*International Journal of Learning, Teaching and Educational Research*
*Vol. 24, No. 12, pp. 809-830, December 2025*
*https://doi.org/10.26803/ijlter.24.12.34*
*Received Sept 13, 2025; Revised Oct 26, 2025; Accepted Nov 20, 2025*

# Mapping the Usage of Definite and Indefinite Articles in Student and ChatGPT Essays: A Stylometric-Cartographic Approach

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**Abstract.** This study set out to investigate, analyse, and compare the usage frequencies of two English articles, the definite article, *the*, and the indefinite article, *a*, in two discursive essay sets. One set was written by first-year, English second language, undergraduate students (SWDEs), while the other set was generated by ChatGPT (CGDEs). Both essay sets responded to the same essay topic at different times (2023 and 2024). Each set comprised 50 essays, with the SWEDE set consisting of 27,183 tokens, whereas the CGDE set had 25,010 tokens. SWDEs were selected using convenience sampling, and all the 50 CGDEs were generated individually. The study employed a Deleuzian-Guattarian cartographic mapping and stylometry as its theoretical framing. In addition, it utilised AntConc to analyse its data. Some of the findings of this study are as follows. Pertaining to SWDEs, the definite article, *the*, had more usage frequencies than the indefinite article, *a*. A similar pattern was observed concerning CGDEs. Across the two essay sets, SWDEs recorded more usage frequencies of these two articles than CGDEs, with the definite article, *the*, having the most occurrence frequencies than the indefinite article, *a*, in both sets. With reference to cartographic representations of these two articles in the two essay sets, the study observed that these two articles can have multiple and varying representations that foreground their unfixed, indeterminate, fluid, and impermanent nature. This particular ephemeral nature, results in the cartographic deterritorialisation of these two articles across the two essay sets. This view inherently perceives student writing as being in a state of flux and negates the orthodox framing of student writing as predictable, linear, and stable. The study ends with recommendations and caveats regarding the use of these two English articles by English L2 students and by LLMs such as ChatGPT.

**Keywords:** AntConc; ChatGPT-generated discursive essays; Deleuzian-Guattarian cartographic mapping; English definite and indefinite articles; student-written discursive essays; usage frequencies; stylometry

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## 1. Introduction

Since the advent of large language models (LLMs) such as ChatGPT, the spotlight is now beginning to be put on investigating author attribution and stylometry in student written texts to distinguish such texts from human-written and machine-generated texts. Against this backdrop, student-written discursive essays (SWDEs) and ChatGPT-generated discursive essays (CGDEs) were examined and analysed from a rhizomatic perspective using the cartographic mapping theory as informed by Deleuze and Guattari's (1987) rhizomatic thinking principles. According to the definition of rhizomatic writing used in this study, student writing is viewed to be in a state of constant development and manifestation.

Accordingly, a linear perspective, which presumes that the writing process is organised, inflexible, and coordinated, is antithetical to a rhizomatic perspective (Deleuze & Guattari, 1987; Wyatt & Gale, 2018). The rhizomatic perspective, which questions a conventional practice about analysing student writing, served as the inspiration for the cartographic mapping used in this paper. Cartographic mapping is essentially a divisible and fluctuating mapping process that is subject to contextual adaptations (Deleuze & Guattari, 1987; see also Hernández-Hernández et al., 2018; Nkhobo & Chaka, 2021; Padilla-Petry et al., 2021). From this study's vantage point, mapping suggests a map-making process that illustrates how frequently English definite and indefinite articles (henceforward articles) are used in SWDEs as opposed to CGDEs produced by a free version of ChatGPT (ChatGPT-4, and henceforth ChatGPT).

As the present study construes students' usage of articles in written essays to be rhizomatic in nature, it seeks to map the usage of such articles in written essays in comparison to essays produced by ChatGPT. Currently, there is a dearth of research that has investigated the usage frequencies of definite and indefinite articles in SWDEs versus CGDEs rhizomatically by representing them in a cartographic and stylometric way. The concept of cartography has, however, been applied in a variety of fields, such as composition studies and/or cartographic literacy (Canfield, 2021; Hanley, 2019; Nègre, 2024; Santee, 2022, 2023; Ulmer & Koro-Ljungberg, 2015; Wyatt & Gale, 2018). One thing all writing practices have in common is that mapping exercises are necessary for researchers and educators to learn from the patterns that emerge from written texts and use the resultant knowledge to inform writing epistemologies.

Scholars in different disciplines have utilised the concept of cartography to propose new ways of inquiry that could lead to a paradigm shift in how writing is perceived (Fairbairn et al., 2021; Nobre et al., 2020; Padilla-Petry et al., 2021). In another context, an increasing number of studies have focused on the concept of cartography from a microscopic fictional perspective within the field of literary studies (Castro-Varela 2023; Caquard & Cartwright, 2014; Cooper et al., 2016; Mura, 2023; Peterle, 2018). The aforementioned studies essentially concur that the principle of cartography necessitates a narrative interpretation. In addition to the viewpoints articulated by the studies mentioned above, learning - which includes writing - is viewed as an ongoing process of transformation (Hernández-Hernández et al., 2018).

Against the backdrop of the points highlighted in preceding paragraphs, the current study set out to answer the following research questions (RQs):

- What are the usage frequencies of the English definite and indefinite articles <*the*> and <*a*> in SWDEs versus CGDEs as analysed by the AntConc's concordance and concordance plot?
- What kind of cartographic mappings do the usage frequencies of these two articles portray in SWDEs versus CGDEs as analysed by the AntConc's concordance and concordance plot?

The structure of this paper is as follows: cartographic mapping and stylometry; literature review; methodology; findings; discussion; and conclusion, limitations, and recommendations.

**1.1 Cartographic Mapping and Stylometry**

Deleuze and Guattari's (1987) principle of cartography serves as the theoretical foundation for this work. Both philosophers employed a poststructuralist approach to question a hierarchical way of learning, thinking, and reasoning. As stated earlier, the present study employed cartographic mapping as a theory to illustrate the usage frequencies of the two previously specified articles in SWDEs versus CGDEs. According to Deleuze and Guattari (1987, p. 120, cartographic mapping suggests that "[t]he map is open and connectable in all dimensions; it is reversible, detachable, and susceptible to constant modification" In respect of student writing, the goal of cartographic writing is not to find or trace uniformity, but to transcend normative modes of theorising and representing (Ulmer & Koro-Ljungberg, 2015) writing. Concerning this study, cartographic mapping was employed to represent the usage frequencies of two aforementioned English articles in SWDEs versus CGDEs.

In addition to cartography, this paper employs a stylometric lens. While stylometry itself may be characterised differently, features that comprise it are mainly those related to the style of language (stylometry) that a person uses or a machine produces. In this instance, stylometric features are categorised into lexical, grammatical, and syntactic features. These features are used in areas like language studies (Chaka & Nkhobo, 2023; Nkhobo & Chaka, 2021, 2023a, 2023b; Sinaga, 2025), literary studies (Eisen et al., 2017; Gómez-Adorno et al., 2018; Tiwari et al., 2023), information science (Berriche & Larabi-Marie-Sainte, 2024), and philology (Kovalev, 2024; Zenkov, 2024). Lexical features encompass words, word choice, word lengths, and word frequencies, and vocabulary richness.

