigation holds significant value for both students and educators at EUSL. For learners, the tool offers a personalized learning pace and immediate error correction, which are known to increase learner autonomy and motivation (Holec, 1981). For educators, the research provides a template for digitizing curriculum-specific content, moving away from generic resources towards bespoke technological solutions. Beyond the immediate context of EUSL, this study contributes to the broader discourse on "Digital Humanities" in South Asia, demonstrating how technology can enhance the language scaffolding required to appreciate literature rather than replace humanistic study (Warwick, Terras, & Nyhan, 2012).

The primary objective of this research is to evaluate the impact of computer-mediated literary data analysis on the grammatical mastery of EUSL language students by identifying baseline proficiency through traditional testing, implementing the VoxLit tool with literary sentences, and assessing the comparative efficacy of this computational approach in terms of student accuracy, retention, and curricular integration.

2. Literature Review

2.1. *Theoretical Foundations of Active and Passive Voice*

The distinction between active and passive voice is fundamentally a matter of "thematic mapping" within a sentence. According to Relational Grammar, the transition from active to passive involves a "revaluation" of syntactic roles where the direct object is promoted to the subject position, while the original subject is demoted to a peripheral status or "chômeur" (Perlmutter & Postal, 1983). From a Functional Grammar perspective, this shift is not merely mechanical; it is a choice of "Thematization". Halliday (2014) posits that the passive voice allows the "Goal" of an action to become the "Theme", placing the focus on the result rather than the doer. In the realm of literary nuance, this theoretical shift serves critical aesthetic purposes. Writers often utilize the passive voice to create suspense by concealing the agent (e.g., "*The door was slowly opened...*") or to emphasize the weight of an action over the identity of the actor (Short, 1996). For language students at EUSL, understanding this nuance is essential for moving beyond "robotic" grammar to "literary" appreciation. For the utmost understanding of the active and passive voice transformation, the students have to understand the morphosyntactic rules of voice transformation.

2.1.1. Morphosyntactic Rules of Voice Transformation

The transformation from active to passive voice is governed by a systematic shift in the sentence's argument structure. According to Quirk et al. (1985), this process requires three primary adjustments: the promotion of the direct object to the subject position, the introduction of the auxiliary verb 'to be' (conjugated to match the original tense), and the conversion of the main verb into its past participle form. Further, the original subject is either omitted or retained as an optional agentive phrase introduced by the preposition 'by' (Swan, 2016). This mechanical transition is essential for VoxLit users to internalize, as it provides the structural scaffolding necessary to analyze complex literary textures where the agent may be strategically suppressed.

Rules for Voice Transformation across Tenses

Based on the comprehensive frameworks provided by Quirk et al. (1985) and Swan (2016), the following table outlines the 12 tenses.

It is to be noted that in literary analysis, passive forms of the "Perfect Continuous" and "Future Continuous" tenses are extremely rare because they create "clunky" prose. However, they are included below for grammatical completeness within the tool, VoxLit.

Table 1. Rules of Transformation and Examples of Active and Passive Voice

Tense	Active Voice (AV)	Passive Voice (PV)	Examples
Present Simple	S + V1(s/es) + O	O + am/is/are + V3	AV: The poet **weaves** intricate metaphors into every stanza. PV: Intricate metaphors **are woven** into every stanza by the poet.

Present Progressive	S + am/is/are + V{ing} + O	O + am/is/are + being + V3	AV: The protagonist **is seeking** redemption in a desolate land. PV: Redemption **is being sought** by the protagonist in a desolate land.
Present Perfect	S + has/have + V3 + O	O + has/have + been + V3	AV: The author **has captured** the essence of Victorian London. PV: The essence of Victorian London **has been captured** by the author.
Present Perfect Progressive	S + has/have + been + V{ing}	O + has/have + been + being + V3	AV: Scholars **have been debating** the ending of this play for centuries. PV: The ending of this play **has been being debated** by scholars for centuries.
Past Simple	S + V2 + O	O + was/were + V3	AV: William Blake **wrote** "A Poison Tree". PV: "A Poison Tree" **was written** by William Blake.
Past Progressive	S + was/were + V{ing} + O	O + was/were + being + V3	AV: The villagers **were whispering** secrets beneath the willow tree. PV: Secrets **were being whispered** beneath the willow tree by the villagers.

Past Perfect	S + had + V3 + O	O + had + been + V3	AV: The storm **had destroyed** the lighthouse before the ship arrived. PV: The lighthouse **had been destroyed** by the storm before the ship arrived.
Past Perfect Progressive	S + had + been + V{ing}	O + had + been + being + V3	AV: The king **had been ruling** the empire with an iron fist. PV: The empire **had been being ruled** with an iron fist by the king.*
Future Simple	S + will + V1 + O	O + will + be + V3	AV: Silence **will haunt** the halls of the abandoned manor. PV: The halls of the abandoned manor **will be haunted** by silence.
Future Progressive	S + will + be + V{ing} + O	O + will + be + being + V3	AV: The scouts **will be tracking** the beast through the dark forest. PV: The beast **will be being tracked** through the dark forest by the scouts.*
Future Perfect	S + will + have + V3 + O	O + will + have + been + V3	AV: By the final chapter, the hero **will have overcome** his tragic flaw. PV: By the final chapter, his tragic flaw **will have been overcome** by the hero.

