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Gil's Article Maker. An interactive tool for teaching English article use to Polish gimnazjum students: development and evaluation

[*Gil's Article Maker*. Opracowanie i ewaluacja interaktywnego narzędzia do nauczania przedimków angielskich w polskim gimnazjum]

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Poznań, dnia .....

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Ja, niżej podpisany/a .....student/ka Wydziału

.....

Uniwersytetu im. Adama Mickiewicza w Poznaniu oświadczam, że przedkładaną pracę dyplomową pt: ..... napisałem/am samodzielnie. Oznacza to, że przy pisaniu pracy, poza niezbędnymi konsultacjami, nie korzystałem/am z pomocy innych osób, a w szczególności nie zlecałem/am opracowania rozprawy lub jej części innym osobom, ani nie odpisywałem/am tej rozprawy lub jej części od innych osób.

Oświadczam również, że egzemplarz pracy dyplomowej w formie wydruku komputerowego jest zgodny z egzemplarzem pracy dyplomowej w formie elektronicznej.

Jednocześnie przyjmuję do wiadomości, że gdyby powyższe oświadczenie okazało się nieprawdziwe, decyzja o wydaniu mi dyplomu zostanie cofnięta.

(czytelny podpis)

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Introduction

Mastering the appropriate use of English articles is one of most difficult skills English as a Second Language (ESL) learners face while learning English (Ekiert 2005; Master 1988, 1997; Zabor 2011b). This skill is particularly difficult for Polish ESL learners as Polish, being one of many Slavic languages which do not have an equivalent grammatical structure (Arabski 1979, 1990, Ekiert 2005, 2007; Kałuża 1963; Świątek 2013; Tryzna 2009; Zabor 1993, 1999, 2012; Zabor and Zwierzyńska 2001).

The aim of this research is to create an effective teaching agent using modern technology that draws on the best research-based elements from differing but complementary theoretical perspectives such as the binary article choice theory (Master 1988, 1990, 1996, 1997, 2002, 2003a), interaction theory (Long 1996; Pica 1987), focus on form (Doughty and Williams 1998; Long 1991; Long and Robinson 1998; Pawlak 2006; Williams 1995), the output hypothesis (Hammerly 1987; Harley and Swain 1978; Harley 1993; Izumi et al. 1999; Swain 1985, 1993, 1995, 2000), socio-cultural theory (Beale 2005; Coufal 2002; Gillian 2008, 2015b; Obikwelu et al. 2012; Puntambekar and Hubscher 2005; van Merrienboer et al. 2003; Vygotsky 1978), corrective feedback (Bitchener and Knoch 2009, 2010a, 2010b; Bitchener 2012; Ellis et al. 2008; Ferris 2006, 2010; Ferris et al. 2013; Nassaji and Swain 2000; Sheen 2007; Sheen et al. 2009; van Beuningan et al. 2012; Van der Kleij et al. 2015; Zabor and Rychlewska 2015), and Game Based Learning (GBL) theory (Gillian 2008, 2015b; Prensky 2005; Obikwelu et al. 2012; Van Eck 2006; Wouters et al. 2011; Zarraonandia et al. 2012, 2015).

The rationales behind using such a range of differing but well-researched theoretical perspectives in creating an e-learning teaching tool are to ensure the tool is well grounded in pedagogical principles but also GBL principles.

Chapter 1: Articles - definition, key concepts

1.1. Outline

English articles (i.e. the words *a*, *an,* and *the*) are among the most difficult items for English as second language (ESL) learners to learn (Ekiert 2005; Master 1988, 1997; Zabor 2011b). The representation of complex semantic/syntactic functions in one morpheme is one of the key issues in learning English articles. In his comprehensive research into this field of pedagogical linguistics, Master states that "the article system stacks multiple functions onto a single morpheme, a considerable burden for the learner, who generally looks for a one-form-one-function correspondence in navigating the labyrinth of any human language until the advanced stages of acquisition" ((Master 2002: 332). In turn, Zabor (2011b) discusses the main functions, stating that English articles "encode such complex semantic notions as existence, reference, and attribution; discourse notions of context and anaphora and syntactic notions of number and countability" (Zabor 2011b: 64). The notions that Zabor presents are often context-dependent e.g. nouns in English can be countable and uncountable: "I have one hair in my soup" (countable); "I have black hair" (uncountable). Consequently, Zabor argues that "articles are one of the most difficult structural elements for second language (L2) learners" (Zabor 2011b: 64) which fits in with Master's argument that ESL learners, who seek certainty and one rule for one situation, often stumble and grope for understanding while learning the article system of English because the complex notions embedded in articles and the context-dependency of article use mean that ESL students are often unsure when making their decisions about appropriate article use in texts.

