



**A Mixed-Methods Comparative Analysis of Grammatical Errors in Handwritten and Digitally Typed Academic Writing of Sri Lankan EAP Undergraduates**

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**Article Info**

Article History:  
Received 15 Oct 2024  
Accepted 11 Nov 2025  
Issue Published Online  
01 July 2026

**Key Words:**

Academic Writing  
EAP Undergraduates  
Digitally Typed Essays  
Grammatical Errors  
Handwritten Essays

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Journal homepage:  
<http://journals.sjp.ac.lk/index.php/vjhss>

<http://doi.org/10.31357/vjhss.v11i02.02>

VJHSS (2026), Vol. 11 (02),  
pp. 01-19

ISSN 1391-1937/ISSN  
2651-0367 (Online)

**ABSTRACT**

*This study investigated the types and the causes of grammatical errors in handwritten and digitally typed essays produced by second-year English for Academic Purposes (EAP) students in a Sri Lankan state university. Although previous studies (Jayasundara & Premarathna, 2011; Abeywickrama, 2010) have focused on handwritten essays, little is known about how digital typing affects grammatical accuracy in writing. Adopting a mixed-methods design, the study combined quantitative error analysis of student essays with qualitative data from a questionnaire. Using Corder's (1967) Error Analysis framework and Selinker's (1972) Interlanguage Theory as the main theoretical frameworks, handwritten and digitally typed essays produced by 22 undergraduates were analyzed to identify error patterns. Errors were categorized as omission, addition, substitution, misordering, or tense and subject-verb agreement errors. The questionnaire was used to explore contextual factors contributing to these errors. The research found that students made numerous mistakes in article usage and verb tense and subject-verb agreement throughout both their handwritten and their typed essays. The handwritten essays contained more spelling and mechanical errors whereas the digitally typed essays displayed greater typographical and lexical errors which resulted from excessive dependence on technological resources. Participants also reported that authentic English exposure and L1 influence and lack of guided practice and insufficient constructive feedback together caused these errors.*



## **1. Introduction**

Although in Sri Lanka English is taught as a core subject in schools, many undergraduates continue to experience difficulties in academic writing, particularly in areas such as article usage, prepositions, subject-verb agreement, and tense (Jayasundara, 2011; Abeywickrama, 2010).

Grammatical errors are considered mistakes that make writing meaningless by going against the standard rules. There are various types of grammar errors, including syntax errors, which happen in word order and sentence structure, morphology, which are verb tense, subject-verb agreement, and plural forms, or mechanics, including punctuation and capitalization. As noted by Ferris (2006), in academic writing, these errors are significantly crucial since they can disturb the flow of ideas, making arguments weak.

One major reason for these difficulties is the guidance of the mother language. Sri Lanka has two major languages, Sinhala and Tamil, whose grammatical structures are slightly different from English. The examples are that the absence of articles in Sinhala and Tamil usually leads to their omission in English writing (James, 2013; Sheroon et al., 2025). Moreover, limited exposure to real-world materials in classrooms and fewer chances to practice writing meaningfully can also be considered as another factor for making major grammatical errors (Dineshika & Jayasinghe, 2025). As a result, most undergraduates who are aware of the theories of grammar rules struggle to use them accurately in writing.

Meanwhile, digital tools, including grammar checkers and AI-powered tools, have changed the writing styles with minimal errors. Some research shows that these tools have increased students' confidence in writing by reducing mistakes in writing (Aaqil et al., 2022; Guzmán Alvarado & Naranjo Andrade,

2025). However, other studies point out that depending too much on these tools may prevent learners from developing a deeper understanding of grammar (Farhan, 2025). In Sri Lanka, this issue is especially applicable as university students still produce handwritten essays in exams, but also progressively use digital platforms for assignments. Nevertheless, only a little is known about how the mode of writing, whether it is handwritten or digital, affects the errors made by students in their writing. So, to fill the gap, this study analyzes grammatical errors in handwritten and digitally typed essays of second-year undergraduates in Sri Lankan universities, following two objectives and research questions.

The existing research about grammatical mistakes in ESL student writing has increased since 2011 yet most studies still concentrate on examining handwritten academic work (e.g., Jayasundara, 2011; Abeywickrama, 2010) while showing minimal interest in studying digitally typed documents which match academic standards. The research has not established how writing mode affects grammatical mistakes which Sri Lankan undergraduates make during their writing process. The growing use of digital tools in academic work requires researchers to study whether these tools help students with grammar mistakes or create new difficulties for them. The literature review requires a comparative study between handwritten documents and digital text production methods to complete existing research gaps.

The objectives of the study are:

1. To identify the types of grammatical errors in handwritten and digitally typed academic essays produced by second-year undergraduates in a Sri Lankan state university.
2. To examine the factors that contribute to these errors among these undergraduates in both modes of writing.

The research questions are as follows:

1. What types of grammatical errors occur in handwritten and digitally typed academic essays of second-year undergraduates in a Sri Lankan state university?
2. What factors contribute to these grammatical errors in handwritten and digitally typed essays produced by these undergraduates?

The study also aims to find out whether digital tools are capable of improving grammatical accuracy or creating new challenges by comparing the essays written and typed by the students.

## **Literature Review**

Grammatical accuracy is essential and considered the most important element in academic writing since it demonstrates clarity, coherence, and overall language proficiency (Ferris, 2006). Learning grammatical conventions is not as simple as it seems; it is quite challenging for learners who are learning English as their second language. English is not the first language in Sri Lanka; it is taught as a second language in Sri Lankan schools. Even though undergraduates in universities are exposed to the English language throughout their school life, and even though they have been learning English since childhood, they still make grammatical errors in academic writing (Jayasundara, 2011; Abeywickrama, 2010). Some common errors they usually make are related to subject-verb agreement, article usage, prepositions, verb tense, and sentence structure.