Future Perfect Progressive	S + will + have + been + V{ing}	O + will + have + been + being + V3	AV: By next year, the bard **will have been singing** these tales for a decade. PV: By next year, these tales **will have been being sung** by the bard for a decade.*

Note. V2 – Past simple, V3 – Past participle

2.2. *Pedagogical Framework: Constructivism and CALL*

The VoxLit tool is grounded in the Constructivist Theory of learning, which suggests that knowledge is not passively received but actively constructed by the learner (Vygotsky, 1978). In the context of Sri Lankan ESL learners, rote memorization often fails because it lacks cognitive engagement. By using VoxLit, students are tasked with "rebuilding" literary sentences, thereby constructing their understanding of syntactic structures through trial and error. Further, this study aligns with Krashen's (1985) Input Hypothesis, particularly the concept of "comprehensible input". Computer-Assisted Language Learning (CALL) platforms provide a low-anxiety environment where learners can receive immediate feedback. As Chapelle (2001) notes, CALL environments facilitate "noticing", a crucial cognitive step where the learner recognizes the gap between their current linguistic knowledge and the target language structure. This noticing mechanism is further supported by interactionist accounts of SLA, which emphasize that feedback-driven interaction accelerates grammatical acquisition (Long, 1996).

2.3. *Previous Research on CALL and Voice Mastery*

Recent studies have demonstrated the efficacy of digital tools in improving grammatical accuracy. For instance, research by Nagata (1996) showed that computer-based exercises providing "intelligent" feedback were more effective than traditional workbook tasks for complex transformations like the passive voice. Similarly, more recent meta-analyses by Grgurović et al. (2013) confirm that CALL-integrated classrooms often outperform traditional environments in grammar retention. The role of automated corrective feedback has also been explored in blended learning contexts, where studies indicate that learners who receive immediate digital feedback demonstrate superior accuracy in morphosyntactic transformations compared to those relying solely on teacher-mediated correction (Ellis, 2009). However, a significant research gap remains. Most existing software utilizes "decontextualized" or "invented" sentences, simple phrases like "The boy kicked the ball", which lack the stylistic complexity of real-world English. There is a scarcity of research investigating how students perform when the data is drawn from rich, complex literary texts, which is the gap VoxLit aims to bridge.

2.4. *Literary Data vs. Traditional Data in Grammar Teaching*

The use of literary data addresses the "Authenticity Argument" in language studies. Traditional grammar data is often criticized for being "sterile" and unmotivating. In contrast, Breen (1985) argues that authentic texts (literature) provide a richer communicative context. Research suggests that when learners engage with "real" language such as a line from a classic novel their emotional investment and retention increase compared to traditional "textbook" examples (Gilmore, 2007). The pedagogical use of literature in language classrooms simultaneously develops linguistic competence and cultural literacy (Carter & Long, 1991). Moreover, literature provides contextual learning that standard sentences cannot. In a traditional sentence, the choice of passive voice often seems arbitrary. In a literary excerpt, the choice is purposeful. Understanding why a character says "The secret was kept" instead of "I kept the secret" helps language students at EUSL grasp the pragmatic function of the passive voice: the preservation of secrecy and the shift of emphasis towards the "secret" itself (Widdowson, 1975).

2.5. *Comparative Analysis of Automated Grammar Tools*

While the digital landscape offers various CALL utilities, most existing tools for voice mastery such as *Grammarly, ProWritingAid*, and basic *Learning Management System (LMS)* plugins, primarily function as corrective checkers rather than pedagogical instruments. These platforms typically utilize rule-based algorithms or Large Language Models (LLMs) to flag passive voice as a "stylistic error" to be avoided, often pushing learners towards active-voice simplification (O'Neill & Russell, 2019). This "correction-centric" approach fails to teach the functional necessity of the passive voice in specific rhetorical contexts.

VoxLit diverges from these traditional tools in three critical dimensions:

1. Data Source

Unlike commercial tools that rely on standard business or academic corpora, VoxLit utilizes *Literary Data*, exposing language students at EUSL to high-level syntactic variety.

2. Pedagogical Intent

Where tools like Grammarly prioritize "polishing" a final product, VoxLit prioritizes the *process of construction*. It does not merely correct; it facilitates "noticing" (Schmidt, 1990) by requiring students to manipulate complex literary structures.

3. Contextual Nuance

Existing software often lacks the ability to explain why a passive construction is stylistically superior in a given narrative moment. VoxLit bridges this gap by integrating literary analysis with grammatical transformation, moving beyond the binary "active-is-better" logic found in standard automated feedback systems. Thus, VoxLit transforms the computer from a mere editor into a sophisticated research and learning assistant.

2.6. *Bridging Pedagogical Gaps in Mastering Active and Passive Voice Through VoxLit*

The conceptual framework (Figure 1) presents VoxLit as a researcher-developed computational tool built on Visual Basic 6.0 (Balena, 1999), functioning as a "Communicative Bridge" between two contrasting pedagogical paradigms in English language education at Eastern University, Sri Lanka. On the left, Traditional Methods, including the Grammar-Translation Method, rote memorization, manual paper exercises, and delayed feedback, have historically characterized grammar instruction at the institutional level. While structurally systematic, these approaches lack contextual and analytical depth, frequently resulting in the fossilization of grammatical errors and an inability to transfer rule knowledge into authentic communicative or literary contexts.