For their part, grammatical features include parts of speech (e.g., nouns, pronouns, verbs, adverbs, adjectives, prepositions, conjunctions, determiners, and interjections). This includes their frequencies, and their density and diversity, especially in the case of verbs, adverbs, and adjectives, in a given piece of writing. Syntactic features involve phrases, clauses, sentences, and paragraphs as well as their frequencies, lengths, density and diversity in a particular piece of writing (Berriche & Larabi-Marie-Sainte, 2024; Tiwari et al., 2023; Zenkov, 2024). Determiners or articles are also regarded as function words. Similarly, in this

paper, they are viewed as function words (cf. Ahmad & Khan, 2021; Gómez-Adorno et al., 2018). As stated above, two related stylometric features, definite and indefinite articles together with their usage frequencies in the two aforesaid essay sets (SWDEs and CGDEs), were the major focus of the current study.

## 2. Literature Review

Numerous studies have examined author attribution and stylometry in written texts since the advent of artificial intelligence (AI) tools. These studies include but are not limited to (Banat, 2024; Casal & Kessler, 2023; Divjak et al., 2023; Fu & Liu, 2024; Kumarage & Liu, 2023; Kumarage et al., 2024; Leong, 2023; Lund et al., 2023; Maisto, 2025; Sison et al., 2024). Therefore, the current study investigates the usage frequencies of definite and indefinite articles in SWDEs versus CGDEs (Benitez-Castro, 2021; Castro-Varela, 2023; Chan, 2022; Derkach & Alexopoulou, 2024; Divjak et al., 2023; FaqeAbdulla, 2024; Liu et al., 2023; Nègre, 2024; Park, 2023; Rousell, 2021; Ulmer & Koro-Ljungberg, 2015; Wyatt & Gale, 2018).

Park's (2023) study investigated the article utilisation patterns of L1 Korean L2 English learners by using the International Corpus Network of Asian Learners of English (ICNALE) written corpus, which is a large English interlanguage corpus. The data consisted of 300 L1 Korean L2 English and L1 English written essays. Together, these essays had 69,594 tokens. The study employed AntConc 3.5.8 to analyse these written essays. It focused, mainly, on one specific noun phrase (NP), *part-time jobs*. It discovered that learners' patterns of using the article system seemed similar to the one employed by native speakers in the group that had higher English proficiency.

The study also found that these learners' article usage habits became more like those of native speakers as their proficiency level rose. Specifically, both learner and native speaker groups favoured using indefinite NP forms, while the two groups rarely used definite single forms. One of the observations made by this study is that even the most skilled learners often utilised bare nominals or NPs that tend not to require articles. In light of its corpus analysis, the study suggests that article instruction should be prioritised in L2 classes in English as a foreign language (EFL) context and that teaching learners about the structural distinctions between their L1 and their L2 is crucial.

Another recent study, which explored the use of articles in student-written texts is that of FaqeAbdulla (2024). The purpose of the study was to determine how frequently definite and indefinite articles appeared in 35 paragraphs written by first-year English majors at Salahaddin University's College of Education in Erbil, Iraq, during the 2022–2023 academic year. Descriptive statistics was employed in the study to determine the frequency of articles using conceptual content analysis. Among other things, this study observed that first-year English majors found it difficult to properly utilise articles in their work. They had trouble using definite and indefinite articles correctly on a regular basis. Since the definite word, *the*, was missing from the majority of the paragraphs, the students' use of definite articles was inconsistent. This suggested that because the total frequency of definite articles in the paragraphs was relatively low, it would be difficult for students to

understand the proper usage of articles. Overall, students did use indefinite articles a little more often than definite articles. In another related study, Chan (2022) examined article errors in essays written by Hong Kong Cantonese ESL students. Three-hundred and eighty-seven students participated in the study, comprising 322 students from five nearby secondary schools and 65 students from three nearby universities. They completed two 200–300 word free writing assignments. The study collected more than 600 pieces of free writing. Errors were found in the analysis of English article usage.

At intervals of roughly two weeks, the participants completed two free writing assignments (a narrative text and a descriptive text) totalling 200–300 words each, given at two separate 40-minute time periods without any writing assistance. A total of 158,168 words were collected, comprising 344, 240, and 112 pieces of writing from university students, F.3 and F.6 students, respectively. After being typed up in a document file, each piece of text was examined for article errors. The study discovered that while ESL learners at all skill levels struggled with the English article system, their performance improved as their competence increased. What proved to be problematic was intentional general reference, whereas over-extension and under-extension were more common than substitution and co-occurrence.

## 3. Methodology

As stated earlier, the main objective of the current study was to investigate, analyse, and compare the usage frequencies of two English articles, the definite article, <*the*>, and the indefinite article, <*a*>, in two discursive essay sets, SWDEs and CGDEs using AntConc. This was intended to establish which of the two essay sets employed these articles the most given the prevailing view that AI tools use language differently from humans (Braswick, 2025; Chaka, 2023b). The study also investigated the use of these two English articles in the two essay sets from a dual lens: a Deleuzian-Guattarian cartographic mapping and stylometry. The study employed an exploratory research design.

### 3.1 Research Design

This study was exploratory in nature since it examined an area of research that has, thus far, received little attention (Grønmo, 2023; Johnson & Christensen, 2024; Leavy, 2022]. An exploratory research design aims to uncover new perspectives into a particular subject. This definition is pertinent to the current study, which aims to provide new insights into the usage frequencies of the definite and indefinite articles <*the*> and <*a*> in SWDEs and CGDEs from a cartographic mapping point of view as analysed through the concordance and concordance corpus tool, AntConc.

By its nature an exploratory research design avoids making an unwarranted generalising of the findings as it focuses on contextual cases and specific participants, whose number can sometimes be limited (Reiter, 2017). The current study employed more quantitative approach than a qualitative one (Ahmadin, 2022; Allan, 2020; Kandel, 2020; Mwita, 2022). Its quantitative data are in the form of usage frequencies of the aforementioned articles as captured in each dataset of

the two essay sets. However these usage frequencies were extracted from essays, which are qualitative in nature.

### 3.2 Sampling Procedure

The study identified SWDEs and CGDEs using a convenience sample technique. A careful selection of the available datasets is important for convenience sampling (Ahmadin, 2022; Kandel, 2020). Consequently, 50 SWDEs written by first-year students enrolled in an undergraduate English Studies module were selected in the first semester of 2023. The students to whom these essays belonged were English second-language (L2) students. ChatGPT was also used to generate 50 discursive essays on the same essay topic as the one on which 50 SWDEs were based. The study was conducted under an ethical clearance certificate granted by the College of Human Sciences Research Ethics Committee.

### 3.3 Data Collection Process

Fifty SWDEs submitted for Assessment 2 of an undergraduate English Studies module during the first semester of 2023 were downloaded by one of the authors of this paper. The following topic was the subject of the discursive essays on which all students (n = 2,500) enrolled for the said module were required to write their essays. *Using research, discuss TWO (2) positive and TWO (2) negative effects of how technology use in education affects students' learning. Your response should include a minimum of FIVE (5) credible sources.* ChatGPT (ChatGPT-4) was given the same essay topic as a prompt to generate 50 distinct discursive essays on May 23, 2024. These 50 CGDEs were generated individually. Each essay in each essay set had to be no longer than 500 words. SWDEs had 50 files, which together, consisted of 27,183 tokens. Likewise, CGDEs had 50 files, but whose overall tokens were 25,010.