The increase in digital learning has introduced various digital writing tools, especially for ESL learning. Before the technical revolution, most studies had focused heavily on handwritten essays. Nowadays, students not only use digital tools such as word processors and spell checkers

but also AI-based writing assistants like Grammarly and ChatGPT. As mentioned by the researchers, these tools struggle to address deeper grammatical challenges or L1 interference since their potential is limited to minimizing surface-level errors (Guzmán Alvarado & Naranjo Andrade, 2025; Farhan, 2025). This is why most Sri Lankan students tend to select digital writing for its accuracy and efficiency over handwriting. Foundational studies in error analysis such as those by Ellis (1994) have emphasized the importance of systematically identifying learner errors to understand language development of them. Additionally, studies such as Mueller and Oppenheimer (2014) highlight how different modes of writing, particularly handwriting versus typing, can influence cognitive processing and learning outcomes, suggesting that writing mode may also impact grammatical accuracy.

## **Influence of Digital Writing Tools**

Even in digital writing tools, there are many advantages and disadvantages for ESL learners. Digital tools like word processors, spellcheckers, and AI-assisted platforms are capable of providing real-time feedback on spelling, punctuation, and other minor grammar errors (Guzmán Alvarado & Naranjo Andrade, 2025). As mentioned by Farhan (2025), AI tools like Grammarly and ChatGPT especially improve the accuracy of mechanical writing. Anyhow, those tools are limited to students' critical thinking, creativity skills, and especially independent learning.

Moreover, cognitive processing is also influenced by digital writing tools, according to studies. Studies also suggest that digital writing can influence cognitive processing. Especially in typing, it makes drafting and revising fast and easy, which could encourage learners to engage in experimentation with sentence structures (Kessler et al., 2012). On the other hand, these tools can also make learners overconfident about their writing

and grammar because they depend on automated corrections instead of self-learning and understanding the underlying rules and methods by themselves (Aaqil et al., 2022).

While most global studies focus on the benefits of digital tools, only a few studies have focused on the specific effect on ESL writing in Sri Lanka. Most of the Sri Lankan studies focus on handwritten essays and rarely account for autocorrect, grammar suggestions, or digital typing dynamics. This suggests that digital writing remains a relatively unexplored area in grammar error research, indicating the need for comparative studies.

### **Context of Sri Lankan Undergraduates**

Proficiency skills in English vary a lot among university students, depending on various factors. Such as prior school English instruction, socio-economic background, and access to digital resources (Sheroon et al., 2025).

According to some research, most university students struggle to deal with omission, addition, and substitution errors in both formal and informal writing tasks. For example, due to the influence of L1 structure, second-year students do not read articles at all, misuse prepositions, and most importantly, make subject-verb agreement errors (Dineshika & Jayasinghe, 2025).

The new features of platforms like Microsoft Word or Google Docs are capable of alerting learners about errors in their writing. Auto correction options in these tools reduce typing errors and surface-level errors, even though they also struggle to identify and clarify deeper syntactic and semantic errors that are especially related to L1 transfer, as mentioned by researchers (Aaqil et al., 2022). Other than that, how learners' familiarity with typing versus handwriting influences errors is also yet to be discovered.

### **Types of Grammatical Errors**

The grammar errors are categorized based on the principles of error analysis (Corder, 1967; Brown, 1994). The errors are omission, substitution, misordering, and other minor errors that are frequently made in subject-verb agreement, articles, prepositions, verb tenses, and overall sentence structure. Omission errors occur when necessary details are left out unknowingly, while substitution errors occur when incorrect forms and words are used in writing. Finally, misordering errors are placing words and phrases in the wrong way. Identifying and fixing these errors is crucial for the grammatical accuracy, clarity, and coherence that are essential in academic writing. Studies done in Sri Lanka also highlighted that these are the common errors that undergraduates usually make in their writings (Jayasundara, 2011; Abeywickrama, 2010; Dineshika & Jayasinghe, 2025).

So it is clear how identifying these errors is useful not only for teachers but also for researchers to compare models in order to identify difficulties and the influence of these tools on writing. The classifications help researchers identify error patterns while they develop knowledge about the cognitive and linguistic processes that cause writing errors in various writing styles.

The existing research demonstrates that multiple factors control how ESL students write with grammatical errors; their first language influences them, they have limited access to real language usage and their writing in digital spaces continues to progress. The previous research has found common error patterns which appear in digital tool usage, but it has studied each aspect separately. The research field lacks studies which examine both handwritten and digitally typed writing within a single study to investigate how these two writing styles affect grammatical accuracy.

The relationship between writing mode and grammatical error patterns requires study through comparative methods which will help researchers understand how Sri Lankan undergraduates use different writing styles.

### **Theoretical Framework**

The researchers of this study selected three theoretical frameworks which include Error Analysis (Corder, 1967; Brown, 1994), Interlanguage Theory (Selinker, 1972), and the Contrastive Analysis Hypothesis (Lado, 1957). The systematic framework of Error Analysis enables researchers to trace, organize, and explain student errors which educational practitioners use to study student writing grammatical mistakes. The Interlanguage Theory shows that language learners create a temporary bridge between their first language and their target language which results in specific first language transfer mistakes. The Classroom Analysis Hypothesis shows its highest application value in ESL settings, especially in Sri Lanka, because Sinhala, Tamil, and English speakers face different article usage and sentence structure problems, which arise from their different language structures. The research framework establishes three distinct methods to discover, group, and understand grammatical mistakes throughout this investigation.

