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EFL students' chronic deficiency of semantic genericity and specificity of bare plurals and indefinite articles: The quantifying way as a contemporary solution

 Adelina Asmawi^{1*}, Md. Saiful Alam²

¹Universiti Malaya, Kuala Lumpur, Malaysia.

²World University of Bangladesh, Dhaka, Bangladesh.

Corresponding author: Adelina Asmawi (Email: adelina@um.edu.my)

Abstract

The purpose of the study is to address the persistent challenges non-native English learners face with article systems by introducing and evaluating a novel pedagogical method for teaching indefinite articles. The study developed a "quantifying method," grounded in the semantic premise of noun phrase (NP) countability and the interaction of quantifying elements within English articles. This method was applied to teach indefinite articles ('a/an' and 'zero/null') to 15 EFL students over two weeks. Pre-test and post-test performance scores were analyzed using paired sample t-tests to measure the method's impact. Findings revealed that the quantifying method significantly improved students' overall acquisition of indefinite articles, with higher performance noted for 'a/an' compared to 'zero/null'. The results highlight the effectiveness of the quantifying method as a targeted instructional tool for overcoming the difficulties of teaching English indefinite articles. The implications of the study recommend a validated, innovative approach to EFL grammar instruction that can be integrated into language teaching practices to enhance learner outcomes.

Keywords: Bare plurals, Indefinite articles, Quantifying method, Semantic genericity, Specific reference, Teaching articles, Generic reference.

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1. Introduction

From a linguistic perspective, English articles are a crucial but complex language system. From an applied linguistics perspective, the forms, functions, and acquisition of English article systems have been a matter of much scholarly attention [1-3]. It has been a sustained pedagogical standpoint that English article systems are notoriously difficult [4]. Acquisition of

English articles has been a chronic challenge for individuals who are not native speakers of English [5-11], needing contemporary pedagogical solutions. They are the most difficult aspect to address when teaching English grammar to foreign learners, and their incorrect usage often indicates non-native proficiency in English [12]. For instance, a study by Han et al. [13] solely dedicated to analyzing errors in articles detected article errors in the TOEFL essays of native speakers of Chinese, Japanese, and Russian. These writers made errors in about one out of every eight NPs, or almost once in every three sentences. Most importantly, the acquisition of indefinite articles (a/an) is the hardest for students [14, 15].

It is argued that the prototypicality of English nouns' countability poses a difficulty for students [16], and the countable nature of nouns impacts the learning of articles [17]. The level of comprehension students have regarding countability plays a crucial role in their ability to grasp indefinite articles such as 'a' and 'an' Master [17]. Young [11] articulates that article systems encode a syntactic notion of countability and number. Therefore, it is important to focus on the development of an effective pedagogical tool that incorporates noun countability as a crucial factor for teaching indefinite articles to non-native English speakers. Regrettably, there is a lack of extensive research addressing the issue of countability-focused pedagogy for teaching English indefinite articles, which are reported to be the most difficult for tertiary EFL students [18].

Only two research studies conducted by Lee [19] and Miller [14] addressed the concept of countability in their instructional approaches. However, both of these methods taught definite and indefinite articles together, encompassing complex categorizations of binaries that create the cognitive load of multiple categories. They failed to acknowledge the quantifying nature of articles, specifically in the context of semantic approaches to indefinite articles ('a', 'an', and 'zero/null'). Consequently, their methodologies proved less effective in teaching these indefinite articles. In light of this, the present research adopts a novel teaching approach that exclusively focuses on the countability aspect of nouns, allowing for dedicated instruction on indefinite articles, namely 'zero/null', 'a', and 'an', building upon [12] quantifier constituent of English articles.