### 3.4 Data Analysis

Each of the 50 discursive essays in each of the two sets of discursive essays (SWDEs and CGDEs), was converted into a text file. It was, then, saved as a Microsoft (MS) Word text file in a folder aptly named after an essay set to which it belonged like SWDEs or CGDEs. Each essay set had two datasets for the *the* article text files and for the *a* article text files. Each dataset was uploaded onto AntConc for analysing its own article usage frequencies. All the analysed text files were saved as text files in their respective datasets in the specific SWDE and CGDE folders to which they belonged.

AntConc analyses text files it is fed with using its own internal mechanism of scoring word usage frequencies. It is these text files of the two articles' usage frequencies that were represented as figures (see Figures 1, 2, 3, and 4) for each text file in each dataset. In addition, the usage frequencies of the two articles were depicted in tables (see Tables 1 and 2). Thereafter, the four article usage frequencies were represented as cartographic maps (see Figures 5, 6, 7, and 8) in keeping with a Deleuzian-Guattarian cartographic mapping explained earlier.

## 4. Findings

The findings of this study are presented in line with the two previously mentioned sets of discursive essays, each of which contained two datasets. They are grouped

based on the usage frequencies of the definite and indefinite articles <*the*> and <*a*> analysed in SWDEs and CGDEs by AntConc's concordance and concordance corpus.

### 4.1 Student-Written Discursive Essays (SWDEs): Usage Frequencies of the Definite and Indefinite Articles, <*the*> and <*a*>

As mentioned above, the 50 MS Word text files for SWDEs were uploaded onto the AntConc software programme to determine the usage frequencies of the definite and indefinite articles, <the> and <a>. Table 1 depicts the usage frequencies of these articles.

**Table 1: Usage frequencies of the definite and indefinite articles in SWDEs as represented by AntConc**

| Articles | |
|---|---|
| Usage frequencies | Usage frequencies |
| *the* | *a* |
| 1,184 | 416 |

As is evident from Table 1, <*the*> appeared 1,184 times in all SWDEs, while <a> featured 416 times. As a corollary, Figure 1 below, presents a concordance in context and a concordance plot of the above-mentioned definite and indefinite articles as identified by AntConc.

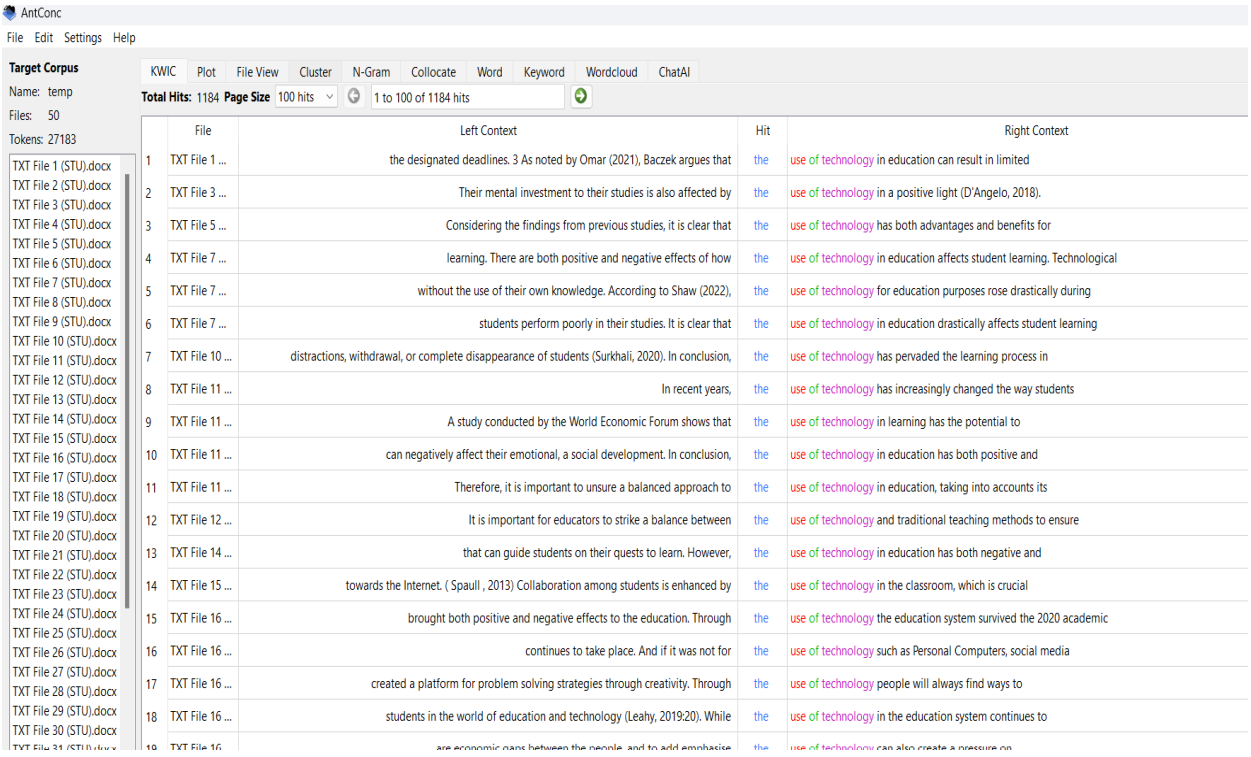


**Figure 1: The <*the*> concordance in context and concordance plot for SWDEs**

From both the concordance in context and the concordance plot as portrayed by Figure 1, the definite article, <*the*>, was highly used by SWDE 24 with 60 hits (appearances). However, in SWDEs 50, 16, 40, and 19, it recorded 44, 43, 41, and

40 hits, respectively, in terms of its usage. In SWDEs 42, 2, 8, 23, 26, and 36, it clocked 34, 33, and 31 hits, apiece, while in SWDEs 23, 26, and 36, it scored 30 hits per essay. In contrast, <*the*> appeared 29 and 28 times, each, in SWDEs 34 and 28. It had a tie score of 26 hits in SWDEs 10 and 48. In SWDE 18, it recorded 25 hits in the beginning, middle, and closing paragraphs, whereas in SWDEs 3, 6, 15, and 47, it clocked the same number of hits (n = 24).

Moreover, it shared similar hits (n = 23) in SWDEs 12 and 43. Likewise, in SWDEs 11, 14, 39, 41, and 44, it had 22 hits in all of them, and did so for SWDEs 9, 33, and 49 with 21 hits in each case. Furthermore, this article occurred 20 times in SWDE 30, while it generated 19 hits, apiece, for SWDEs 1, 5, and 38. On the other end of the spectrum, <*the*> recorded 18 instances of usage in SWDE 20, but had a tie of 17 hits in SWDEs 7, 13, 27, 32, 35, and 46. For SWDE 21, it recorded 16 hits, while it produced 15 hits, apiece, for SWDEs 17, 25, and 29. Concerning SWDE 31, it had 14 hits, but had a tie score (n = 13 hits) for SWDEs 4 and 22. Finally, it only scored 21 hits and 9 hits for SWDEs 37 and 45, respectively.