## **2. Materials and Methods**

### **Research Design**

The study adopts a mixed-methods design, combining quantitative error analysis of student essays with qualitative data obtained through a structured questionnaire. The quantitative component focuses on identifying and categorizing grammatical errors, while the qualitative component examines students' perceptions of factors contributing to these errors. To categorize and explore the errors and factors, this study used the error analysis framework adapted from Dissanayake and Dissanayake (2019).

### **Sample and Sampling Technique**

The sample of the study involves 22 second-year undergraduates who are involved in an EAP course at their university. The purposive sampling was used to select 22 second-year undergraduates enrolled in an EAP course at a Sri Lankan state university, ensuring that they have a relatively consistent level of English proficiency, prior exposure to academic writing instruction, and familiarity with argumentative essay formats. This sample was considered appropriate for an in-depth qualitative analysis of error patterns, where the focus is on detailed linguistic examination rather than generalization to a larger population. Each participant had to submit one handwritten and one digitally typed essay. The handwritten one was submitted first, then the digitally typed one. Even though the researcher used two different argumentative essay topics for handwritten and digitally typed essays, both matched with IELTS Band 7–8 standards ensuring difficulty level is similar. However, familiarity of students with those topics might have affected the errors they made.

### **Inclusion criteria for participation were as follows:**

- Enrollment in a second-year English-medium program
- No reported learning disabilities that significantly affect writing
- Willingness to participate and submit both essay types
- All participants provided informed consent prior to participation.

Selecting students who had received formal EAP training in argumentative writing ensured that the essays represented structured academic writing rather than informal or untrained responses. This controlled variability and focused the analysis on genuine grammatical challenges rather than on content generation difficulties.

## Data Collection Instruments

### 1. Academic Essays

Two essay topics were assigned to examine grammatical accuracy across handwritten and digital formats:

- **Handwritten essay topic:**

“The position of women in society has changed markedly in the last twenty years. Many of the problems young people now experience arise from the fact that many married women now work and are not at home to care for their children. To what extent do you agree or disagree with this opinion?”

- **Digitally typed essay topic:**

“The responsibility of bringing up children should be shared equally between mother and father. To what extent do you agree or disagree? Give reasons for your answer and include any relevant examples from your own knowledge or experience.”

These topics were chosen because they:

- Encourage argumentative writing and structured reasoning
- Are comparable in complexity
- Align with IELTS Band 7–8 standards, ensuring validity and reliability

Students were given 10 minutes for planning and 40 minutes for writing each essay. Digital essays were typed using Google Docs with only standard autocorrect enabled. In the meantime, they were not allowed to use AI-assisted grammar tools such as Grammarly or ChatGPT.

### 2. Questionnaire

To collect data for the second research question, a Google Form questionnaire was distributed among the participants right after one week of the submission of both essays. Items included:

- First language(s)
- Frequency of English use outside class
- Familiarity with digital writing tools
- Self-perceived writing difficulties

The responses to the questionnaire were useful to identify why certain errors were made by the participants. To ensure the clarity, the questionnaire was pilot tested with a small group of students and revised slightly based on the feedback of final administration.

### Procedure

The study was carried out in four main steps:

1. Firstly, students attended their regular class on the day the teacher introduced and explained the study and essay topics. The researcher also informed the students about ethical guidelines, including voluntary participation, confidentiality, and the right to withdraw.
2. Then, students were asked to submit one handwritten and one digital essay under controlled conditions. They had 10 minutes to plan and 40 minutes to write the essays. Some students used laptops and some used mobile phones to type the essays, which influenced typing speed and formatting, which is considered one of the limitations of the study.
3. Thirdly, participants were given a questionnaire by the researcher after one week of essay submissions.
4. Finally, essays were anonymized and categorized after marking and identifying the errors. Informed consent was obtained from all participants prior to data collection.

### Data Analysis

#### Qualitative Approach

The qualitative approach was used to identify errors and factors that cause errors. Errors

made by the participants were analyzed, incorporating the error analysis framework adapted from Dissanayake and Dissanayake (2019). According to them, there are two main types of errors.

- First, interlingual errors that are influenced by the native language of the learner.
- Second, intralingual errors that usually occur from overgeneralization, simplification, or misunderstanding of the rules of the English language.

The submitted essays were examined for:

- Subject-verb agreement (e.g., “She goes to school”)
- The use of Articles (e.g., “He went to the temple”)
- Prepositions (e.g., “good in English” instead of “good at English”)
- Verb tense (e.g., switching between past and present inconsistently)
- Word order and sentence structure (e.g., incomplete sentences, misplaced modifiers)
- Spelling and punctuation

Representative examples were extracted to highlight typical patterns and understand error causes. The analysis followed a systematic process of identifying, classifying, and interpreting errors based on an established error taxonomy. The researchers conducted their study by analyzing both handwritten and digitally typed essays to determine their shared characteristics and unique features. The researchers conducted a study to analyze questionnaire responses through basic descriptive statistics and thematic grouping which led to the discovery of recurring factors that caused errors. Moreover, the questionnaire responses were gathered and examined to get to know why errors occur, considering factors such as

- L1 influence
- Experience with digital writing tools

- Exposure to the English language outside the class

### **Limitations**

Several limitations were noted:

- Due to scheduling restrictions, digitally typed essays were submitted a week after the submission of handwritten essays.
- Then, some students used their phones to type essays, which might have contributed to typing speed, comfort, and formatting.
- Even though the sample size provided detailed analytical insights, it might have limited generalizability since the sample size was 22.