This chapter will discuss the rationales for teaching English article usage patterns, particularly to Polish learners of English. Then, previous research concerning Polish learners of English will be discussed. Next, a definition of English articles will be presented and discussed. Also, additional features of English nouns in terms of common versus proper nouns will be examined. Countability with English nouns will be examined and its effect on article choice will be explained. Then, two major linguistic models for explaining English articles, definiteness and indefiniteness, will be presented and discussed. Within these two sections, a pedagogical model for teaching articles, Master's binary schema, will be examined in terms of its utility and effectiveness in explaining definiteness and indefiniteness in relation to English article usage patterns. Then, applying Master's binary schema to the creation of an e-learning tool for teaching English article patterns will be examined. Finally, how the different English articles and nouns interact in terms of the different contexts associated with Master's binary schema will be discussed.

1.2. Rationales for teaching articles: Article usage in English

As these complex, context-dependent function words are not always necessary in normal conversational discourse, some researchers (Krashen 1985; Sachs and Polio 2007; Truscott 1996, 2007; Truscott and Hsu 2008) believe it is not worth the time and effort to teach ESL learners the patterns of English article usage. Some researchers (Yamada and Matsurra 1982) have stated that ESL learners learn the article system of English almost in a random fashion.

So, the question is posed, why bother to learn the English article system? Is it worth the time and effort? The answer can be given, yes, it is worth teaching the patterns of the English article system based on the effects on communication, particularly in writing, and frequency of usage. The inappropriate use of these words is particularly noticeable in written communication in English. Often in normal conversational English, the meaning of these words can be conveyed through extra-linguistic cues such as pointing at the specific object (Mizuno 1992). However, in written English, these extra-linguistic cues are not available to the reader (Master 1988) and "errors in this area are highly noticeable to native speakers" (Miller 2005: 80). As English is often used as a

lingua franca in the business world around the planet, the ESL writer may have a higher desire to be accurate in the use of articles in written text, particularly if the writer is writing professionally in English (Huong 2005).

The effect of inappropriate use of articles in written communication is particularly noticeable due to the frequency of English articles in written texts (Sinclair 1991). In the COBUILD (Collins Birmingham University International Language Database) list of the ten most frequent words in English (Sinclair 1991), *the* is ranked first in the corpus of 20 million words and the indefinite article *a* is ranked fifth (see Table 1 for more details).

Table 1. List of the ten most frequent words in English (after Sinclair 1991).

Word	**Number of occurrences in the corpus**	**Relative Frequency**
the	309,497	25.1%
of	155,044	12.6%
and	153,801	12.5%
to	137,056	11.1%
a	112,928	10.5%
in	100,138	8.1%
that	67,042	5.4%
I	64,849	5.3%
it	61,379	5.0%
was	54,722	4.4%

Master (1997) conducted further research into the frequency of articles, he concluded that the zero article (i.e. when no article is used before nouns or noun phrases and not included in the frequency counts for the COBUILD corpus) should be ranked first before the definite article (See Table 2 for more details). Master examined complete works in five genres and found that the percentage of articles in the determiner set, in which Master includes such elements as articles, possessives, and demonstratives (see section 1.3. for more details) in the corpus of nearly 200,000 words mentioned is much higher than for any other determiner (Master 1997). He also found that the percentage of the article determiner is higher in non-fiction texts than in fiction, which would have a higher impact in business writing which consists of reports, descriptions, and emails.

Table 2. Percentage of occurrence of the three articles in five genres (after Master 1997).

Genre	**Source**	**Zero**	**The**	**A(n)**	**Article as % of Determiners**	**Total Words**
Research Journal	Technical Articles (16)	49.7	38.6	11.8	90.3	63,289
Science Magazine	*Science News* (4 issues)	57.0	28.7	14.3	88.4	34,987
News	*Newsweek* (1	46.6	34.4	19.1	82.6	31,896

Magazine	issue)					
Novel	*The Tenth Man*	27.9	45.9	26.2	77.7	30,956
Plays*	Macbeth, Julius Caesar	44.7	38.7	16.7	58.8	36,516
All	24 Samples	48.0	36.3	15.7	82.6	197,644

*Vocatives (forms of direct address, e.g. fool, sirrah, lady) were not counted in the plays.

Recent research suggests that the use of the English article is changing considerably, but still remains important (Liberman 2015). Liberman analysed the frequency of the use of English articles using three sources: the 1991 Switchboard corpus (SWB) of conversational telephone speech (about 3.3 million words overall), the 2003 Fisher corpus of conversational telephone speech (about 23 million words overall), and the various genres of the 1990-2012 BYU Corpus of Contemporary American English (COCA) (90-95 million words per genre). He found that the usage of the definite article *the* is less common in speech than in writing, the definite article is much less common in informal speech (SWB and Fisher) than in formal speech, and the definite article is most common in the most formal writing (Liberman 2015). He also found that the use of the indefinite article *a/an* has increased about a third when examining the BYU Corpus of Historical American English (COHA) and the Google Books N-Gram viewer (GNG) for trends over the last 100 years (Liberman 2015). While this indicates considerable change in the use of the English article system, it also indicates that the overall usage of the English article system remains important in spoken and written texts.