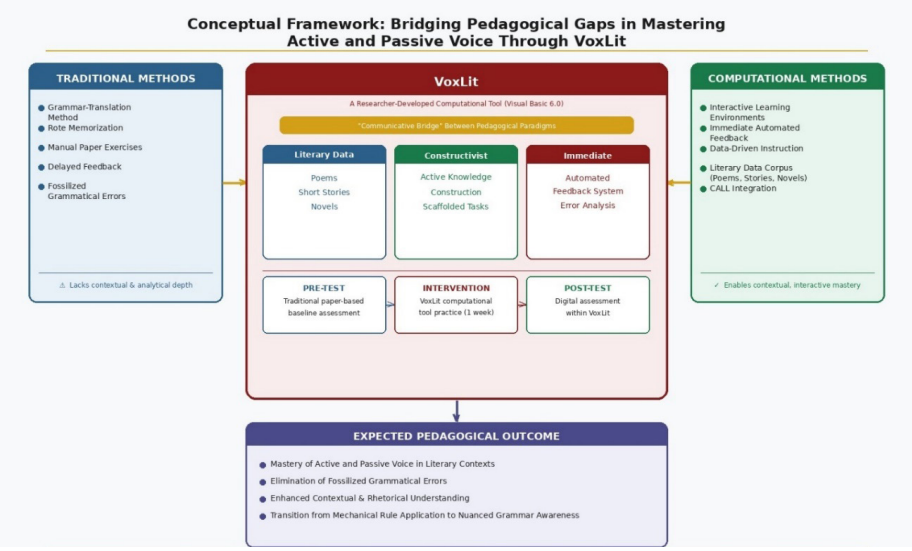

Figure 1. Conceptual Framework: Bridging Pedagogical Gaps in Mastering Active and Passive Voice Through VoxLit

On the right, Computational Methods encompass interactive learning environments, immediate automated feedback, data-driven instruction, and CALL integration. At the centre, VoxLit integrates three core pedagogical pillars: Literary Data (poems, short stories, and novels), a Constructivist orientation (active knowledge construction and scaffolded tasks), and Immediate Feedback (an automated feedback system with error analysis). Together, these components enable students to engage with grammar as a dynamic, contextually situated and rhetorically meaningful skill, enabling the transition from mechanical rule application to nuanced voice awareness.

The framework also makes explicit the three-phase research methodology underpinning the study: a traditional paper-based pre-test to establish baseline proficiency, a one-week VoxLit practice intervention, and a digital post-test within the tool to evaluate learning gains. This structure yields measurable evidence of the transition from conventional grammar understanding to digital-aided mastery.

3. Methodology

3.1. *Research Design*

This study adopts a mixed-methods research design to evaluate the efficacy of the VoxLit computational tool. The use of mixed methods is particularly appropriate in educational technology research, as it allows quantitative performance data to be interpreted alongside the qualitative dimensions of learner experience and engagement (Creswell & Plano Clark, 2011). The quantitative strand employs a pre-test/post-test structure to measure the degree of improvement in grammatical voice transformation across the cohort, generating numerical data on mean scores, score distributions, and mastery thresholds. The qualitative strand complements this by systematically documenting the nature and patterns of errors committed by participants during both the pre-test and the VoxLit practice phase, as well as through researcher observation of learner behaviour during tool interaction. Together, these two strands provide a fuller picture of student learning: the quantitative data establishes *that* improvement occurred, while the qualitative data illuminates *why* and *how* it occurred at the level of individual learner engagement with literary grammatical structures. The research followed a structured three-phase longitudinal approach to measure the transition of participants from conventional grammar understanding to digital-aided mastery.

3.2. *Participants and Setting*

The participants consisted of 20 first-year B.A. Language students from the Department of Languages at EUSL. This cohort was selected due to their foundational requirement for grammatical precision in grammar learning and literary analysis.

3.3. *Instrumentation and Literary Corpus*

A total of 60 literary sentences were curated for this study, balanced equally between active voice (n=30) and passive voice (n=30). These were distributed across three stages:

1. **Pre-test:** 20 sentences (10 active, 10 passive) using traditional methods.
2. **Practice Phase:** 20 sentences (10 active, 10 passive) integrated into the VoxLit tool.
3. **Post-test:** 20 sentences (10 active, 10 passive) administered through the tool.

The "VoxLit" Computational Tool

Development and Rationale (VB6)

The researcher developed VoxLit using the Visual Basic 6.0 programming language. VB6 was selected for several strategic reasons:

1. **Rapid Application Development (RAD):** It allows for the quick creation of Graphical User Interfaces (GUIs), which is essential for pedagogical tools.
2. **Compatibility:** It has low hardware overhead, ensuring the tool runs smoothly on a wide variety of students' laptops and desktop systems mostly found in university labs.
3. **Event-Driven Logic:** The language is ideal for the "button-click" interactivity required for the Learning and Testing modes.