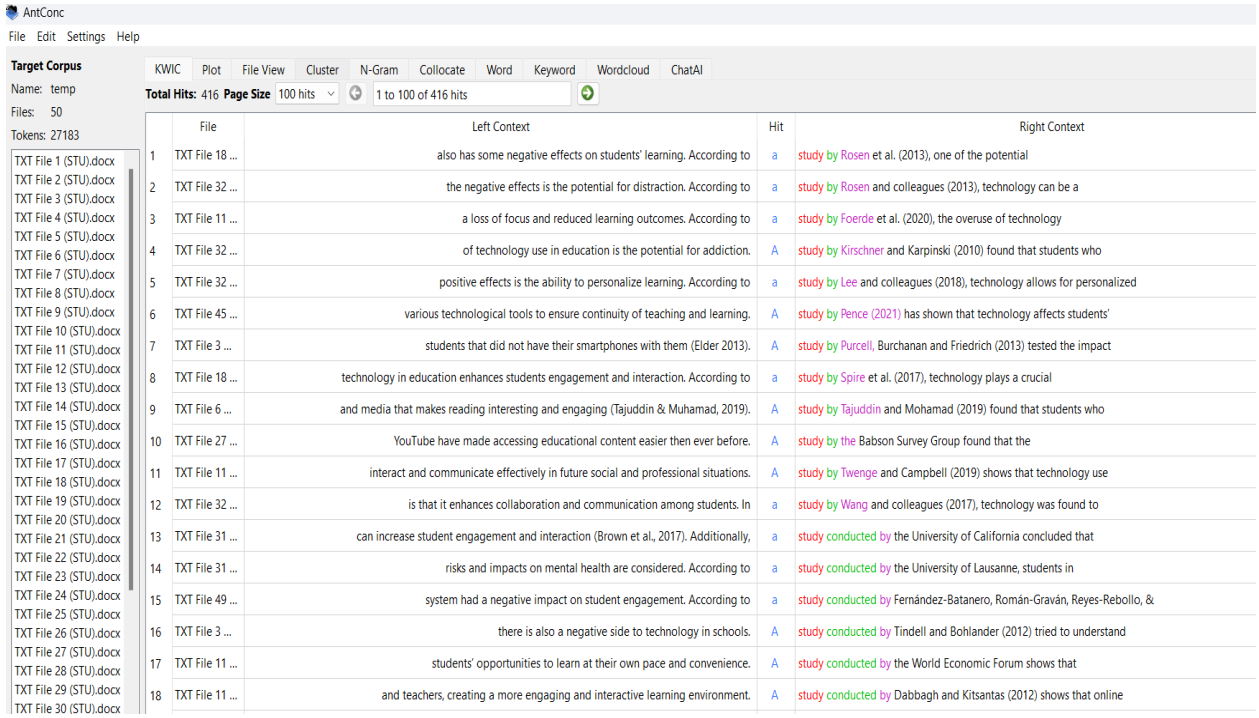


**Figure 2: The <*a*> concordance in context and concordance plot for SWDEs**

Figure 2 shows that the concordance in context and the concordance plot of the indefinite article, <*a*>, was highly used in SWDE 28 with 18 hits. Nonetheless, in SWDEs 49 and 24, it recorded 16 and 15 hits, respectively. By contrast, in SWDEs 16, 19, 22, and 30, it produced 14 hits, each. In a similar vein, it shared similar scores in SWDEs 6, 8, 21, and 34 with 13 hits, individually. In SWDE 44, it recorded 12 hits, while in SWDEs 3, 33, and 35, it managed 11 hits, each.

However, in SWDEs 2 and 42, it recorded 10 hits, apiece. Pertaining to SWDEs 11, 18, 31, 32, 41, and 47, it generated nine hits each, whereas in SWDEs 4, 15, 25, 40, and 43, it clocked eight hits, separately. In addition, it recorded the same number

of hits (n = 7 hits) in SWDEs 23, 39, and 48, while in SWDEs 12 and 14, it managed six hits, each. On the other hand, in SWDEs 7, 9, 10, 20, 36, and 37, it scored five hits, apiece. Moreover, in SWDEs 1, 5, 17, 27, 38, 45, and 50 it had a tie of four hits, per essay. Lastly, in SWDEs 26 and 46 it recorded three hits, each. And, for SWDE 29, it recorded two hits and only one hit for SWDE 13.

### 4.2 ChatGPT-Generated Discursive Essays (CGDEs): Usage Frequencies of the Definite and Indefinite Articles, <*the*> *and* <*a*>

As was the case with SWDEs, the 50 MS Word text files for CGDEs were uploaded onto the AntConc software programme to identify the occurrence frequencies of the definite and indefinite articles, <the> and <a>, as stated earlier. Table 2 represents the occurrence frequencies of these articles: *the* (n = 523 and *a* (n= 211).

**Table 2: Usage frequencies of the definite and indefinite articles in CGDEs as displayed by AntConc**

| **Articles** | |
|---|---|
| Usage frequencies | Usage frequencies |
| the | a |
| 523 | 211 |

The concordance in context and the concordance plot of the definite article, <the>, are illustrated by Figure 3. In this figure, CGDE 5 polled 24 hits, followed closely by CGDEs 18 and 16, which had 18 and 16 hits, respectively. In CGDEs 1, 4, 6, and 18, <the> recorded 14 hits, apiece in terms of its usage, whereas in CGDE 7, it yielded 13 hits. By contrast, CGDEs 13, 22, 41, 42, and 48 produced 12 hits, individually, while CGDEs 2, 11, 12, 15, 16, 19, 20, 23, 35, 37, 39, and 40 managed to have 11 hits, apiece. For that matter, CGDEs 44, 47, and 49 recorded 10 hits, each, followed closely by CGDEs 3, 8, 14, 21, 24, 26, 33, 36, 45 and 46, each of which obtained 9 hits. Two CGDEs, 17 and 27, scored 8 hits, each. Likewise, CGDEs 25, 29, 30, 31, 32, 34, 38, and 50 produced 7 hits, separately, while both CGDEs 28 and 43 recorded 6 hits, each.