As shown above, the high frequency of the English articles in texts, particularly written texts, suggests that they have a number of functions in written discourse. As suggested earlier, the article system of English helps identify specific items to the hearer/reader that are under discussion in a particular context. This function assumes particular importance in written discourse as the reader does not have access to any extra-linguistic cues found in conversation which may help identify the noun or specific item under discussion. This is particularly important in extended discourse where the reader needs to know about the specific topics or topic under discussion. This often occurs when the article *the* is employed. In the paragraph commencing Section 1.2. , the phrases *patterns of English article usage* and *article system of English* are marked with the definite article *the* to signal to the reader that these phrases have been referred to before in Section 1.1. In other words, the definite article *the* marks for the reader an

identity of reference for the noun phrases of a topic that has gone on before (Halliday 1985). Another function is that articles signal when new topics are being presented. Also, in the paragraph commencing Section 1.2. , the phrase *random fashion* is marked with the indefinite article *a*. The reader knows that this phrase is a new comment on some research into how ESL learners learn the article system of English. Thus, the use of definite and indefinite article helps maintain cohesion in extended discourse to support the concept of anaphoric reference. Thus, ESL learners need to learn the article system of English if they wish to communicate more effectively in spoken and written modes. Communication may be negatively impacted if the listener/hearer and the speaker/writer cannot form common sets of items being referred to when articles are not being employed appropriately (Ekiert 2007; Master 2003; Huong 2005).

1.2.1. Problems for Polish speakers in learning the English article system

As the research cohort consists of English learners whose first language is Polish, the characteristics of this cohort learning English, particularly the article system, need to be examined. Numerous researchers (Arabski 1979, 1990; Dziemianko 2008; Ekiert 2005, 2007, Król-Markefka 2007, 2010; Piechurska-Kuciel 2005; Świątek 2013; Tryzna 2009; Zabor 1993, 2011a, 2011b, 2012; Zabor and Rychlewska 2015) have noted that Polish students of English often have difficulties mastering the English article system due to Polish being one of the Slavic languages that do not have an article system. An early researcher into Polish learner's acquisition of English (Kałuża 1963) observed that the idea of articles may seem entirely strange to Polish because of their non-existence in Polish and learning and mastering this system which has no cognates in Polish is very challenging. Król-Markefka has noted that Polish contains concepts such as specificity, but the encoding of these concepts is not achieved through articles but through entirely different methods such as word order, definite (demonstrative) pronouns, indefinite pronouns (*jakiś, pewien*), the number *jeden*, intonation, various 'referring expressions', and context (Król-Markefka, 2008). Zabor notes the practical result of no article system in their first language is that these students employ articles inappropriately "in at least three ways: (1) they drop articles where a/the is obligatory for native speakers (omission errors), (2) they use the where a is required and vice versa (commission errors), and (3)

they may over-generalise the contexts where no article is necessary in English (flooding errors)" (Zabor 2011b: 64–65).

1.2.2. Research into Polish ESL learners of articles

Arabski (1979) carried out a seminal and detailed study into Polish ESL learners' use of articles in written texts which confirmed that Polish ESL learners have difficulties using articles appropriately. A large sample of English department essays written by University of Silesia students was examined and between 21 and 43% of all the grammatical errors observed were errors with articles. Article omission was found to be the most common error, accounting for 70% of all article-related errors. Later researchers (Dziemianko 2008; Ekiert 2005, 2007, Król-Markefka 2007, 2010; Świątek 2013; Tryzna 2009; Zabor 1993; Zabor and Zwierzyńska 2001; Zabor 2012, 2011a, 2011b) confirmed that article omissions are the most frequent errors made by Polish students of English. In particular, Zabor (2011) has conducted additional detailed research in this area. His study's subjects consisted of 80 ESL students whose L1 was Polish. Their educational background was that they were graduate students and high school students. The subjects were placed into a low and high proficiency group according to the results of an Oxford Placement Test conducted as a pre-test. Zabor found that those in the low proficiency group produced 48% appropriate use of articles in all contexts as compared to 85% in the high proficiency group. These findings demonstrated that the low proficiency group produced less than 50% articles in written texts. As these words are high frequency words in written texts (see section 1.2. for more details), these texts would be marked as low quality by the teachers.