### **3. Results**

The first research question, which is “What types of grammatical errors are there in the handwritten and digitally typed academic essays of second-year undergraduates studying at universities in Sri Lanka?” aims to explore errors made by learners in order to categorize them into themes based on EA. The essays of students highlighted various types of grammar issues that represented their lack of basic knowledge about grammar rules and usage, and spelling. Overall, both handwritten and digitally typed essays carried both similarities and differences in error patterns. All the errors that were made by the participants were identified carefully through manually checking each essay. Each essay was read carefully line by line while marking, grouping, and coding mistakes following a standard error classification such as omission, substitution, addition, misordering, and verb-related errors. Patterns that were similar to each other were grouped together while common and representative examples were used to represent learner mistakes that are typically made rather than one-time error. Handwritten essays mainly showed errors related to spelling, missing auxiliary

verbs and articles, while digitally typed essays contained a higher frequency of errors related to word substitution, typing mistakes, and other complex use of tenses.

### 3.1 Substitution Errors

Substitution errors were identified first after marking students' essays. Substitution errors occur when a correct word or grammatical element is replaced by an incorrect one. Those errors provide various insights into the way learners attempt to use advanced vocabulary and structures in their writing. These errors also reveal learners' cognitive strategies and the limitations of thinking in writing.

As shown in the given examples, such as "mens" for "men" and "fmily" for "family", most substitution errors were phonetic or morphological. These demonstrate

overgeneralization of plural rules and phonetic simplification and, implying L1 sound pattern interference. The digital essays demonstrate evidence of substitution at the lexical and semantic levels, such as "mother is the basement of the family" (instead of foundation or basis) and "batter child development" (instead of better), which indicate incorrect word choice, translating vocabulary limitations, and over-reliance on autocorrect. Other substitutions related to typing revealed "Sterngthen" and "Modren."

These substitution errors are theoretically significant since they represent the way learners develop their language skills, because usually students depend on what they already know when they trying to involve more complex structures into their writing. They also support the role of L1 transfer and overgeneralization in second language acquisition.

**Table 1.** Representative Substitution Errors Across Modes

Mode	Error (as written)	Likely Reason	Linguistic Type
Handwritten	mens → men	Overgeneralization of the plural rule	Morphological
Handwritten	fmily → family	Phonetic simplification	Phonological
Handwritten	cuases → causes	Pronunciation-based spelling	Phonological
Digital	mother is the basement of the family	Lexical substitution; wrong word choice	Lexical-semantic
Digital	Batter child development	Confusion between homophones	Lexical
Digital	Sterngthen → strengthen	Typing speed; lack of proofreading	Orthographic
Digital	Modren → modern	Simplification; careless typing	Orthographic
Digital	I am agree	Overgeneralization of verb phrase	Syntactic

**Table 2.** Representative Omission Errors Across Modes

Mode	Error (as written)	Likely Reason	Linguistic Type
Handwritten	family is foundation of society	L1 interference (absence of articles)	Morphosyntactic
Handwritten	When mens going	Omission of auxiliary verb	Morphosyntactic
Handwritten	one of reasons to women doing a job is family's weak economy	Article and plural omission	Morphosyntactic
Digital	both parent	Missing plural marker	Morphological
Digital	a easy task	Incorrect article due to phonological confusion	Morphological
Digital	sharing responsibilities reduce	Omission of auxiliary verb	Syntactic

**Table 3.** Representative Errors of Addition Across Modes

Error (as written)	Mode
unnecessary use of because and because of e.g. because of the in this society	Handwritten
fills with full of responsibilities with the real sense of the word	Digital
guiding those teaching those values	Digital

**Table 4.** Representative Misordering Errors Across Modes

Error (as written)	Mode
care emotionally	Digital
offer more protection and care emotionally	Digital
very important is education	Handwritten
children always should respect parents	Handwritten

### 3.2 Omission Errors

Conversely, omission errors were another widely occurring category. These errors consisted of the articles and auxiliary verbs, prepositions, and plural markers, thus rendering the sentence incomplete and grammatically incorrect. Articles were frequently omitted by students with sentences like "family is foundation of society" or auxiliary verbs as in "when mens going." These errors are seen as L1 transfer because Sinhala and Tamil do not have

articles, but the errors also demonstrated little awareness of English morphosyntax. In the digital essays, plural markers and determiners, such as in "both parent," "sharing responsibilities reduce," and "a easy task," were omitted. In these cases, errors indicated reliance on speed and intuition over grammatical awareness.

These findings support the Contrastive Analysis Hypothesis, as the absence of articles in Sinhala and Tamil appears to directly influence omission patterns in

English, highlighting L1 transfer at the morphosyntactic level.

### Addition Errors

When learners add extra words or phrases unnecessarily, errors of addition occur in their writing. These mistakes create awkward and repetitive sentences. In the handwritten essays of the participants, they have made fewer errors of addition compared to their digitally typed essays. However, those errors in handwritten essays have had an impact on the clarity of their work. For instance, the phrases from their essays, such as "very good but" and "because of the in this society" show how students repeated the same idea, struggling to convert their thoughts into well-written phrases. In contrast, digitally typed essays had more addition errors compared to the handwritten ones, resulting in long and wordy sentences as mentioned in *"fills with full of responsibilities with the real sense of the word"* and *"a world of the children is really genuine and pure. Because all they want"*. These samples highlight how students unnecessarily use repetition and connectives to make their writing formal but ended up complicating them when using digital tools.