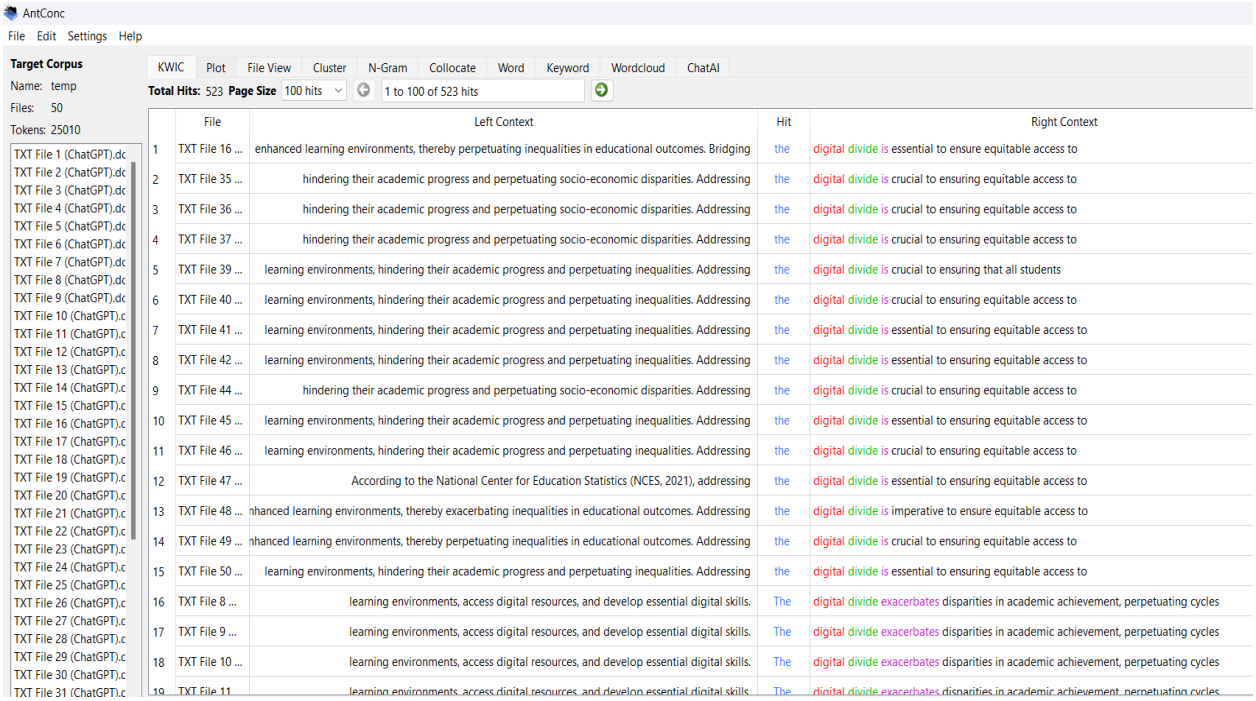


**Figure 3: The <*the*> concordance in context and concordance plot for CGDEs**

Concerning the indefinite article, <*a*>, its hits across CGDEs are exhibited by Figure 4. This figure shows that this article was highly used in CGDEs 4, 5, and 9, in which it had the most occurrences, with the first of these three essays having one more hit than the other two essays, which were both tied with 8 hits. CGDEs 2, 3 and 15 produced 7 hits of this article, apiece. In comparison, CGDEs 13, 14, 17, 43, and 47 recorded 6 hits, individually, whereas CGDEs 7, 8, 10, 19, 23, 48 and 49 managed 5 hits, singly. They were followed by CGDEs 6, 11, 12, 20, 22, 25, 29, 31, 32, 34, 38, and 44, each of which scored 4 hits. The other group of CGDEs that had a tie score comprised 1, 16, 18, 21, 26, 27, 35, 37, 39, 40, 41, 42, 45, and 50, all of which produced 3 hits, each. The same is true of CGDEs 28, 30, 33, and 46, which recorded 2 hits, each. CGDEs 24 and 36 only recorded one hit, each.

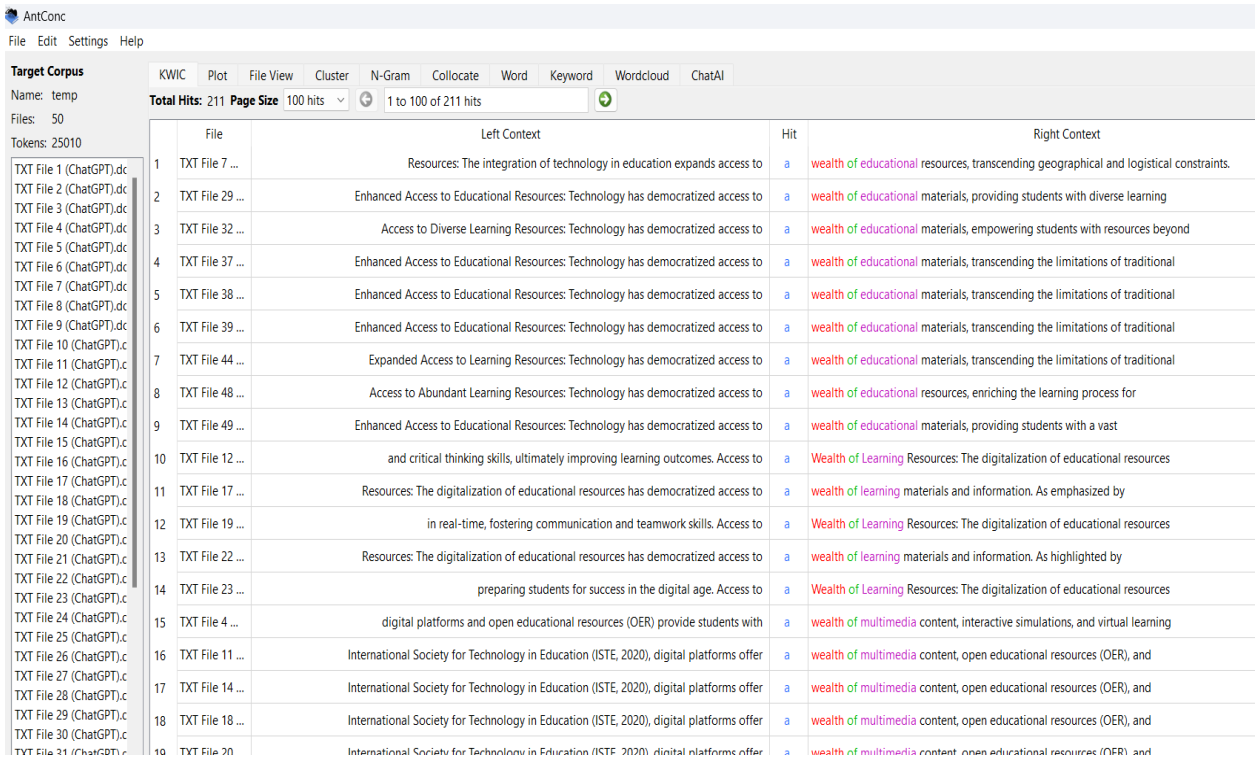


**Figure 4: The <*a*> concordance in context and concordance plot for CGDEs**

## 5. Discussion

This section discusses the findings presented in the preceding section in response to the two research questions (RQs) mentioned earlier. Again, as stated several times earlier on, the concordance and concordance corpus analysis tool, AntConc, was used to identify and analyse the usage frequencies of the definite and indefinite articles, <*the*> and <*a*>, in the two sets of discursive essays: SWDEs and CGDEs.

### 5.1 Usage Frequencies of Definite and Indefinite Articles: SWDEs versus CGDEs

As highlighted in the findings section, the definite article, <*the*>, had the most occurrences among SWDEs, wherein SWDE 24 had 60 hits (appearances) as the most hits across the two essay sets. The essays with the lowest number of hits were SWDE 37 (n = 21 hits) and SWDE 45 (n = 9 hits). Contrarily, in CGDEs, CGDE 5 was the essay with the most hits in both sets of AI-generated discursive essays. Its highest frequency and its most occurrences were, comparatively speaking in this essay set, only 24 hits, trailing SWDE 24 by 36 hits. Among CGDEs, eight CGDEs, each, shared 7 hits, while two CGDEs had a tie of 6 hits. These two groups of essays within CGDEs boast the lowest hits of the definite article, <*the*>, which are lower than the two essays with the lowest hits in the SWDE essay set.

There are some studies conducted on stylometric features that have different purposes, but whose results have some relevance to the current study. For instance, Zaitsu and Jin's (2023) study examined and analysed GPT-3.5- and GPT-4-generated texts (n =72, n = 72) and human-generated academic texts (n = 72) using Japanese stylometric analysis. The human texts were journal articles written

by human authors and were extracted from three Japanese psychology journals. Four categories of stylometric features were its focus: bigrams of parts of speech (e.g., noun + adjective, verb + adjective, and preposition + verb); the rate of function words, a bigram of postpositional particle words (e.g., ending, case, and binding particles); and the positioning of commas. The study employed a multi-dimensional scaling (MDS) to detect the distributions of these four categories.