Within the identified research lacuna, this study endeavors to pioneer an innovative pedagogical approach tailored for non-native English learners, placing a significant emphasis on noun countability as a foundational element in comprehending and appropriately employing indefinite articles ('zero/null', 'a', and 'an'). The primary objectives encompass exploring the interrelationship between noun countability comprehension and the acquisition of indefinite articles, designing a specialized pedagogical tool that highlights this correlation, and evaluating its effectiveness in facilitating a more accurate usage of indefinite articles among non-native English-speaking learners. Additionally, this research aims to compare and contrast the proposed approach with existing methodologies, focusing on countable nouns as a crucial determinant in article usage, and thereby contribute empirical insights to the limited research body concerning countability-focused pedagogy for teaching English indefinite articles, especially targeting tertiary-level EFL students.

2. Literature Review

2.1. Whitman's *Quantifying Articles: Implications for the Pedagogy of Articles*

This study examined one of the two constituents of articles known as 'quantifier' (the other is the determiner), as defined by Whitman [12]. The study departs from the conventional and widely held understanding of articles as being solely definite and indefinite, and specified and unspecified. Instead, throughout the paper, the conventional term 'indefinite' refers to quantifying the nature of articles such as 'a', 'an', and 'null/zero'. This study uses Whitman's 'quantity alone' type of article to avoid multi-dimensional complexity. Whitman [12] explains that this particular component of the article functions to quantify the noun phrase by determining whether it is singular or plural. Its semantic role involves counting the noun phrase, while its syntactic property plays a crucial role in establishing subject-verb agreement.

Two indefinite articles that serve as singular quantifiers are the non-numerals 'a', and 'an' to mean 'one'. Whitman [12] expands on the idea that 'a/an' can convey an additional semantic interpretation, wherein it represents the generic notion of encompassing 'all' members of a particular category within a noun phrase. For instance, in the sentence 'a mouse is smaller than a rat,' the quantifier 'a' holds the meaning of 'all' when considering the category as a whole. Young [11] recognizes the importance of mapping out the multiple meanings of English articles. There are quite a variety of plural quantifiers, including all plural numerals (for example, 11, 12, 50, etc.) and non-numeral counters (for example, some, many, all, etc.).

For Whitman [12], when the NP is generally or universally quantified, the presence of a quantifier becomes optional. For instance, in the sentence "Books are the storehouse of knowledge," the word "books" lacks a singular quantifier (a, an) or any plural non-numeral counters (some, all, etc.). Yet, it is evident that the intended meaning is "all books." This type of NP usage is classified as 'null/zero' articles, as described by Whitman [12] and Master [17]. Additionally, in the sentence "I read books in my free time," the meaning of 'books' is semantically inferred to be 'many or some books,' given that reading is a habitual activity for the person.

Drawing on the quantifying aspect of articles [12], the current research suggests a novel approach to instructing students on indefinite articles ('a', 'an', and 'null/zero'). This involves prompting students to determine the quantity of nouns semantically by posing three questions on the noun used in the sentence. See Table 1.

Table 1.

Questions for quantifying articles with countable nouns in a syntactic structure.

NP in aSentence	Quantifying question	If yes	Then use	Example	Semantic Meaning of theArticle in theSentence
X	One?	Yes	A / an +NP(e.g., a book)	I am a teacher.	One
X	Some? Many?	Yes	Plural (zero article)	I read books inmy free time.	Some, many
X	All	Yes	A / an+ NP Or, plural (zero/ null article)	i.A cow is adomestic animal. ii.Cows are a domestic animal.	(i) All (ii) All

An illustrative example is provided here: "I read books." Am I reading 'one book'? No, as reading is my habit, I do not limit myself to reading just one book. Instead, I read some or many books because it has become a part of my routine. Is it possible for me to read all the books in the world? No, despite reading being a habit of mine, it is not feasible for me to read every book in existence.