### 3.4 Misordering Errors

Misordering is also another type of error analysis. They usually occur when writers put words in the wrong order, such as putting a verb before the noun or an adjective after a verb. These errors are often trivial but end up occurring together with other errors, such as substitution or omission. These errors highlight how students struggle to organize their ideas in order to write and use accurate sentence structures. These errors occurred mostly in digital essays in adverbs and

prepositional phrases, as shown in the given examples, by showing that these errors may have occurred because students were confused about the structures, trying to keep the rhythm or emphasis on the sentences they wrote in their writing.

### 3.5 Tense and Verb Form Errors

Most students have mixed up tenses and verb forms in their writing. Some have used the wrong form of verbs, like in *"when mothers works outside"*. Some missed auxiliary verbs *"women doing jobs their"* or *"it am agree"*, or forgot to use the third-person singular like in *"it help to parent"* accurately in both digitally typed and handwritten essays, showing how even though learners have learnt grammar rules since grade 1, they struggle to adapt those rules when they are writing or typing something by themselves. This suggests that they are still in need of knowledge of fundamental grammar rules and proofreading skills.

### 3.6 Spelling and Typographical Errors

All the participants had made numerous spelling errors in both modes of writing due to various reasons. The way they have mistakenly written *"complexiciety"* and *"equally"* shows how they have made phonetic errors following the sounds of the words rather than carefully following correct spelling. They have also followed capitalization incorrectly in words like *"sri lanka,"*. Errors such as *"Sterengthen"* and *"Modren"* reveal how fast typing and lack of proofreading result in mistakes. Those spelling errors not only show their lack of proofreading skills but also their limited knowledge of vocabulary.

**Table 5.** Representative Tense and Verb Form Errors Across Modes

Mode	Error (as written)	Likely Reason	Linguistic Type
Handwritten	when mothers works outside	Third-person singular confusion (SVA overlap)	Morphological/Syntactic

Handwritten	children’s problem are only because	Verb–subject inconsistency	Morphosyntactic
Digital	it am agree	Overgeneralization of auxiliary verb	Syntactic
Digital	women doing jobs their	Missing auxiliary verb	Morphosyntactic

**Table 6.** Representative Spelling and Typographical Errors

Mode	Error (as written)	Likely Reason	Linguistic Type
Handwritten	complexiciety	Phonetic simplification	Phonological
Handwritten	eaqually	Sound-based spelling	Phonological
Handwritten	sri lanka	Improper capitalization	Orthographic
Digital	Sternngthen	Typing speed; proofreading neglect	Orthographic
Digital	Modren	Simplification of form	Orthographic
Digital	Phines	Sound-based substitution for “phones”	Phonological

**Table 7.** Summary of Grammatical Error Categories

Error Category	Handwritten Example	Digital Example	Likely Reason	Linguistic Type
Substitution	mens → men	Batter child development	Overgeneralization; lexical confusion	Morphological/Lexical
Omission	family is foundation of society	a easy task	L1 interference; article omission	Morphosyntactic
Addition	because of the in this society	fills with full of responsibilities	Redundant structure	Syntactic
Misordering	discussion that situation we can identife...	care emotionally	Word order confusion	Syntactic
Tense/Verb Form	when mothers works outside	it am agree	Verb form confusion	Morphological
Subject-Verb Agreement	mens should take the responsible...	sharing responsibilities reduce	Ignoring number agreement	Morphological
Spelling	complexiciety	Modren	Phonetic simplification / fast typing	Phonological/Orthographic
Punctuation	I totally agree to with. Since Raising children...	Helping with studies...	Poor sentence segmentation	Mechanical

### 3.7 Punctuation and Sentence Fragments

Students have not added punctuation correctly in most of their writing. They have

missed commas, brackets, and misplaced periods as shown in the samples taken from digitally typed essays and handwritten

essays, “I totally agree to with. Since Raising children ...,” “they have to take care of their children, husband and parents”, and “ the womens parents are also make restrictions”. Moreover, sentence fragments were also seen in both types of essays in some phrases like “Helping with studies and being role models, while mother can also share...” and “a example children might spend more time with television, phines or friends.”, highlighting that they have not been well-trained to convert their ideas into meaningful and grammatically correct sentences. Overall, it is clear how students have struggled to keep grammatical accuracy in both modes of writing. These errors highlight the limited writing practice, lack of understanding of grammar rules, inconsistent use of punctuation, and lack of proofreading skills.

and substitution, followed by spelling errors, subject-verb agreement, and tense/verb form issues. Handwritten essays showed more omission and spelling errors while essays produced with digital tools showed more substitution, addition, and typographical errors. The most common types of errors are omission and substitution errors as shown in Figure 1, in Handwritten essays there were higher frequency of omission and spelling errors, while digitally typed essays demonstrated more substitution, addition, and typographical errors. Overall, students seem to struggle with maintaining grammatical accuracy, whether it is digitally typed or handwritten. It is clear that lots of learners are struggling with limited and guided writing practices, a lack of understanding of grammar rules, inconsistent use of punctuation, and a lack of proofreading skills.