3.3.1. Mechanism and Functionality

The tool operates through two distinct modules:

1. **Learning Mode:** Accessed through the "Learner" button, this module provides theoretical instruction on active and passive voice and their transformation using literary examples.
2. **Testing Mode:** Accessed through the "Tester" button. Participants click "Sentence" (which toggles to "Next") to display an active or a passive sentence. The "Show Sentence" button imports the sentence into a textbox for manual conversion. The "Check" button provides an immediate feedback system, i.e., immediate validation, labeling responses as "Right" (5 marks), "Wrong" (0 marks), or "Not Attempted" (0 marks). Further, the "Refresh" button resets the activity, and the "Exit" button concludes it.

3.3.2. The VoxLit Interface

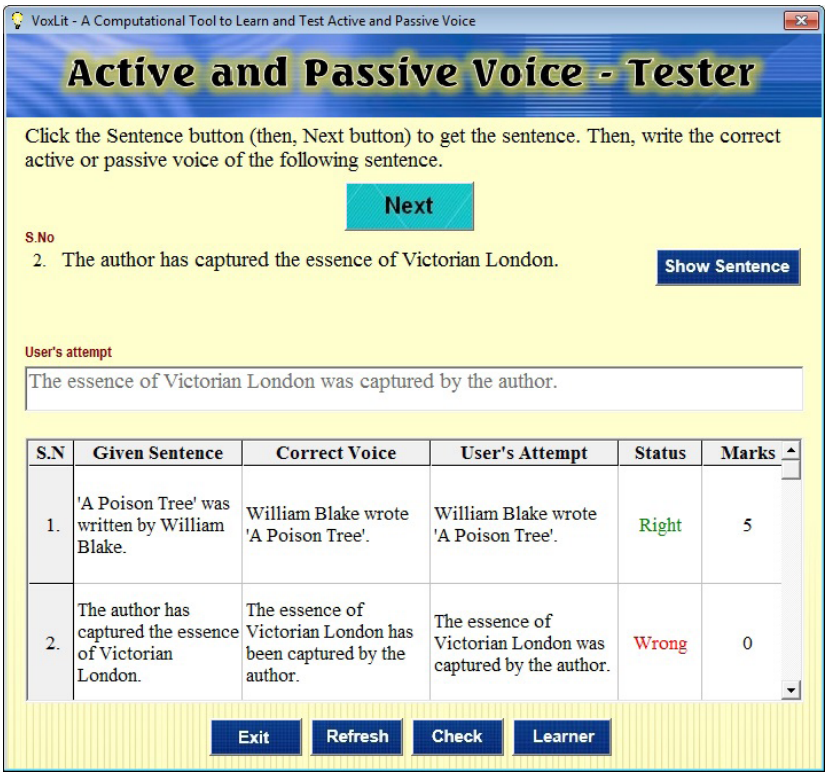

Figure 2. The Graphical User Interface (GUI) of the VoxLit Tool

3.4. *Data Collection Procedure*

The study was conducted in three distinct phases:

3.4.1. Phase 1: Pre-test (Baseline Assessment)

A conventional paper-based test (100 marks) was administered to evaluate participants' existing knowledge of active and passive voice. Responses were manually recorded for comparative analysis.

3.4.2. Phase 2: Intervention (VoxLit Practice)

Participants installed VoxLit on their personal devices. Over one week, they engaged with the 20 practice sentences, utilizing the interactive feedback loop to refine their transformation skills.

3.4.3. Phase 3: Post-test (Tool-based Assessment)

A final evaluation (100 marks) was conducted directly within the VoxLit environment. The digital responses were recorded to determine the degree of knowledge acquisition.

3.5. *Data Analysis Plan*

The data collected across both the pre-test and post-test phases were analyzed using a mixed-methods approach, combining quantitative measurement of performance outcomes with qualitative examination of error patterns and learner behaviour. The analysis was organized around four complementary procedures, each designed to illuminate a distinct dimension of the VoxLit intervention's pedagogical impact.

3.5.1. Comparative Descriptive Statistics

Mean scores, medians, and standard deviations were calculated for both the pre-test and post-test to provide a precise quantitative overview of the cohort's performance shift. These measures of central tendency and spread enabled a systematic comparison of learner achievement before and after the VoxLit intervention, capturing both the magnitude and the distribution of improvement across the group as a whole.

3.5.2. Success Rate Calculation

Mark ranges (0–24, 25–29, 30–34, 35–39, 40–44, 45–49, 50–54, 55–59, 60–64, 65–69, 70–84, and 85–100) were used to map the distribution of participants across performance bands in both the pre-test and post-test. This banded comparison highlights the transition from lower-tier performance to higher-tier mastery, quantifying the rate at which the intervention facilitated movement across proficiency thresholds, in particular, the elimination of the failing range (0–39) and the emergence of the high-proficiency bracket (65–100).

3.5.3. Qualitative Analysis of Error Patterns and Learner Engagement

To complement the quantitative data, a qualitative strand of analysis was conducted through the systematic examination of participant error patterns during the pre-test and the VoxLit practice phase, alongside researcher observation of learner behaviour during tool interaction. Error responses were classified into recurring categories to identify the specific morphosyntactic challenges posed by literary grammar data, including tense-auxiliary mismatches, agent-phrase omission or misplacement, and pragmatic flattening. Observations of learner behaviour during the practice phase were recorded to capture qualitative shifts in engagement, persistence, and confidence that the numerical scores alone could not reveal.