2.2. Countability and Teaching of Articles: Research Reports on Article Pedagogy

The correlation between the presence of an article system in one's native language and the ease or complexity of comprehending the article system within the English language has sparked diverse approaches in distinct geographic contexts and for learners of English who speak different L1s. This consideration has prompted the emergence of varied methodologies aimed at comprehending and interpreting the nuances of articles in English. For example, the dialogical approach advocated by Beavitt and Popova [20] emphasizes the significance of establishing a communicative space conducive to dialogue while instructing individuals on article selection, specifically within the context of crafting scientific literature in English. Their approach underscores the necessity of fostering an interactive environment that encourages engagement and exchange between the writer and the prospective reader. This involves posing reflective inquiries during the writing process, such as "Does my reader possess prior knowledge of the subject matter?" or "Is the information being presented already familiar to the intended audience?" By integrating such questions into the instructional framework, Beavitt and Popova [20] propose an approach that encourages writers to consider their audience's perspective, promoting a more deliberate and contextually informed choice of articles in scientific discourse. Ultimately, this dialogical strategy aims to enhance the clarity and coherence of scientific texts by prompting writers to assess the familiarity of the information they convey to their readers. The current study transcends the social aspect (dialogical WE) typically incorporated into the teaching of English articles and delves deeper into the realm of noun countability and the quantitative attributes inherent within articles themselves. Thus, the present study considers the following previous studies.

Miller [14] utilized instructional videos and an article choice chart as a teaching method for articles. The approach was implemented with undergraduate and post-graduate international non-native students, mainly from 17 countries, but predominantly from China (304 participants). These students were enrolled in a preparatory English program at an Australian university. Except for Spanish and Portuguese speakers, none of the participants' native languages have article systems.

The main objectives of this method were twofold: first, to identify the most challenging articles for EAL students; and second, to determine if instructing students on countability and article use could be beneficial. To achieve this, Miller [14] created a basic question chart based on Master's [9] article categories and uses. This chart prompted students to consider whether an article was necessary in different scenarios, addressing four categories: (i) countable/uncountable, (ii) definite/indefinite, (iii) generic/specific, and (iv) common/proper.

Besides, to make the learning experience enjoyable, Miller [14] integrated a humorous video story. The combination of resources, for example, a chart and a video, was employed in a single teaching session. The immediate effectiveness of the stated integrated pedagogical tool was assessed through pre-test and post-test evaluations. The results indicated that the method led to an improvement in the usage of both definite and indefinite articles. However, it was also observed that the usage of 'null/zero' articles and indefinite articles (a, an) was more difficult for the students compared to definite articles.

Miller's [14] pedagogical tool for teaching articles has certain limitations. Firstly, it combines the instruction of definite and indefinite articles simultaneously, which can lead to confusion in students. To Master [21], it is more effective to learn definite and indefinite articles independently. For Cowan [22], on the other hand, it is advisable to teach countable nouns in conjunction with indefinite articles. Secondly, Miller's [14] approach involves a multi-question, multi-category chart for article usage, encompassing four pairs of binaries: countable/uncountable, definite/indefinite, generic/specific, and common/proper. Working on these multiple categories at once may overload students' cognitive capacity, potentially resulting in a weaker understanding of certain categories compared to others. The current research, therefore, employs a novel teaching method that focuses exclusively on the countability aspect of nouns to instruct solely on indefinite articles, namely 'zero/null', 'a', and 'an' based on the quantity constituent of English articles.

In their study, Lee [19] adopted a distinct approach to teaching articles called "co-presenting English articles with nouns." They experimented with two Korean English teachers who taught 174 Korean 5th and 6th graders, whose native language lacks article systems.

The treatment group received instruction on 32 easy countable nouns, selected from their national curriculum English textbook, along with indefinite articles (for example, "a leaf"). This was accomplished through a PowerPoint presentation with accompanying images. Notably, the articles were integrated into vocabulary teaching rather than taught as isolated grammar items. On the other hand, the control group was taught the same countable nouns using the same method, but without including articles (for example, "leaf").

Throughout the instruction, both groups were presented with visual aids, images, spelling, and pronunciation in both English and Korean. The treatment group was encouraged to repeat, write the articles and nouns as chunks on worksheets, and complete sentences using these chunks.

The findings indicated that the approach of co-presenting indefinite articles with singular nouns during vocabulary teaching proved to be more effective compared to presenting nouns without articles. This is especially so when it came to enhancing the students' ability to complete sentences in their second language (L2). Additionally, the co-presentation group demonstrated greater success in using indefinite articles correctly when converting plural nouns into singular nouns.