To date, despite the learning of articles by Polish ESL learners being identified as an area of particular pedagogical need, there has been little research conducted in Poland about the effective and motivating teaching techniques in the area of articles with Polish ESL learners. Król-Markefka (2010) conducted a study in 2010 that compared the effectiveness of a pedagogical method based on Langacker's theoretical model of articles with traditional instruction. Both techniques were delivered through a traditional pen and paper approach to 42 subjects between the ages of 19 and 27 (Król-Markefka 2010). The study concluded that both methods improved students' skills in

appropriate use of articles with no significant differences between the groups (Król-Markefka 2010). Another study was conducted by Zabor in 2014 to investigate the effectiveness of written error correction based on the principles of the Counterbalance Hypothesis with Polish learners of the English article system. This study investigated which types of written corrective feedback were more effective with 59 adult intermediate Polish learners of English. Four intervention groups were created: "(1) a direct-only correction group taught inductively, (2) a direct-only correction group taught deductively, (3) a direct meta-linguistic correction group taught inductively, and (4) a direct meta-linguistic correction group taught deductively" (Zabor and Rychlewska 2015: 131). The study demonstrated "that all the treatment groups outperformed the control group on the immediate post-tests, and the direct meta-linguistic group taught inductively performed significantly better than the remaining research groups." (Zabor and Rychlewska 2015: 131). This research showed that corrective feedback has a role to play in teaching the English article system to Polish ESL learners.

To date, no GBL studies for teaching English articles to Polish ESL learners have been found.

1.3. Definition of English articles

English articles are always associated with nouns or noun phrases and convey the idea of definiteness or indefiniteness when they are placed before nouns or noun phrases (Halliday and Hasan 1976; Hawkins 1978; Master 1996). Syntactically, articles can be regarded as part of the English determinative system (Huddleston and Pullum 2002). There have been a number of theoretical approaches undertaken to classify the determinative system of English. One approach has been Huddleston and Pullum's system, rooted in the Hallidayan tradition, which classified the determinative system in terms of basic determiners (including articles), subject determiners (including genitive determiners) and minor determiners (Huddleston and Pullum 2002: 355). Another approach has been Master's theory, developed within the Huebner/Bickertonian theoretical construct, where he classified the determinative system into eight categories: articles, possessives, demonstratives, assertives, negatives, universals, dual, and WH-determiners (Master 1996). Whichever theoretical approach is taken towards the syntactic function of articles

in English, researchers have identified the article subsystem as the most frequently employed, as seen in section 1.2. Syntactically, the determinative system (including the article subsystem) incorporates a set of words and phrases that occur at the start of a noun phrase in English (Huddleston and Pullum 2002; Master 1996). The most important syntactic characteristic of the English determinative system is that these words are mutually exclusive in any given context (Huddleston and Pullum 2002; Master 1996). This means only one determiner can be associated with a noun or noun phrase for a particular context (Master 1996). For example, in English, *the computer* and *my computer* are grammatically appropriate but not **the my computer*.

As stated before, articles are always associated with nouns. Syntactically, nouns or noun phrases "are prototypically capable ... of functioning as the complement in clause structure i.e. as subject (The doctor arrived), object (We need a doctor), or predicative complement (Kim is a doctor)" (Huddleston and Pullum 2002: 326). Semantically, nouns are words that prototypically refer to living entities, objects, elements, and/or phenomena in the real world or abstract concepts. Nouns can be regarded as definite when they are known, familiar, unique, or identified to the speaker/writer and hearer/reader (Huebner 1983; Huong 2005). A noun is regarded as indefinite when it is new, unfamiliar, or assumed by the speaker/writer not to be identified specifically by the hearer/reader (Huebner 1983; Huong 2005). Articles help determine the reality, or concrete specification, of the noun by quantifying the definite or indefinite nature of the noun depending on the context (Master 1996).

The next sections will enumerate the major grammatical contexts and relationships that articles are employed in before returning to discuss the major types of articles in English. These contexts and relationships will be discussed before the types of articles as the usage of a particular type of article depends on a description of these contexts and relationships.

1.4. Additional features of English nouns: Common versus proper nouns

Nouns have been discussed as having certain syntactic qualities, as delineated in section 1.3. Nouns also have semantic and phonological features which need to be discussed as these features also influence article usage. Semantically, nouns are words that have the

function of naming people, things that can be concrete and abstract (i.e. soil, country, objects, places), things that can be concrete and specific (i.e. living creatures), or things that are purely abstract (i.e. actions, states of existence, or ideas) (Halliday 2014: 58–59; Lester and Beason 2012; Master 1996; Quirk et al. 1985). Nouns in English can start with a vowel sound, such as the word *elephant* or a consonant sound like the word *laptop* (Lester and Beason 2012; Master 1996). This phonological distinction is important to remember as it can help determine if the indefinite article *an* or the indefinite article *a* will be used in conjunction with a noun (Master 1996) which will be discussed in more detail in Section 1.8.