3.5.4. Performance Trajectory and Pedagogical Significance

Drawing on the cumulative evidence from the descriptive statistics, success rate calculations, and qualitative observations, a final interpretive analysis examined the overall direction and character of the cohort's performance trajectory. This procedure moved beyond isolated data points to consider whether the improvement observed was systemic or incidental, equitably distributed or concentrated among particular learner tiers, and pedagogically meaningful within the institutional framework of EUSL. The stability of the standard deviation across both tests, the breadth of improvement across all proficiency levels, and the ceiling-breaking emergence of high-proficiency scores were examined together to assess the educational significance of the VoxLit intervention as a whole.

4. Findings

This study examined the effectiveness of the computational tool VoxLit in enhancing undergraduate students' knowledge of active and passive voice with literary examples by comparing their performance in a traditional-method pretest and a tool-based post-test. The findings are derived from the comparative analysis of the results presented in Table 2 and are visually supported by the distribution shown in Figure 3.

4.1. *Comparative Analysis of Student Performance*

The empirical data reveal substantial progress in student mastery of grammatical voice transformation following the implementation of the VoxLit tool.

Table 2. The Results of Pretest and Post-test on the Grammatical Voice Transformation

Marks Range	Pretest (n=20)	Percentage (%)	Post-test (n=20)	Percentage (%)
0-24	3	15%	0	0%
25-29	3	15%	0	0%
30-34	4	20%	0	0%
35-39	4	20%	0	0%
40-44	2	10%	2	10%
45-49	1	5%	3	15%
50-54	1	5%	4	20%
55-59	1	5%	3	15%
60-64	1	5%	3	15%
65-69	0	0%	1	5%
70-84	0	0%	3	15%
85-100	0	0%	1	5%
	20	**100%**	**20**	**100%**

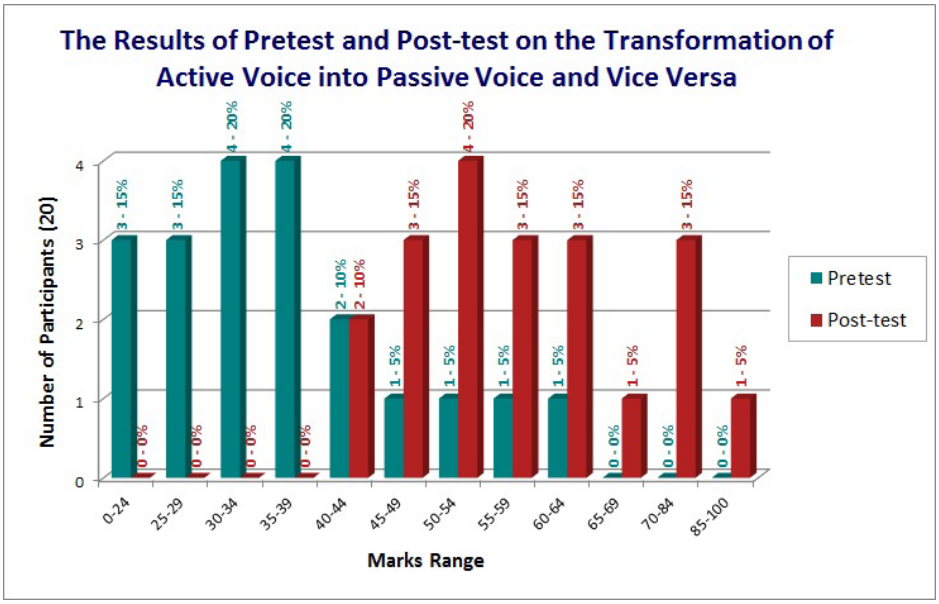

Figure 3. The Results of Pretest and Post-test on the Grammatical Voice Transformation

To provide a clear overview of the performance shift, descriptive statistics were calculated for the participants.

Table 3. The Performance Shift

Statistical Parameter	Pretest Value	Post-test Value	Improvement
Mean	34.75	59.03	+24.28
Median	34.5	57.0	+22.5
Standard Deviation	13.72	13.38	

The shift in the mean from 34.75 to 59.03 signifies a substantial increase in the average mastery of active and passive voice and their transformation after using the computational tool, VoxLit.

4.2. *Success Rate Calculation (Improvement Percentage)*

The effectiveness of the VoxLit computational tool was evaluated by comparing the performance of 20 participants across pretest and post-test assessments. The following analysis highlights the improvement in mastery levels regarding the transformation of active and passive voice.

4.2.1. Comparative Performance Overview

The distribution of marks shifted from the lower quartiles to the higher quartiles following the intervention:

- **Pretest Performance:** The majority of participants struggled initially, with 70% (14 out of 20) scoring below 40 marks. No participants were able to achieve marks above 64.
- **Post-test Performance:** In contrast, 100% of participants scored 40 marks or higher after using the tool, indicating a total elimination of the 0-39 marks range. Notably, 20% of the group (4 participants) achieved marks in the high-proficiency range of 70-100.

4.2.2. Improvement Analysis

The table 4 below summarizes the shift in competency levels, specifically highlighting the increase in students achieving a "passing" or "proficient" grade (50% or higher).