One of the findings of this study, which is relevant to our study is that stylometric features used in the GPT-generated texts were not close to or were fewer than those used in human-written texts (Berriche & Larabi-Marie-Sainte, 2024). The same is true for our study, even though it only focused on the two stylometric features mentioned above, which are subsumed under the last category (function words) in Zaitsu and Jin's (2023) study. In other words, in our study, too, CGDEs, collectively, had fewer determiners than SWDEs.

In another context, Zindela's (2023) study, which analysed the lexical and syntactic complexity of argumentative essays written by first-year, Setswana second-language learners of English at one of the universities in South Africa and those generated by ChatGPT-3.5, made some observations that are pertinent to the present study. Firstly, it discovered that human-written essays used more content and function words (of which the two types of articles as investigated in the current study are part of the latter), but had less vocabulary diversity. Secondly, ChatGPT-generated essays, contrariwise, had more varied and advanced vocabulary diversity than human-written essays. As pointed out above, in the present study, too, SWDEs had more function words (e.g., the definite and indefinite articles) than CGDEs (see Tables 1 and 2).

Another study worth mentioning in this regard, is Nkhobo and Chaka's (2023a). This study employed a different corpus analysis tool, Coh-Metrix, to compare two essay sets, student-discursive essays (SDEs) and ChatGPT-generated discursive essays (ChatGPT-GDEs), in terms of lexical diversity, syntactic complexity, and referential cohesion. Again, these language categories are part of stylometric categories. SDEs consisted of seven essays written by first-year, undergraduate students enrolled for an English Studies module during the second semester of 2020 at a university in South Africa. The essays were in response to an essay assignment topic. ChatGPT was instructed to produce the same number of essays based on the same topic instructions given to students in 2020.

A t test was also used to determine the mean scores of the two essay sets. Pertaining to raw mean scores, SDEs had more lexical density and referential cohesion than ChatGPT-GDEs, whereas the latter set of essays had more syntactic complexity than the former set (cf. Zindela, 2023). Nevertheless, from a t test perspective, there was no statistically significant difference between the mean scores of the two essay sets concerning these three linguistic categories. The observation regarding the more lexical density that SDEs had over ChatGPT-GDEs dovetails with the findings of the present study, even though it employed AntConc and not Coh-Metrix as its corpus analysis tool.

### 5.2 Cartographic Mappings of the Definite and Indefinite Articles, AntConc's – SWDEs versus CGDEs

This section discusses cartographic mappings that can be derived from the types of articles investigated in this study in relation to the two aforementioned essay sets. As highlighted at the different points above, the use of both articles <*the*> and <*a*> was higher in SWDEs than in CGDEs, with the former article being the most frequently used across the two essay sets. For the cartographic mapping purposes, the spotlight shifts from the numerical frequencies of items (*the* and *a*) per se to the reversibility, detachability, and fluidity (continuous change) (e.g., (Deleuze & Guattari, 1987) of items so that theorising about and representing student writing can go beyond the normative modes we are accustomed to as argued earlier (Ulmer & Koro-Ljungberg, 2015).

For instance, looking at Figures 5 and 6 that depict the usage of the definite article, <*the*>, in both SWDEs and CGDEs, respectively, and putting the spotlight on Figures 6 and 8, which display the use of the indefinite article, <*a*> in SWDEs and CGDEs, consecutively, illustrates how these two types of articles can be cartographically represented not only differently, but also in a mutable, malleable, transient, and non-static way.

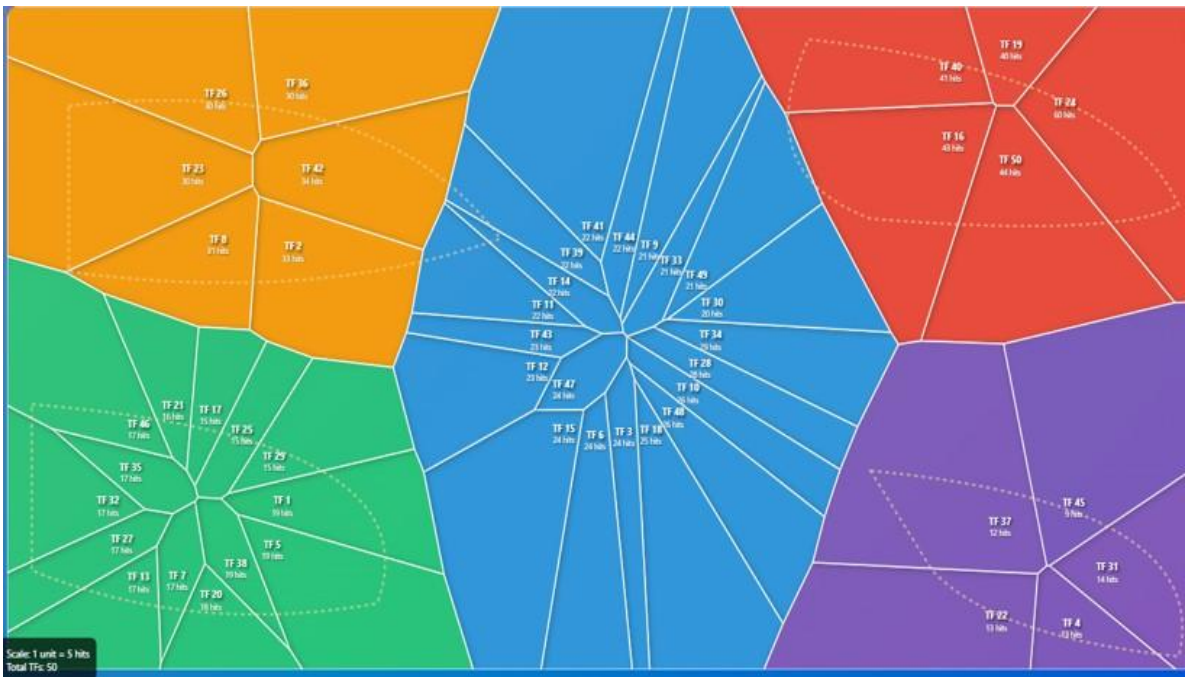


**Figure 5: A cartographic map of the article, *the*, in SWDEs**

This means that apart from having many and varied cartographic representations of the usage of the same article, this same article usage can be represented at different locations within the same usage map as exemplified by these four figures. But, doing so, however, does not affect or degrade the numerical frequencies of each article's usage in each essay set. That is, each article's usage frequencies remain constant, but their cartographic representations are impermanent, deterritorialised, and unfixed. In this condition of impermanency, deterritorialization and unfixity, lies the reversibility, detachability, and fluidity

(Deleuze & Guattari, 1987) of each article's cartographic usage configuration as pointed out above. Importantly, this condition underscores the fact that student writing, especially students' use of these two forms of articles in the current study, is in a constant state of flux (becoming), and is thus unpredictable, non-linear, and unstable. The same can be said about ChatGPT's own writing and its use of these two articles as explored in this study. The notion of the use of these two articles being in the state of flux is more pertinent to English L2 student writing, which is thought to be in a constant state of becoming in the Deleuzian-Guattarian sense.