### 3.8 Frequency of Errors

According to this study, the most common types of grammatical errors were omission

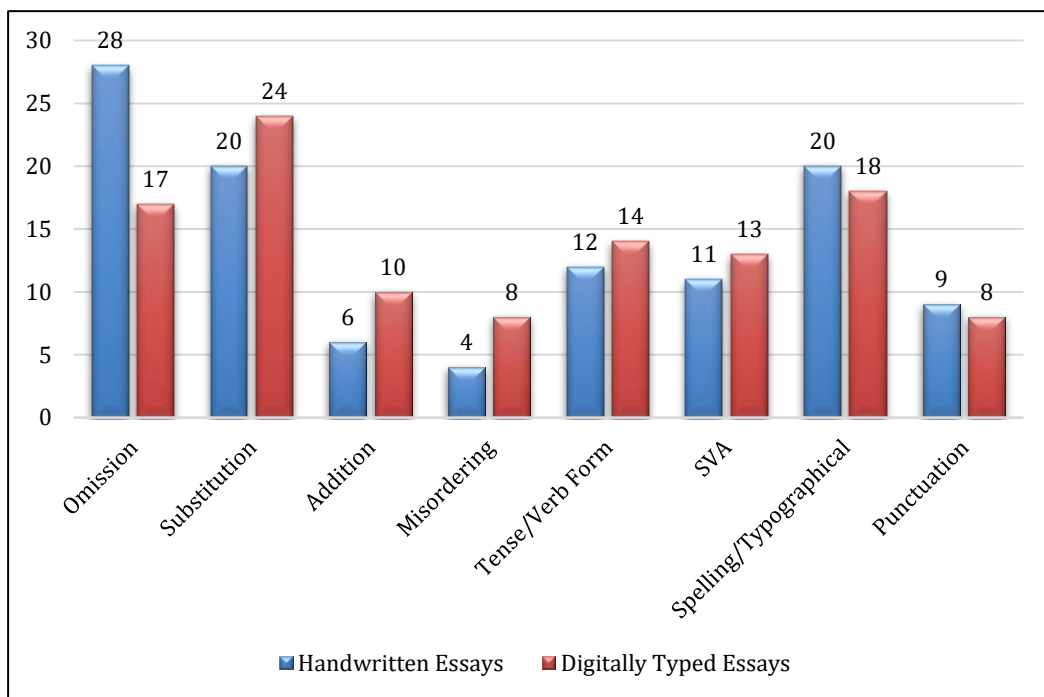


Figure 1. Frequency of Error Types in Handwritten and Digitally Typed Essays

**Table 8.** Frequency of Grammatical Errors Across Modes

Error Type	Handwritten (n)	Digital (n)
Omission	28	17
Substitution	20	24
Addition	6	10
Misordering	4	8
Tense/Verb Form	12	14
Subject-Verb Agreement	11	13
Spelling/Typographical	20	18
Punctuation	9	8

### Results for Research Question 2: Factors Contributing to Grammatical Errors in Handwritten and Digitally Typed Essays

To answer the second research question of the study, which is: *“What factors contribute to grammatical errors in handwritten and digitally typed essays?”*, thematic analysis was conducted on questionnaire responses using a qualitative coding approach. Responses were first read multiple times to identify recurring patterns. Initial codes were then generated and grouped into broader categories, which were refined into three main themes aligned with the research question. They are:

1. Challenges in Handwritten Essay Writing
2. Challenges in Digitally Typed Essay Writing
3. Perceived Needs and Support for Grammar Improvement

In addition to the open-ended questions, the participants also responded to a few short-scale questions, which were used to understand their opinions about handwritten and digitally typed essays. As shown in Figure 1, most students face difficulties such as spelling errors, time pressure, and a lack of focus on grammar when writing by hand. On the other hand, as shown in Figure 2, many students use digital tools like Google Docs and

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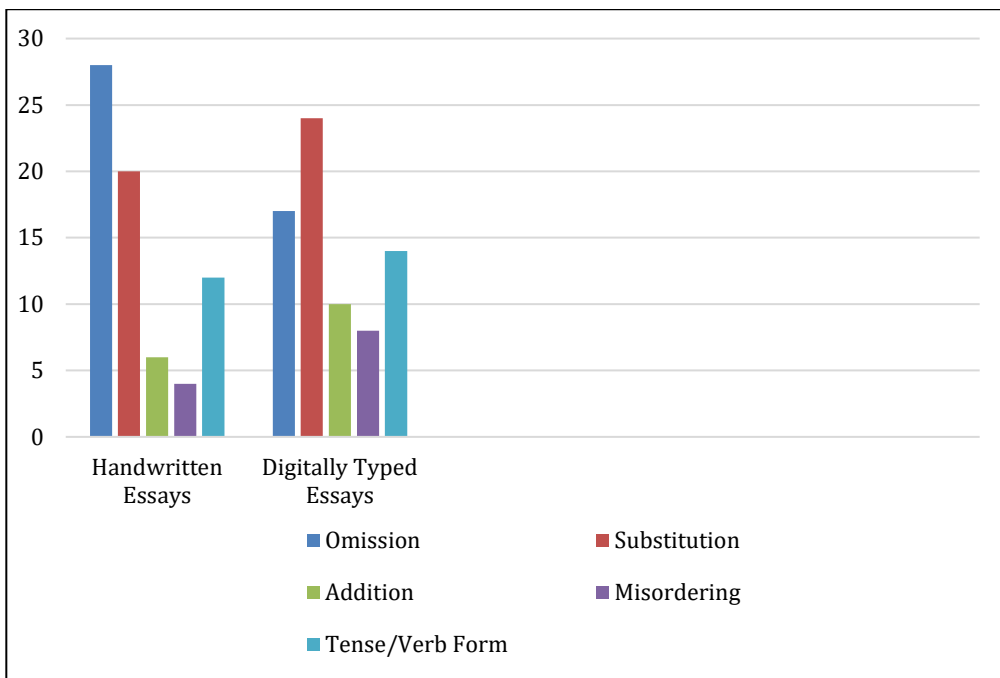
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In addition to the open-ended questions, the participants also responded to a few short-scale questions, which were used to understand their opinions about handwritten and digitally typed essays. As shown in Figure

1, most students face difficulties such as spelling errors, time pressure, and a lack of focus on grammar when writing by hand. On the other hand, as shown in Figure 2, many students use digital tools like Google Docs and Grammarly confidently, but some feel that depending too much on these tools prevents them from improving their grammar knowledge.