Lee [19] "co-presenting tool", however, has a limitation as it neglects to address 'zero' or 'null' articles, which add complexity to English article systems (17). In response to this, the current study proposes a more inclusive pedagogical tool that effectively teaches 'a', 'an', and 'zero/null' articles to adult students by considering both easy and challenging nouns in terms of countability while recognizing articles as quantifiers. Applying this novel tool, we have our following research questions answered:

- (a) What are the overall effects of the quantifying approach on the learning of indefinite articles among tertiary EFL students?
- (b) Which indefinite articles show more development through the use of the quantifying approach?

3. Methodology

3.1. Materials

A whiteboard, a black marker pen, and three sheets of paper containing English news excerpts taken from The Daily Star newspaper.

3.2. Subjects and Setting

The current research involves a group of 15 first-year undergraduate students, comprising ten males and five females, who attend a private university in Bangladesh to study Computer Science and Engineering (CSE). Their first language is Bangla, which has an article system. Throughout their academic journey from grade one to twelve, they underwent 12 years of compulsory EFL learning. Additionally, at the time of the study, all participants took the course 'ENG-101: Functional English,' taught by the second author of the paper.

3.3. Pedagogical Procedure

Initially, a pre-test on the indefinite articles was administered to students and collected upon completion. Students completed the news extract by adding articles to the noun phrases (NPs) provided in 24 brackets in the news extract. Following this, a new teaching method was introduced. It began with a bilingual (Bangla and English) presentation on the whiteboard, explaining the uses of quantifying articles. NPs were presented in complete sentences and elucidated by the teacher. The teacher guided the students on how to ask quantifying questions (refer to Table 1) and semantically determine the appropriate articles (a, an, null/zero). Various examples were given and thoroughly explained, covering all types of quantifying articles and their four meanings (one, some, many, and all). Subsequently, additional examples were provided on the whiteboard, allowing students to practice on their own. Next, the students received a second English news extract containing 30 gaps, which they were instructed to attempt at home. In the subsequent class, the teacher went over the correct answers for the homework, enabling the students to enhance their comprehension and rectify any incorrect responses. Additionally, the students were given an extra week to practice. After one week, a post-test was administered, consisting of a gap-filling task with 38 gaps, focusing on countable nouns for the students to rewrite with quantifying articles. The teaching duration encompassed two sessions, each lasting 40 minutes, and involved classroom teaching and students working on homework over two weeks.

3.4. Measures

The correct answers, which involved using countable nouns with the appropriate articles ("a/an" and "null/zero") developed from the sense of correct quantification, were labeled "R/a" (indicating the correct use of countable nouns with "a/an") and "R/p" (representing the correct use of countable nouns in plural form). Similarly, the incorrect use of "a/an" and the incorrect use of plurals were labeled as "W/a" and "W/p" respectively. Where two alternatives are possible, alternative codes were used - W/p / W/a, or R/p / R/a. Spelling mistakes such as "a vehicle" were accepted as a correct answer as our approach focused on articles and not spelling. The use of "an" instead of "a" and vice versa was accepted as the correct answer because the study concerns the quantifying aspect of articles. The occurrences of each student's R/a, W/a, R/p, and W/p were tallied and converted into percentages. These were then combined to obtain the total sum. Then, a paired-samples T-Test was conducted using STATA 14 to compare the outcomes of the pre- and post-tests. To assess the data's normal distribution, a Shapiro-Wilk W test, which is the most powerful normality test [23], was employed. The results section presents the calculated values for mean, median, and standard deviation.

4. Results

Since there was no control group, the researchers opted to use the paired-sample t-test as an appropriate method to analyze the pre- and post-test outcomes [24]. The paired-sample t-test is chosen when there are no outliers, particularly in the post-test scores, and when the scores follow a normal distribution [25]. Upon examining the boxplots, it was found that there was one outlier in the pre-test percentage scores, but none in the post-test percentage scores. After calculating the differences between the post-test and pre-test scores, we conducted a Shapiro-Wilk W test on these differences and determined that they follow a normal distribution ($\text{Prob} > z = 0.74568$).