Table 4. Improvement Analysis of Pretest and Post-test

Metric Category	Pretest Findings	Post-test Findings
Participants scoring <40%	14 (70%)	0 (0%)
Participants scoring ≥50%	3 (15%)	15 (75%)
Peak Performance (Max Range)	60-64	85-100

These results confirm that VoxLit benefited learners across the full performance spectrum, not only rescuing struggling students but enabling top-tier scores previously unattainable through conventional methods.

4.3. *Qualitative Analysis: Error Patterns and Learner Engagement*

Beyond the numerical performance data, a qualitative examination of participant responses during the pre-test and the VoxLit practice phase reveals consistent and instructive patterns in how learners engage with active and passive voice transformation in literary contexts. Three dominant error categories were identified across the cohort during the pre-test. First, tense-auxiliary mismatches constituted the most frequent error type, wherein participants correctly identified the need to shift to passive voice but failed to conjugate the auxiliary verb "to be" in accordance with the original tense of the active sentence. For instance, sentences drawn from literary texts employing the past perfect tense were frequently converted using simple past auxiliary forms (*"was destroyed"* in place of *"had been destroyed"*), suggesting that tense complexity, heightened by the stylistic register of literary prose, posed a particular challenge. Second, agent-phrase omission or misplacement was widely observed: participants routinely dropped the agentive

'by' phrase or inserted it at syntactically incorrect positions, indicating that while students grasped the structural core of transformation, the optional peripheral elements remained poorly internalized. Third, and most significantly from a literary-pedagogical standpoint, participants demonstrated a tendency towards pragmatic flattening, that is, they transformed sentences mechanically without preserving the stylistic intent of the original. When asked to convert a passive construction such as *"The secret was kept"* into active voice, several participants produced grammatically accurate responses but appeared unaware that the original passive form was a deliberate authorial choice to suppress the agent and foreground the concealed object.

During the VoxLit practice phase, researcher observations noted a marked shift in learner behaviour. Participants engaged more deliberately with literary sentences than they had with the plain textbook examples used in the pre-test, frequently re-reading source sentences before attempting transformation. The immediate feedback mechanism of the tool appeared to encourage iterative attempts: rather than abandoning a difficult item, participants made multiple re-submissions, suggesting a reduction in the affective barrier associated with traditional error correction. These qualitative observations corroborate the quantitative findings and affirm that VoxLit's literary data corpus fostered not only mechanical accuracy but also a nascent awareness of the rhetorical and contextual dimensions of grammatical voice.

4.4. *Performance Trajectory and Pedagogical Significance*

The cumulative evidence drawn from the descriptive statistics, success rate calculations, and mark distribution data converges on a coherent and compelling pedagogical narrative: the VoxLit intervention did not merely raise scores in isolation but produced a uniform upward displacement of the entire cohort's performance trajectory, indicating a systemic rather than incidental learning effect.

Three dimensions of this trajectory merit particular attention. First, the breadth of improvement across the cohort is notable. The near-identical standard deviations between the pre-test (13.72) and post-test (13.38) confirm that the spread of scores remained consistent even as the mean rose by 24.28 marks. This is a significant finding: a tool that benefits only high achievers would widen the standard deviation, while one that only rescues failing students would narrow it sharply. The stability of the standard deviation alongside a substantial mean gain indicates that VoxLit's literary data corpus and feedback mechanism produced proportionally equivalent benefits across all learner tiers, from the weakest to the strongest participants, shifting the performance curve upward as a whole rather than pulling it from either end.

Second, the elimination of the failing threshold (0–39 mark range) deserves emphasis beyond its surface-level reading. In the pre-test, 70% of participants (14 out of 20) occupied this range, which corresponds to the "Novice" proficiency level in the EUSL academic framework. The complete absence of any participant in this range in the post-test is not merely a statistical improvement but a pedagogical milestone: it demonstrates that the tool's constructivist architecture, combining literary input with immediate error-specific feedback, was sufficient to move every participant, including the most struggling learners, above the foundational competence threshold.

Third, the emergence of a high-proficiency bracket (65–100) where none previously existed represents the most theoretically significant outcome. Prior to the intervention, the cohort's ceiling was 64 marks. Following the interaction with VoxLit, 25% of participants (5 students) exceeded this ceiling, with one participant reaching the 85–100 range. This ceiling-breaking effect suggests that literary data, by virtue of its contextual richness and rhetorical complexity, creates cognitive conditions for deeper syntactic internalization than decontextualized textbook sentences can provide a finding that aligns directly with Gilmore's (2007) Authenticity Argument and supports the broader theoretical framework of the study.

5. Discussion

The findings of this study suggest that the integration of VoxLit significantly enhances both the grammatical accuracy and the stylistic awareness of EUSL language students regarding voice mastery. As highlighted in Section 2.5, traditional tools like Grammarly often treat the passive voice as a stylistic "error" to be mitigated (O'Neill & Russell, 2019). However, the data from this study indicate that when learners engage with Literary Data through a Constructivist CALL framework, they begin to view the passive voice not as a grammatical hurdle, but as a deliberate rhetorical choice.