When it comes to difficulties in typing essays digitally, most of the participants identify grammar, typing speed, and technical issues as challenges to effective writing in digital platforms. Five students out of 14 reported that they found it difficult to produce essays digitally due to grammar-related issues, such as *“I can’t type fast and write sentences without grammar errors.”*, *“Sometimes I forget to use correct tense accurately.”*

**Theme 2: Challenges in Digitally Typed Essay Writing**



**Figure 2.** Uses of digital tools and their impacts

On the other hand, some participants have also commented on technical issues and formatting challenges. They shared comments like *“It’s hard to use punctuation correctly when I type quickly,”* and *“Sometimes the document or app freezes while I’m typing.”*, highlighting that since typing skills and familiarity with digital tools vary from person to person. These can affect the accuracy of written work. There were some students who

were more focused on typing quickly within the given time than on grammar while others struggled with multitasking between spelling, punctuation, and sentence structure. One of the participants said that she did not have any challenges when typing. This suggests that some students are confident in writing digitally. However, most participants still found grammar and formatting difficulties

even with autocorrect and other useful digital features.

### Theme 3: Perceived Needs and Preferred Support for Grammar Improvement

When the participants were questioned about what would help them improve their grammar, most of the participants responded that they need more time to practice, reading books and articles, and getting teachers' feedback on their writing tasks. Responses included statements like *"Prefer English books daily, and practice the grammar as a habit," "Grammar practice," "Self-practice," "Regular grammar workshops and feedback from teachers on my writing,"* and *"I need exercises that focus on common mistakes I make."* These comments highlight that the students value structured guidance and consistent practice in order to build their confidence and accuracy in writing.

Comments like *"I use AI tools like ChatGPT and Quillbot to check my grammar mistakes,"* and another noted, *"Duolingo helps me learn new words and sentence structures"*. These suggest that the students use digital tools in education, especially to practice four language skills.

Other examples of support involved comments like *"Watching YouTube videos in English to learn to hear correct sentences"* and *"Practicing writing short paragraphs every day,"* which indicate that students use informal, self-directed learning strategies to enhance their writing.

In general, the comments from students support the idea that they are aware of the importance of ongoing practice with grammar, receiving teacher feedback, developing vocabulary, and strategically using technology to improve their writing in both handwritten and online formats.

In conclusion, it is clear that participants suggested that grammar, vocabulary, and mechanical issues are the main causes of errors in both handwritten and digitally typed essays. While typing showcases the problems with speed and technical errors, handwriting showcases challenges related to time and neatness, as mentioned below.

1. Lack of awareness of grammar and applying rules accurately.
2. Limited knowledge of spellings and vocabulary.
3. Lack of time management.
4. Typing speed and technical issues such as connection issues, unplanned updates, and app freezes.
5. Depending too much on AI and grammar tools
6. Lack of guided feedback on writing and lack of continuous grammar practices.

### 4. Discussion

The findings of this study indicate that the grammatical errors in the handwritten and digitally typed essays may vary but overlap in linguistic, cognitive, and technological backgrounds. The first research question was designed to identify the types and patterns of grammatical errors, while the second research question examined the reasons for grammatical errors. The findings of the two research questions collectively indicated that Sri Lankan undergraduates continue to face problems with grammatical accuracy in both forms of writing despite many years of English instruction.

After analyzing the students' essays, it became clear that the grammatical errors that occurred most frequently were article omission, subject-verb agreement, verb tense failure, preposition errors, and spelling errors. Encoding examples such as *"family is foundation of society," "when mens going," "I am agree,"* and *"sharing responsibilities reduce"* illustrate habitual errors that violate

standard grammar rules. Each of these examples confirms previous research conducted by Jayasundara (2011) and Abeywickrama (2010) with regard to Sri Lankan undergraduates.

The errors in coding can be categorized as interlingual and intralingual, from the Error Analysis Framework (Corder, 1967; Brown, 1994). Interlingual errors related to L1 interference mean the learners' first language caused the learner to transfer the structural or syntactic aspect of their first language (Derrick et al., 2018) while making assumptions about the target language grammar i.e. English grammar in this context. This resulted in omitting auxiliary verbs, articles and prepositions, such as, in the case of correct article omission, " *He kind*". These findings support Selinker's (1972) Interlanguage Theory to the extent that the learners were grappling with two varieties of their language and transitional English language competence from their first language.

These patterns also show that learner errors are systematic and developmental rather than random, reflecting an evolving interlanguage shaped by both L1 transfer and incomplete acquisition of L2 rules. Differences based on mode were also highlighted throughout the study. Essays that were written by hand had errors related to omission, spelling, and punctuation errors while digitally typed essays had more instances of lexical substitution, typographical errors, and overextended sentences, such as "*the mother is the basement of the family, batter child development*". These illustrate lexical substitution types of errors likely caused by mis-selection and over-reliance on spellcheck. This goes with the findings of Kessler et al. (2012) and Rosen (2017), who indicated that while these digital affordances may decrease surface-level errors, they do not eliminate some underlying grammatical problems.