Hence, we proceeded with the paired-sample t-test to answer research question one. The results of the test indicate that the quantifying method of teaching articles had statistically significant effects on the performance of tertiary English as a Foreign Language (EFL) students concerning indefinite articles (for example: 'a', 'an', and 'zero/null' articles). The post-test mean was .8877, the pre-test mean was .1333867, and the mean difference between the two was .7543133. See Table 2.

Table 2.
Effects of the quantifying method on students' overall performance in indefinite articles.

Variable	Obs.	Mean	Std. Err.	Std. Dev.	95% Conf.	Interval
Scores of post-test	15	0.8877	0.0167276	0.0647858	0.8518228	0.9235772
Scores of pre-test	15	0.1333867	0.0330711	0.1280836	0.0624563	0.204317
Difference	15	0.7543133	0.0326049	0.126278	0.6843829	0.8242438

During the evaluation of the performance of the pre-test scores for the indefinite articles 'a' and 'an', there were two outlier data points, and one outlier was observed in the post-test performance scores. Due to the violation of normality ($\text{Prob} > z = 0.00810$) caused by these outliers, the paired-sample t-test was initially not feasible. To address this, we chose to remove the outliers and then conducted the paired-sample t-test. The results of the test revealed that the quantifying method significantly improved students' performance in using indefinite articles 'a' and 'an' in particular. The pre-test mean score was .0571429, the post-test mean score was .9285714, and the mean score difference was .8714286. See Table 3.

Table 3.
Effects of the quantifying method on students' performance in the indefinite articles 'a / an'.

Variable	Obs.	Mean	Std. Err.	Std. Dev.	95% Conf.	Interval
Scores of post-test	14	0.9285714	0.0147619	0.055234	0.8966803	0.9604626
Scores of pre-test	14	0.0571429	0.0326727	0.12225	0.0134422	0.1277279
Difference	14	0.8714286	0.0391994	0.1466708	0.7867434	0.9561138

During the pre-test evaluation of performance scores for null/zero articles, there was one outlier observed. However, in the post-test performance scores, there were no outliers. Subsequently, the data were found to be normally distributed ($\text{Prob} > z = 0.91079$). As a result, we conducted a paired-sample t-test, and the outcomes indicated that the quantifying method significantly improved students' performance in using null/zero articles. The pre-test mean score was .1754267, the post-test mean score was .8840467, and the mean score difference was .70862. See Table 4.

Table 4.
Effects of quantifying method on students' performance in null/zero articles.

Variable	Obs.	Mean	Std. Err.	Std. Dev.	95% Conf.	Interval
Scores of post-test performance in null/zero articles	15	0.8840467	0.027056	0.1047876	0.8260172	0.9420761
Scores of pre-test performance in null/zero articles	15	0.1754267	0.040665	0.157495	0.0882089	0.2626445
Difference	15	0.70862	0.0443206	0.1716531	0.6135617	0.8036783

The results further show that although the quantifying method increased students' performance in both 'a/an' and 'null/zero' articles, the increase in performance was slightly higher in 'a/an', with a mean score difference of .8714286, compared to 'null/zero' articles where the mean score difference was .70862. These findings answer our second research question. See Table 5.

Table 5.
Comparison of effects of quantifying way on students' performance in a/an and zero/null articles.

Variable	Obs.	Mean	Std. Err.	Std. Dev.	95% Conf.	Interval
Mean scoredifference (a/an)	14	0.8714286	0.0391994	0.1466708	0.7867434	0.9561138
Mean scoredifference (null/zero)	15	0.70862	0.0443206	0.1716531	0.6135617	0.8036783

5. Discussion

In contrast to the approaches used by Lee [19] and Miller [14] for teaching indefinite articles, the present study employed a different method called "the quantifying way." Lee and Chung's "co-presentational way" and Miller's [14] "integrating way" do not focus on the nature of the articles themselves. On the other hand, the quantifying method is centered on analyzing articles themselves and their quantifying constituents.