Historically, nouns are classified into two major semantic categories: *proper nouns* and *common nouns* (Quirk et al. 1985). Traditional grammar is the theory that has provided the most complete definition of proper nouns (Russell 1905; Quirk et al. 1985; Chesterman 1991; Master 1997). Quirk et al. (1985) detail that *proper nouns* "are basically names of specific people (*Shakespeare*), places (*Milwaukee*), months (*September*), days (*Thursday*), festivals (*Christmas*), magazines (*Vogue*) and so forth" (Quirk et al. 1985: 288). Quirk et al. (1985) delineate that *proper nouns* have different patterns of article usage from *common nouns* based on number (i.e. countability), determination (i.e. article usage), and modification. Also, Quirk et al. (1985) illustrate how personal names usually have no article, but how there are some contexts where articles can be used i.e. unique names e.g. *the Kremlin,* pre-modification e.g. *the Suez Canal,* and post-modification e.g. *the House of Commons* (Quirk et al. 1985: 295). The authors then delineate further the concept of *proper nouns* preceded by *the* with examples like plural names e.g. group of islands and ranges of mountains and other geographical names such as rivers, seas, oceans, and canals, and public institutions. Theorists (Chesterman 1991; Christophersen 1939; Hawkins 1978; Langacker 1991; Lyons 1999; Master 1997, 2003; Huong 2005; Król-Markefka 2010) who have undertaken research into English articles rely on traditional grammar accounts about the noun structure of English through employing terms such as *common* and *proper nouns*.

For the purposes of this thesis, these terms of *common* and *proper nouns* will be employed with some additional features which will be detailed now. To recapitulate briefly, *proper nouns* are nouns representing unique entities (such as *Earth*, *Poland*, *Mars*, *Ola*, or *Mercedes*) (Lester and Beason 2012). However, to extend this definition, *proper nouns* have been noted to consist of three major subtypes which are *proper*

names, pseudo-names, and *groups* (Langacker 1991; Huong 2005). *Proper names* can refer to names of living and non-living objects (e.g. *Stefan, Daneel the robot*), cultural events (e.g. *Christmas, Easter*), and some types of political/geographical features (i.e. continents, countries, states, cities, institutions, and officials). *Proper names*, when referring to cultural events or some types of political/geographical features, can be written as *names* or *titles* (Master 1996). When *proper names* are spoken about/written as names, then the nouns are written without an article, as illustrated in examples (1) and (2):

(1) *Easter is my favourite holiday.*

(2) *Africa has many beautiful parks*

By contrast, when these nouns are spoken about/written as titles or parts of titles, then the nouns are written with the definite article *the*, as illustrated in examples (3) and (4):

(3) *The fourth of July is an American holiday.*

(4) *The continent of Africa is huge.*

When these nouns are written as titles or parts of titles, they are marked with the definite article *the* and the preposition *of*, as shown in examples (3) and (4).

Pseudo-names consist of two sets: one that is used with no article and the other that is associated with the definite article *the*. The first set includes nouns representing transport and communication, day's time, seasons, meals, diseases, and sports (Huong 2005). The second set includes some geographical names (i.e. canals, deserts, oceans, and seas), public institutions (e.g. *the Louvre*), planes and ships (e.g. *the Titanic*) and newspapers/websites (e.g. *the New York Times, the Guardian*) (Huong 2005).

Groups refer to names of sets of names and are different from the other subtypes as they are plural proper names (Huong 2005). They can refer to groups of political/geographical features such as mountains, islands, and lakes (Master 1996) and cultural features such as nationalities (Huong 2005). These types of nouns are marked with the definite article *the.* The rules governing the use of articles, at first glance, seem quite easy; either no article is employed or the definite article *the* is employed. However, *proper nouns* are often categorised outside the rules elucidated above by researchers (Langacker 1991; Master 1988, 1996; Król-Markefka 2010) as they do not follow the same patterns as common nouns. Indeed, Master, who has extensively researched the teaching of English articles, comments "(s)ome generalizations can be made but many uses of articles with proper nouns appear to be arbitrary" (Master 1996: 225). This arbi-

trariness can be seen to have arisen due to disagreements about what constitutes a *proper noun* (Langacker 1991). For example, Langacker hypothesises that sport nouns do not belong in the *proper names* category and can be regarded as abstract non-count nouns which should be construed with maximal generality. Also, there is a paucity of research into how articles and proper nouns interact (Langacker 1991; Master 1988, 1996).

Common nouns represent a class of entities (such as *city*, *animal, planet*, *person* or *car*) and a *common noun* can be further described in terms of countability, definiteness/indefiniteness, and genericity which also help determine the type of article to be employed and which will be discussed in the following sections.