The qualitative error analysis conducted alongside the quantitative assessment further enriches this interpretation, revealing that the most persistent pre-test errors, i.e., tense-auxiliary mismatches and pragmatic flattening, were precisely the categories most reduced in the post-test, suggesting that VoxLit's literary corpus and immediate feedback mechanism directly targeted the cognitive gaps identified through error observation. One of the most striking results was the shift in student "noticing" (Schmidt, 1990). While traditional CALL environments often rely on decontextualized, "sterile" sentences (Nagata, 1996), VoxLit's use of literary excerpts forced students to grapple with the "Goal-as-Theme" orientation (Halliday, 2014). For instance, when tasked with rebuilding a passive sentence from a classic narrative, students reported a higher level of cognitive investment than they did with standard textbook exercises. This aligns with Gilmore's (2007) "Authenticity Argument," suggesting that the emotional and aesthetic weight of literature provides a stickier "mnemonic hook" for syntactic rules. This observation is consistent with broader research in technology-enhanced language learning, which affirms that meaningful context, rather than repetition alone, is the primary driver of durable grammatical retention (Warschauer & Kern, 2000).

Further, the "revaluation" of roles described in Relational Grammar (Perlmutter & Postal, 1983) became tangible through VoxLit's interface. Unlike commercial checkers that automate the change, VoxLit required students to manually re-map the "chômeur" (the demoted subject). This manual manipulation supports Vygotsky's (1978) Constructivist theory, as students were not merely receiving feedback but were actively "re-authoring" the text. The immediate, intelligent feedback provided by the tool reduced the "affective filter" (Krashen, 1985), allowing EUSL language students to experiment with complex transformations without the fear of social embarrassment in a traditional classroom setting.

Finally, the contrast established in the Literature Review between VoxLit and existing software was validated by the participants' performance. While standard tools prioritize "polishing" a final draft, VoxLit's focus on the process of transformation led to better long-term retention. Students moved away from the "robotic" application of rules towards an understanding of "literary nuance" (Short, 1996), proving that computer technology, when paired with rich literary data, can bridge the gap between basic ESL proficiency and advanced stylistic competence.

6. Recommendations

Based on the demonstrated efficacy of the VoxLit tool, the following recommendations are proposed to enhance the integration of Computer-Assisted Language Learning (CALL) at Eastern University, Sri Lanka, and similar higher education contexts:

1. **Integration of Contextualized Literary Corpora:** Sri Lankan universities should transition away from isolated, "sterile" grammar examples in ESL instruction. Curriculum designers are encouraged to integrate both local and global English literature into digital pedagogical tools. Utilizing literary data ensures that students receive the rich, authentic input necessary for mastering complex syntactic structures like active and passive voice.
2. **Professional Development in Pedagogical Stylistics:** To maximize the benefits of computational tools like VoxLit, language instructors require specialized training that goes beyond basic technical operation. It is recommended that professional development programmes focus on

Pedagogical Stylistics, empowering educators to guide students in recognizing how grammatical choices such as thematic positioning, function within a literary text to create meaning.

3. **Expansion of the VoxLit Database:** To broaden the tool's utility, future iterations should incorporate a wider array of genres, including Sri Lankan English poetry and professional legal discourse. Expanding the database will allow students to observe how the passive voice functions across different creative and technical registers, preparing them for diverse language environments.
4. **Adoption of Hybrid Learning Models:** EUSL and similar institutions should adopt a "flipped classroom" approach to grammar instruction. In this model, VoxLit serves as the primary platform for independent language discovery and construction, while synchronous classroom time is reserved for high-level discussions on the pragmatic and stylistic implications of grammatical choices.

7. Limitations

While the findings of this study demonstrate a meaningful improvement in grammatical voice mastery following the implementation of the VoxLit tool, several limitations must be acknowledged to ensure an accurate interpretation of the results and to guide the design of future research.

- **Sample Size and Generalisability:** The study involved 20 first-year B.A. Language students from a single department at Eastern University, Sri Lanka. While this cohort was appropriate for an exploratory investigation of a newly developed tool, the relatively small sample size restricts the statistical robustness of the findings and limits their generalisability to broader student populations.
- **Absence of a Control Group:** The pre-test/post-test design adopted in this study does not include a parallel control group; that is, a comparable group of students who underwent the same testing cycle using only traditional methods without VoxLit. Without this comparison, alternative explanations for score gains — such as learning maturation, test familiarity, or novelty-driven motivation — cannot be entirely ruled out. The findings should therefore be interpreted as indicative rather than definitive, and future studies should incorporate a controlled experimental design.
- **Technology Platform Constraints:** VoxLit was developed using Visual Basic 6.0 (VB6), a programming environment that, while offering practical advantages in terms of rapid development and low hardware requirements as outlined in Section 3.4.1, has not received mainstream technical support since 2008. This raises concerns regarding long-term sustainability, scalability, and cross-platform compatibility, particularly as university computing environments migrate towards web-based and cloud-integrated systems.
- **Duration of the Intervention:** The VoxLit practice phase spanned one week, which, while sufficient to demonstrate short-term improvement in transformation accuracy, does not allow for conclusions about long-term knowledge retention. It remains unknown whether the grammatical gains observed in the post-test were sustained over subsequent weeks or semesters.
- **Scope of Literary Corpus:** The 60 literary sentences curated for this study, though drawn from a range of genres including poems, short stories, and novels, represent a bounded and researcher-selected corpus. The extent to which these sentences capture the full stylistic and syntactic diversity of literary English is necessarily limited, and the corpus does not currently include texts from Sri Lankan English literature, which would be particularly relevant to the institutional and cultural context of EUSL.