While Miller's [14] method involves teaching definite and indefinite articles simultaneously and takes into account various noun categorizations like count/non-count, definite/indefinite, generic/specific, and common/proper, the quantifying

method focuses solely on a single noun categorization, namely countability. Furthermore, the quantifying method teaches only indefinite articles at a time, just like Lee's [19] approach. However, unlike theirs, which teaches only two indefinite articles, "a" and "an", the quantifying method covers all indefinite articles, including the "null/zero" article. Moreover, while Lee's [19] approach places multiple emphases on factors such as the difficulty level, spelling and pronunciation of noun words suitable for elementary students, the quantifying method concentrates solely on the countability of NPs suitable for tertiary EFL students.

Lee's [19] co-presentation method, which introduces indefinite articles together with countable nouns, has proven to be effective in enhancing the sentence completion ability of elementary-level students. Through a co-presentation approach, students become proficient in using articles 'a' and 'an' when converting plural nouns into singular forms.

The present study findings show that the quantifying method proves to be significantly effective in improving the overall performance of tertiary students in using both 'a' and 'an' correctly, as well as the 'null/zero articles' (pre-test mean score = .0571429, post-test mean score = .9285714, and mean score difference = .8714286). In contrast to Lee [19] students, who were limited to converting discrete plural nouns into singular nouns using 'a' and 'an', the quantifying method enables students to think comprehensively across the entire syntax. This approach allows them to semantically quantify countable nouns in four distinct meanings (one, some, many, and all) and make accurate choices of 'a', 'an', and null/zero articles accordingly.

Miller's [14] approach, which combined instructional videos and an article choice chart, aimed to teach both definite and indefinite articles simultaneously, resulting in some progress. Nevertheless, it proved to be more successful in teaching definite articles and less effective in improving the understanding of 'zero/null' articles and 'a' or 'an'. The method helped students least in the use of 'a' and 'an'. The quantifying method, in contrast, focused solely on teaching indefinite articles and yielded noteworthy improvements in both 'zero/null' articles (pre-test mean score = .1754267, the post-test mean score = .8840467, mean score difference = .70862.) and 'a/an' (pre-test mean score = .0571429, post-test mean score = .9285714, mean score difference = .8714286). However, the quantifying method had slightly more impact on tertiary EFL students' understanding of 'a/an' article (mean score difference = .8714286) compared to 'null/zero' articles (mean score difference = .70862) compared to 'zero/null' articles. This finding contradicts the [14] approach of integration that fails to improve tertiary students' learning of 'a/an' but matches with the results of Lee [19] co-presentation method that yields elementary students' effective learning of 'a/an'.

6. Implications

The quantifying method, centered on analyzing articles and their quantifying constituents with a focus on the countability of noun words, emerges as a highly effective approach to enhance tertiary EFL students' article usage. By concentrating on teaching indefinite articles, including the often-challenging ones (a, an), the method enables students to think comprehensively across syntax. They learn to semantically quantify countable nouns in different contexts and make precise choices of 'a', 'an', and 'null/zero' articles accordingly. Notably, the quantifying method proves particularly successful in improving tertiary EFL students' grasp of 'a/an' and almost equally impacts their understanding of 'zero/null' articles. By integrating this approach into language instruction, educators can foster more accurate and proficient article usage among their tertiary EFL students, facilitating better communication and writing skills.

7. Limitations

The current study was conducted solely with a limited sample size of 15 undergraduate Computer Science and Engineering (CSE) students. This restricted sample size was due to the absence of additional classes enrolled in the English course at the time of the study. The present study focuses exclusively on indefinite articles and does not explore how countability affects the learning of definite articles because definite articles are utilized in the same manner for both singular and plural nouns, regardless of their countability. Additionally, it only assesses the immediate effects of the new method. The method further excludes indefinite articles ('a/an' and 'zero/null' articles) in the fixed phrases and idioms. While the present study demonstrates significant short-term effects of the quantifying method, it does not track and analyze the outcomes of the quantifying method over an extended period, providing valuable insights into its lasting impact on students' article usage. Further research is recommended to address these areas of limitation.

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