1.4.1. Countability with English nouns

Countability is a key concept for nouns and teaching associated appropriate article usage (Butler 2002; Master 1996; Miller 2005; Quirk et al. 1985; Huong 2005). English nouns can be designated as either *countable/count* or *uncountable/noncount*. *Countable nouns* can have a singular form (e.g. *one car)* or a plural form (e.g. *ten cars*); whereas, *uncountable nouns* (such as *happiness* or *water*) have no singular-plural opposition (Master 1996; Król-Markefka 2010; Quirk et al. 1985; Huong 2005). Learners of English need to learn this grammatical distinction as it plays a large part in deciding article usage (Master 1996, 1996; Król-Markefka 2010; Miller 2005; Huong 2005). The students need to recognise also that there are two-way nouns in English, i.e. nouns that can be either *countable* or *uncountable* depending on the sense and context. For example, *light* is uncountable when we refer to light in a general sense (e.g. *Light makes grass* grow) and is countable when we use this word to refer to an object which produces light (e.g. *The light makes grass grow*). In the first example, the absence of an article helps the hearer/reader understand that *light* is uncountable; whereas, in the second example, the article *the* aids the hearer/reader to understand that *light* is countable.

The shifting of lexemes into different countable forms depending on the textual context means learners can experience greater problems when learning about articles. This occurs in the business world where, for example, the word *training,* traditionally recognised as an uncountable form, is now recognised as a countable form in the last ten

years (Davies 2008) and in the academic world. In this latter world, nouns such as *behaviour, knowledge,* and *research,* traditionally regarded as uncountable, are used more and more in the plural form (Miller 2005). ESL learners of English have additional difficulties in that other criteria may decide the use of articles. Huong (2005) points out that the Vietnamese language countable plural nouns are used with articles based on the criteria of definiteness and size. Huong (2005) gives examples of the determiner *những* being used with countable plural nouns to mark the noun as less indefinite and of limited size and the determiner *các* being used with countable plural nouns to mark the noun as 'more' definite and for maximal size. Also, ESL learners of English may have nouns that in their first language have singular and plural forms (Miller 2005). In Polish, *rada* has singular and plural forms, but the English equivalent *advice* does not. Thus, countability of English nouns, particularly for ESL learners, is not an easy topic to deal with, but it is vitally important as it does affect appropriate article choice for nouns.

1.4.2. Countability and effect on article choice

The countability of nouns and its effect on article choice can be regarded in more straightforward manner when considering Master's data on the frequency of articles (Master 1997). Master counted the frequency of all articles used with common nouns in an issue of Newsweek (1989). From a total of 5004 common nouns, 46% of the nouns were associated with no article, 35% of the nouns were associated with the definite article *the,* and 19% were associated with the indefinite article *a* (Master 1990). Furthermore, Master (1997) found that the most commonly occurring article with uncountable and countable nouns is Ø (i.e. No or zero article). Master states that his frequency count emphasises the primacy of the zero article, which often has suffered from being ignored in research in this area as it is difficult to calculate its frequency (Brown 1973; Ionin 2003; Lamotte et al. 1982). Master (1996) posits that the zero article occurs more often than the definite and indefinite articles as it is more often associated with both noncount nouns and plural count nouns, as well as numerous instances where the zero article occurs with a singular count noun (e.g., at home, on edge, the look of home, hunting fox).

This is a particularly important pedagogical point to remember when teaching students about article usage and will be raised again in Chapter 4.

1.5. Definiteness in English

1.5.1. Outline

The usage of the definite article in English is based on the concept of definiteness. The following section presents and discusses Master's schema for dealing with definiteness. This section presents how Master's schema builds on and accounts for some of the major perspectives on the concept of definiteness in regard to the interaction between articles and nouns. These perspectives are examined from two crucial aspects: 1) which perspectives provide the most pedagogical utility in describe English definite article usage patterns 2) which perspectives provide the simplest, easiest to grasp explanations of definite article usage patterns. The review considers the perspectives from the most useful and functional to the least useful and functional. These perspectives range from the more "subjectivist" accounts, which take into account the roles of the speaker/writer, hearer/reader, and the particular context in defining definiteness, to the more formal, "objectivist" approaches, which consider the idea from a more grammatical viewpoint and do not focus on the context, particularly the role of a speaker/writer into account, via descriptivist and pragmatic views, and to the philosophical logic approach of Russell. This section also considers definiteness in relation to other grammatical categories associated with articles and nouns, namely adjectives and verbs. The section concludes with a discussion of some of the key components that linguists have discussed in regard to definiteness.

When weighing up the approaches, a discourse-based model of definiteness will be seen to be more effective for teaching the article system to ESL learners of English as it incorporates explanations about the context-dependent issues that cause the patterns of article usage in English to shift bewilderingly in the view of many ESL learners of English.

1.5.2. Definition of definiteness

The concept of definiteness is a vital but controversial element in the field of linguistics when considered in relation to English article usage. At a fundamental level, linguists and non-linguists can agree about a basic definition of definiteness. An item in the world represented by a noun or noun phrase is definite when both the speaker/writer and hearer/reader mutually understand that the noun is known, familiar, unique, or identified (Ekiert 2007; Król-Markefka 2010; Master 1996; Huong 2005; Zabor 2011b). But, when the concept of definiteness is examined in depth, there is a great deal of disagreement about what constitutes definiteness. A review of research literature is replete with discussion about the definition of definiteness from many theoretical perspectives. The next section considers how Master's schema includes and is based on some of the strongest strands in these discussions: the ideas of identifiability and locatability, specificity and referentiality, inclusiveness, familiarity, uniqueness, and reference.