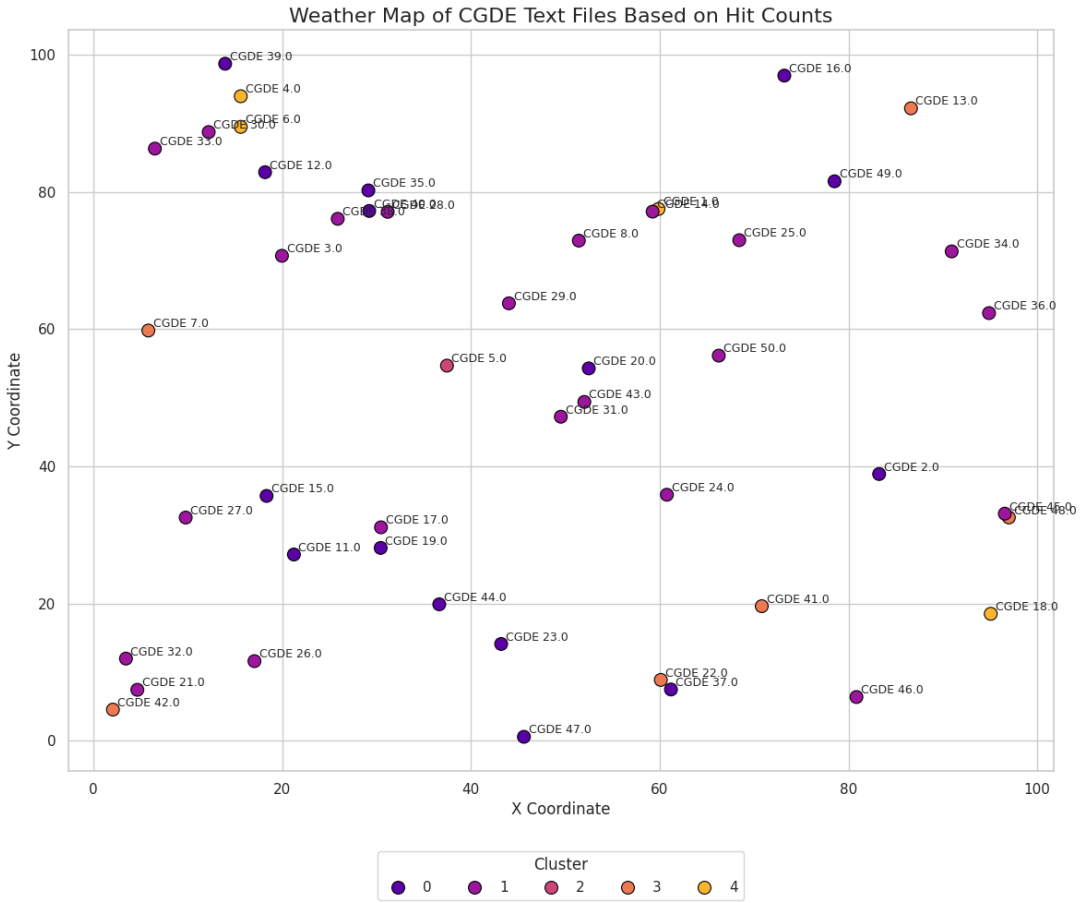


**Figure 6: A weather map of the definite article, *the*, in CGDEs**

In keeping with the article usage frequencies, Hewson (1972) contends that both definite and indefinite articles rank as the ten most frequently used words in English, with their usage and stylistic utility and flexibility often permeating most English discourse (cf. Ahmad & Khan, 2021; Master, 2002; Miller, 2005). Added to this view is the fact that some scholars (Master, 2002; Sinclair, 1991) maintain that *the* and *an* ranked first and fifth, respectively, when their occurrence frequencies were analysed in a cluster of five words that included *of* (second), *and* (third), and *to* (fourth) (see Master, 1997).

Against this backdrop, there is also an accepted view that the use of these two articles, including that of the English article system in general, which includes *an* and the zero or null article (*ø*) not investigated in the present study, tends to be

more difficult for English L2 and English as a foreign language (EFL) students (Ahmad & Khan, 2021). Master, 2002) goes as far as saying that the English article system proves to be one of the most infamously complicated areas of English grammar. Given this context, the high usage frequencies of these two articles (<*the*> and <*a*>) in SWDEs does not necessarily equate to a better or proper usage of them by students. It may, instead, reflect their improper use or their being overused. It may also signify that the two SWDE datasets had more instances that required the use of both <*the*> and <*a*> than is the case with their CGDE dataset counterparts.

In fact, pertaining to CGDEs, the usage frequencies of these two articles may even reflect an internal mechanism in which the algorithms underpinning ChatGPT can predict the sequence of tokens of words (including those of these two articles) and parse such tokens based on their training data. It is important to note that LLMs like ChatGPT can only produce language using tokens and not words as is the case with humans (see Masood, 2025; Superbenji, 2025). Also compare Braswick (2025), Chaka (2023a, 2023b, 2024a, 2024b), Lozić and Štular (2023), Steere (2024), and Yıldız (2025), in this regard.

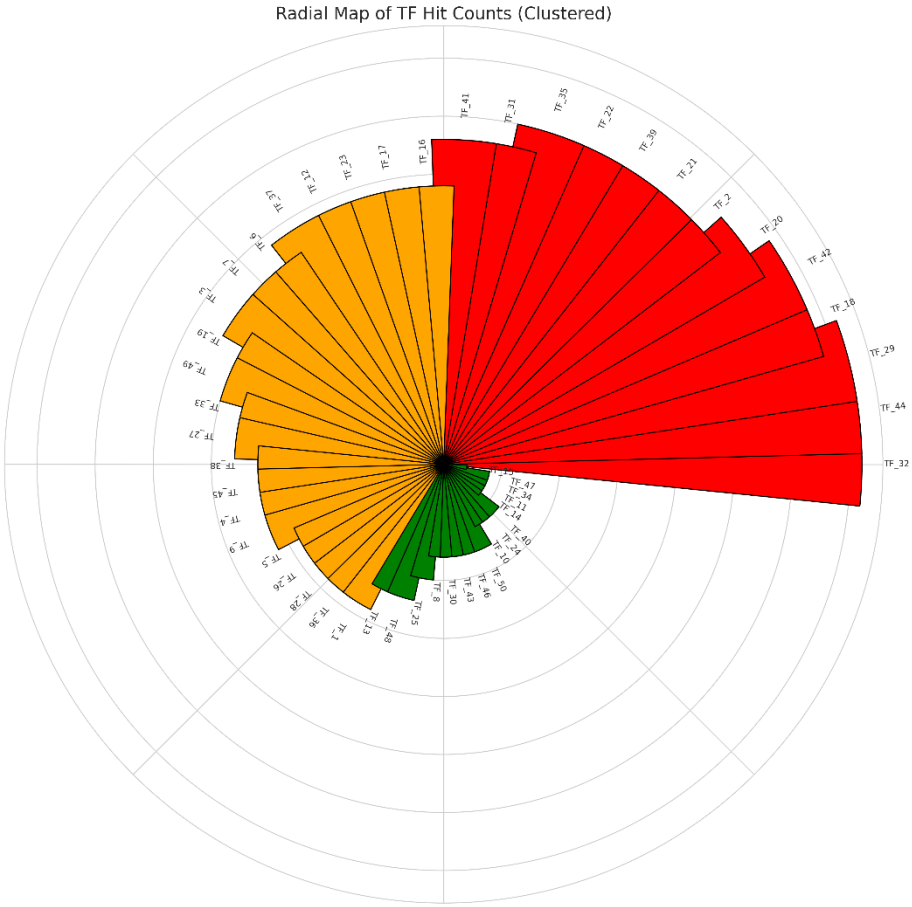


**Figure 7: A radial map of the indefinite article, *a*, in SWDEs**

But most crucially, the English article system needs to be understood within what Hewson (1972) calls "psychomechanics" (p. 32), which encompasses an integrated view of language (both as a system and as a discourse) in which lexical meanings (of which the English article system is a part), are not simplistically subsumed under grammatical or formal meanings. Mainly, this notion has to do with establishing and creating some order out of the chaos that often characterises the impressions embedded in language, with specific reference to English. This again, brings into sharp focus the importance and relevance of the interrelated notions of unfixity, fluidity, impermanence, and becoming when it comes to the usage of the two articles by English L2 students in the current study.