The questionnaire responses helped the researchers unpack the reasons why these errors remained, and these responses answered the second research question: Factors Contributing to Grammatical Errors in Handwritten and Digitally Typed Essays. Respondents reported the following most common difficulties: grammar, spelling, time management, typing rate, and limited vocabulary. These self-reported challenges corresponded to the errors in the essays. Most students have made grammar mistakes due to L1 transfer and lack of exposure to authentic examples of English usage. For example, students whose primary language is either Sinhala or Tamil lack articles and some verb forms, which is why students might produce sentences such as "*family is foundation of society*" or "*mens should take the responsible of their children.*" This supports the Contrastive Analysis Hypothesis, as structural differences between L1 and English directly influence these recurring error patterns. As James (2013) and Dineshika and Jayasinghe (2025) point out, interlingual transfer occurs when students learn habitual incorrect grammar.

Limited vocabulary also seems to restrict students from selecting precise words and using complex structures, which leads to substitution and misordering errors. Students indicated that "*coping with time*" in timed conditions and "*keeping my handwriting neat while writing fast*" were challenges in handwritten essays. The cognitive load of handwriting where learners have to generate ideas while maintaining an awareness of grammar, places increased demands on students supporting cognitive load theory, where increased task demands reduce attention available for grammatical accuracy. Ferris (2006) points out that when we divide our attention, grammar is typically the first focus that declines in accuracy, which can be seen in the examples such as "*When mens going*" or "*both parent*", from their essays.

Digital writing has its own challenges that are mainly connected to technical issues, typing speed, and staying focused throughout the writing process. Some students mentioned that *"I can't type speedily"* or *"to keep my typing from having errors and well formatted"*. These examples show how they get distracted and how their attention is divided between typing and grammar often. This aligns with their mistakes, such as *"it help to parents"* and *"sharing responsibilities reduce,"* which show how writing faster does not make their writing accurate.

As participants mentioned in the questionnaire, they said that using AI-powered tools, including ChatGPT, Quillbot, and Duolingo, is useful in checking their grammar errors even though those tools only help with fixing common and noticeable errors, unlike deeper issues related to tenses, subject-verb agreement, and so on. This finding aligns with studies done by Guzmán Alvarado and Naranjo Andrade (2025) and Farhan (2025), who revealed that relying too much on AI can hinder their ability to convert their thoughts into grammatically correct phrases by preventing them from practicing self-correction methods.

Participants have suggested that *"having regular grammar workshops"* and *"having more feedback from my teacher on my writing"* are useful for them to learn and practice grammar rules to ensure that they are capable of writing without mistakes. This aligns with the findings of Ferris (2006) and Jayasundara (2011) that prove that giving continuous and constructive feedback carries long-term benefits.

Overall, the findings of the study highlight that there is a clear difference between handwritten and digitally typed essay writing. According to the findings, handwritten work mostly had omission and sentence structure errors, which are usually caused by managing the given time and fatigue. On the other hand, digital writing had longer but less accurate sentences due to

limited monitoring by the teacher. As Rosen pointed out in 2017, handwriting encourages reflective thinking with a slow pace that can limit output while digital writing focuses mostly on speed over accuracy. In both cases, the main issue is the lack of strong grammatical awareness and self-monitoring skills. This study contributes to existing research by showing that the mode of writing influences not only the frequency but also the types and causes of grammatical errors.

### **Implications**

There are pedagogical implications in the findings of the study. The first suggestion of this study is that grammar instruction in universities across Sri Lanka should not be limited to explicitly explaining the rules of grammar but also include a more active form of learning through writing-based grammar instruction. Writing-based grammar instruction that includes both handwritten responses and digital writing tasks could support students in achieving a degree of balance between grammatical accuracy and fluency. Second, instructor feedback on grammatical errors could be emphasized by using writing that integrates process writing, peer editing, and focused revision activities. Third, while AI technologies can enhance the practice of grammar learning, students need to be moderated and guided by the instructor to think critically about the usage of grammar. When possible, instructors should promote writing engagement with an awareness of grammar, which will assist students in not passively accepting AI-generated suggestions, but instead reflect on the suggestions made by AI tools.

### **5. Conclusion and Recommendations**

The study showed that Sri Lankan undergraduate students often make grammatical mistakes in their writing, whether it's handwritten or digital. These mistakes come from several related factors. These include the influence of their first language, limited experience with English,

not enough writing practice, their cognitive abilities, reliance on technology, and the pressure of constant evaluation. The handwritten essays revealed more problems with spelling and punctuation and time management, but the digitally typed essays highlighted issues with lexical substitution and typographical mistakes and excessively lengthy sentences.

The findings indicate that these errors occur in a systematic way because they reveal greater issues which exist in second language learning. The study shows how mode of writing affects both error type and frequency of errors because handwriting and digital typing involve different challenges that influence learning in different ways. The research also shows that ESL classrooms must provide equal learning opportunities through both digital and handwritten learning resources.

The study illustrates that teachers need to combine direct grammar teaching with active writing practice across all writing formats. The teachers need to deliver specific feedback while they help students develop self-editing skills and provide grammar assistance and guide students on using digital tools. The upcoming research will analyze larger student samples from different universities to study how particular teaching methods affect the long-term development of grammatical accuracy in both writing formats.

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