1.5.3. Master's schema and definiteness

Master (1990) postulated a binary schema for employing identifiability to teach definiteness in nouns. For Master, definiteness can be subsumed by "the collapsing of the features [± definite] and [± specific] into a single feature [± identified]" (Master 1990: 466). In the next sections, the features of definiteness and specificity that constitute the feature *identified* are presented and discussed.

1.5.4. Identifiability and locatability as explanations of definiteness

Identifiability and locatability have come to prominence in linguistic research to counter the difficulties of uniqueness (see section 1.5.8. for more details), familiarity (see section 1.5.7. for more details), inclusiveness (see section 1.5.6. for more details), specificity (see section 1.5.5. for more details), and referentiality (see section 1.5.5. for more details) in explaining definiteness. These concepts have been built around linguistic and pragmatic models; particularly, speech act theories. Identifiability is seen as more able

to explain definiteness as it includes the idea of referring as a speech act. This concept is the application of uniqueness and familiarity from a speech act perspective (Searle 1969). Searle created two axioms for this application of uniqueness and familiarity to allow for successful definite reference:

(a) axiom of existence: there must exist one and only one object to which the speaker's utterance of the expression applies

(b) axiom of identification: the hearer must be given sufficient means to identify the object from the speaker's utterance of expressions.

(Searle 1969: 82)

Later researchers (Lyons 1999; Strawson 1971) employed Searle's model of identification with identifiability and articles. Strawson (1971) postulated that identifiability is the key component of definiteness. For Lyons, identifiability meant the hearer/reader is able to identify referents when the noun or noun phrase was marked by the definite article *the.* Familiarity was subsumed by identifiability in that the hearer/reader can identify a thing or person as they have had some direct or indirect contact with it in the past. But identifiability also meant the hearer/reader must use their knowledge to create a shared reference with the speaker/hearer. The following scenario is presented by Lyons (1999) as evidence of this:

[Joe has come into the room and Ann, who is trying to hang a picture on the wall and hearing Joe, says to him:]

(5) *Pass me the hammer, will you?*

(Lyons 1999: 6)

Joe, as the hearer, is not immediately familiar with the location of the hammer, but using his local knowledge, and his grammatical knowledge (i.e. the definite article *the* means Joe can assume the object is in the local vicinity and the verb *pass* is often used with accessible items), he can identify it on the chair after visually searching for it (Lyons 1999). Thus, Lyons argues that the hearer is not familiar with the object, but employs the knowledge that the definite article *the* can help him to identify the object required in the immediate context (Lyons 1999).

But Lyons (1999) does demonstrate examples where uniqueness is more important than identifiability, particularly with examples involving associations and special contexts involving predication. The following example from (Huong 2005) shows this:

(6) *[A student entering a lecture class at the beginning of a semester without referring to the faculty's notice about a guest professor]*

I wonder who ***the guest professor*** *is this semester.*

(Huong 2005: 33)

The context of example (6) is that the lecture class requires a teacher but the student is unsure of who this person will be and employs the definite article *the* to state the uniqueness of the referent who is not identified. Thus, the phrase *the guest professor* is grammatically and semantically appropriate. But the speaker, due to the use of the verb *wonder* most likely cannot identify the referent of this phrase (Lyons 1999; Huong 2005). Thus, the hearer will also most likely have problems with identifying the referent (Lyons 1999; Huong 2005).

1.5.4.1. **Location theory – an extension of identifiability**

Due to these concerns about identifiability, Hawkins (1978: 167–168) created location theory. Two important ideas that location theory put forward were inclusiveness (see section 1.5.3 for more details) and shared set. According to Hawkins, a shared set was the facts that speaker/writer and hearer/reader knew in common about an entity referred to. With shared sets, Hawkins posited four requirements in order that communication conveyed a message between the interlocutors: (1) set existence, (2) set identifiability, (3) set membership, and (4) set composition.

The first requirement is the information the speaker/writer and hearer/reader have about the set of objects that contain the definite referent. This implies the two parties have enough common cultural reference to create a shared set. The second requirement is the hearer/reader's skills to surmise which shared set is the intention of the speaker/writer. The hearer/reader must use the previous text in the discourse to decide which is the appropriate set. The third requirement is the entity being referred to must be part of the shared set. The last requirement is the relationships between the definite linguistic expression and its referents and the number of entities in the set meeting the criteria of the predicate. These examples in unsuccessful communication from Hawkins demonstrate the four requirements:

(7) *a. I've just seen the professor again.*
b. I don't think we've met before, have we?

(8) *A. I've just seen the professor again.*
B: Which professor?
A: Oh, didn't I tell you?