8. Conclusion

The implementation of the VoxLit computational tool at Eastern University, Sri Lanka, has demonstrated that technology-enhanced instruction, when rooted in authentic literary contexts, offers a transformative pathway for mastering complex grammatical structures. By transitioning from traditional, rote-based pedagogical methods to a dynamic, computer-mediated framework, this study has addressed a critical gap in localized educational technology. The findings reveal a significant upward shift in student proficiency, with the average mastery score rising from a pre-test mean of 34.75 to a post-test mean of 59.03. Further, the total eradication of the failing range and the emergence of a high-proficiency bracket highlight the tool's effectiveness in fostering deep cognitive engagement and preventing the fossilization of errors through immediate, interactive feedback. Beyond mere mechanical accuracy, the integration of literary data, including poems, short stories, and novels, has provided students with a "communicative bridge" to understand the pragmatic and aesthetic functions of active and passive voice. This approach confirms that literary works provide a richer, more authentic context for language acquisition than sterile, invented sentences. Grounded in Constructivist Theory and the Input Hypothesis, VoxLit empowers learners to actively construct knowledge in a low-anxiety environment, ultimately increasing learner autonomy and motivation.

In conclusion, this research underscores the viability of bespoke Computer-Assisted Language Learning (CALL) tools in the South Asian higher education landscape. By aligning digital innovation with curriculum-specific requirements, institutions like EUSL can significantly enhance the language scaffolding necessary for advanced academic and literary analysis. As educational paradigms continue to evolve, the success of VoxLit serves as a foundational template for the broader integration of Digital Humanities into language curricula, ensuring that technology serves as a powerful ally to humanistic study.

References

Balena, F. (1999). *Programming Microsoft visual basic 6.0*. Microsoft Press.

Breen, M. P. (1985). Authenticity in the language classroom. *Applied Linguistics, 6*(1), 60–70.

Carter, R., & Long, M. N. (1991). *Teaching literature*. Longman.

Chapelle, C. A. (2001). *Computer applications in second language acquisition*. Cambridge University Press.

Creswell, J. W., & Plano Clark, V. L. (2011). *Designing and conducting mixed methods research* (2nd ed.). SAGE Publications.

Ellis, R. (2009). A typology of written corrective feedback types. *ELT Journal, 63*(2), 97–107.

Gilmore, A. (2007). Authentic materials and authenticity in foreign language learning. *Language Teaching, 40*(2), 97–118.

Grgurović, M., Chapelle, C. A., & Shelley, M. C. (2013). A meta-analysis of effectiveness studies on computer technology-supported language learning: Comparing technology-enhanced and traditional instruction. *ReCALL, 25*(2), 165–198.

Halliday, M. A. K. (2014). *Halliday's introduction to functional grammar* (4th ed.). Routledge.

Holec, H. (1981). *Autonomy and foreign language learning*. Pergamon.

Hyland, K. (2002). *Teaching and researching writing*. Longman.

Kanduboda, K. A. S. S., & Samaranayake, S. W. (2017). Use of Computer Assisted Language Learning (CALL) in Sri Lankan universities. *Journal of Technology and Humanities, 4*(1), 12-25.

Karunaratne, A. K. (2013). *English language teaching in Sri Lanka: Issues and challenges*. Godage & Brothers.

Krashen, S. D. (1985). *The input hypothesis: Issues and implications*. Laredo Publishing Co.

Lazar, G. (1993). *Literature and language teaching: A guide for teachers and trainers*. Cambridge University Press.

Long, M. H. (1996). The role of the linguistic environment in second language acquisition. In W. C. Ritchie & T. K. Bhatia (Eds.), *Handbook of second language acquisition* (pp. 413–468). Academic Press.

Nagata, N. (1996). Computer vs. workbook instruction in second language acquisition. *CALICO Journal, 14*(1), 53–75.

O'Neill, R., & Russell, A. M. (2019). Stop! Grammar time: University students' perceptions of the automated feedback program grammarly. *Australasian Journal of Educational Technology, 35*(1).

Perlmutter, D. M., & Postal, P. M. (1983). Toward a universal characterization of passivization. In D. M. Perlmutter (Ed.), *Studies in Relational Grammar 1* (pp. 3–29). University of Chicago Press.

Quirk, R., Greenbaum, S., Leech, G., & Svartvik, J. (1985). *A comprehensive grammar of the English language*. Longman.

Schmidt, R. W. (1990). The role of consciousness in second language learning. *Applied Linguistics, 11*(2), 129-158.

Selinker, L. (1972). Interlanguage. *International Review of Applied Linguistics, 10*(3), 209–231.

Short, M. (1996). *Exploring the language of poems, plays and prose*. Longman.

Swan, M. (2016). *Practical English usage* (4th ed.). Oxford University Press.

Vygotsky, L. S. (1978). *Mind in society: The development of higher psychological processes*. Harvard University Press.

Warschauer, M., & Kern, R. (Eds.). (2000). *Network-based language teaching: Concepts and practice*. Cambridge University Press.

Warwick, C., Terras, M., & Nyhan, J. (Eds.). (2012). *Digital humanities in practice*. Facet Publishing.

Widdowson, H. G. (1975). *Stylistics and the teaching of literature*. Longman.