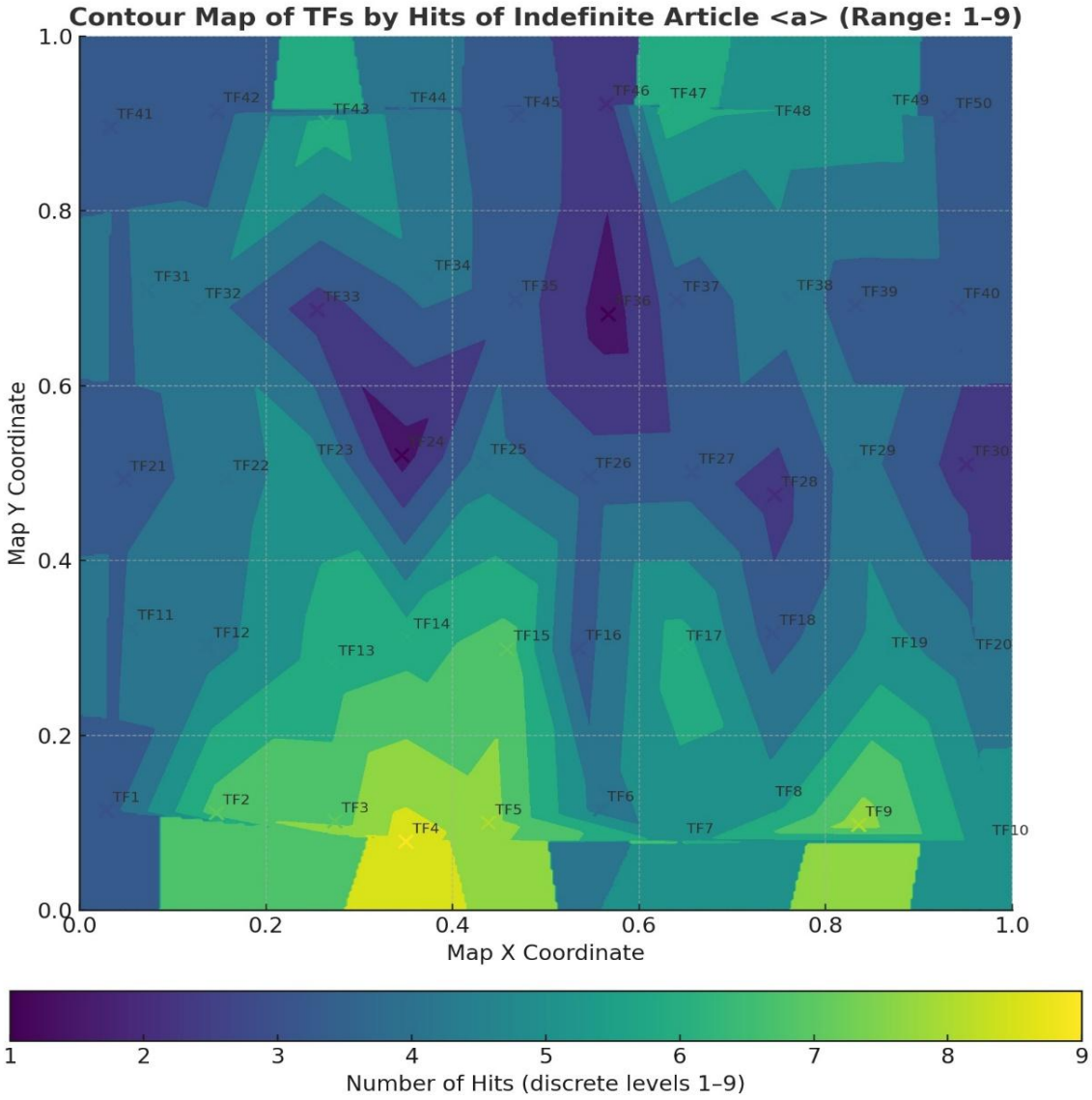


**Figure 8: A contour map of the indefinite article, *a*, in CGDEs**

## 6. Conclusion, Limitations, and Recommendations

This study set out to answer two research questions mentioned in its introduction, and from which it derived its objective. These research questions and their corresponding objective were framed within a dual lens: a Deleuzian-Guattarian

cartographic mapping and stylometry. Overall, within SWDEs, <*the*> had more usage frequencies than <*a*>. The same pattern manifested itself within CGDEs. Across the two essay sets, SWDEs boasted more usage frequencies of these two articles than CGDEs, with <*the*> having the most occurrence frequencies than <*a*> in both sets. Nonetheless, it is reasonable to note that the higher usage of these two articles in this study may just be a numerical frequency that does not necessarily translate into their better or proper use. Rather, it may, as in the case of SWDEs, be a manifestation of other factors such as an improper use or an overuse of these two English articles. Pertaining to CGDEs, it may as well be a reflection of the manner in which ChatGPT used these two articles as part of the language (English) it generates in response to given prompts as determined by the training data underpinning its algorithms.

Concerning the cartographic representations of these two articles in the two essay sets, it has been demonstrated that these two articles can have multiple and varying representations that foreground their unfixed, indeterminate, fluid, and impermanent nature. This particular ephemeral nature, results in the cartographic deterritorialisation of these two articles across the two essay sets, a view that inherently promotes student writing as being in the state of flux, and which negates the orthodox framing of student writing as predictable, linear, and stable.

One of the limitations of this study is that it had a small sample of data for both SWDEs and CGDEs. As such, its findings are contextual. Notwithstanding this contextuality, the study serves as a stepping stone to and as a foundational base for future studies that may seek to analyse not only the usage frequencies of the two articles in question, but also those of other function words including those of lexical words. Based on this, future research will do well to explore the usage frequencies of other function words (including the indefinite article *an* and the zero article (*ø*)) in larger datasets comprising student writing samples and AI-generated academic writing.

## 7. Conflict of Interest, Acknowledgements, etc

There is no conflict of interest to be declared concerning this paper. If any acknowledgement has to be made, it must be directed to both authors, who played an equal role in producing this paper.

## 8. Acknowledgments

The authors did not use of any AI Tool(s) in writing this paper. Thus, the ideas, thoughts, views expressed in this paper remain an accurate representation of the authors' work and intellectual contributions. The authors, nonetheless, acknowledge the cited sources and studies that informed this paper.

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