(9) *A: I've just spoken to the professor.*
B: What? That one over there?
A: No, the one I was just talking to you about.

(10) *(i) The two students*
(ii) The member of parliament

(Hawkins 1978: 168–170)

With example (7), the first requirement is demonstrated as the speaker and hearer did not have a previous discourse set to share; thus, there was no identifying of or locating of the referent in the topic.

Examples (7) and (8) show the relationship between the second and third requirements. These requirements need to work together for successful communication to occur. Example (8) shows the second requirement was satisfied, but not the third. The hearer identified some shared set (requirement 2), but did not identify *the professor* as part of the set. Example (9) demonstrates the opposite; the third requirement was satisfied, but not the second. The hearer was able to identify which shared set the speaker referred to: a set referring to a previous part of the discourse or a set referring to the immediate environment, but not the speaker/writer's intended referent.

The examples in (10) demonstrate the last requirement. The phrase *The two students* is semantically and grammatically appropriate when two is the number of students in the set. Also, one must be the number in the set referred to be the phrase *the member of parliament* due to the singular countability feature of the noun.

The location theory of Hawkins is intended to further extend the concepts of uniqueness and identifiability. The concept of shared set has been noted to be a more detailed model to show how the hearer/reader can identify what the speaker/hearer wishes to convey (Chesterman 1991; Langacker 2008). Also, Hawkins' theory builds upon identifiability theory to explain the definiteness and indefiniteness of noun and noun phrase referents.

1.5.4.2. **Scope of predication, prominence, and shared awareness – further extensions of identifiability and locatability**

Later models such as that proposed by Langacker (2008) have extended the concepts of identifiability and locatability further through considering scope of predication, prominence, and shared awareness in discourse. Langacker posited the concept of scope of predication which relates to the "extent of its coverage in relevant domains" (Langacker 1991: 7). For example, in patronymic relations between such words as *arm* > *hand* > *finger* > *knuckle*, "the entity designated by each term (i.e. its conceptual referent) functions as the scope for the term that follows" (Langacker 1991: 6). In other words, the word *arm* determines the extent or range of the item *hand* that comes after. This conceptual hierarchy is shown that the grammatical subject should provide the "immediate scope of predication for the object" (Langacker 1991: 8) and is reflected structurally in examples like:

(11) *A finger has 3 knuckles and 1 nail.*

(12) *?? An arm has 14 knuckles and 5 nails.*

(Langacker 1991: 8)

Example (11) is more semantically appropriate as *finger* provides the immediate scope of predication for *knuckle* and *nail* (Langacker 1991). On the other hand, example (12) is less semantically appropriate as *arm* does not provide the immediate scope of predication for *knuckle* and *nail*. This concept of scope of predication, particularly with its explanations of patronymic relations, can help to explain how nouns such as *computer* in the following example are identified:

(13) *The keyboard was broken. I was not happy with the computer.*

In the second sentence of example (13), the word *computer* is identified as a second mention noun as the listener can infer that this word is in a patronymic relationship with the word *keyboard* i.e. *the keyboard* is a part of *the computer*. This example also illustrates shared awareness in discourse because for this scope of predication to work, both the speaker and listener must have commonality of reference in regard to the relationship between *keyboard* and *computer.*

Prominence is another discourse-based concept put forward by Langacker that, depending on the context, a speaker or writer may wish to mark a noun as particularly

important in that context; and therefore, the speaker or writer marks the noun with the definite article *the*. Thus, prominence can explain the following example:

(14) *A. The economy collapsed long ago.*
B: Yes, that's true. How did it happen?
A: I'm not sure exactly.

In example (14), speaker A has marked the noun *economy* with the definite article, even though it was first time mentioned in the discourse, as the speaker had the intention of communicating the importance of the topic *economy* to the hearer.

This concept of prominence applies to other types of nouns such as unique nouns (e.g. *the sun*), regional/local nouns (e.g. *the park*), and immediate nouns (e.g. *the chair in the corner of the room*). Unique nouns are nouns that the prototypical speaker and hearer agree are unique in the world such as *the weather*; and thus, are specific instances requiring the definite article (Langacker 1991; Master 1988). Regional/local nouns are nouns the prototypical speaker and hearer agree are specific in the nearby area such as *the park next door*. Again, these nouns are specific instances requiring the definite article (Langacker 1991; Master 1988). Finally, nouns that are in the immediate vicinity of the speaker and hearer that can be directly accessed through the senses can be also regarded specific instances requiring the definite article (Langacker 1991; Master 1988). The application of prominence to these special types of nouns relies on the shared awareness of discourse.

Shared awareness in discourse is the notion that the speaker must be aware of the entity being referred to is unique and maximally congruent with the current discourse and the hearer may or may not be aware of this referred entity (Langacker 1991: 98). Shared awareness where the defined article can be employed may occur in five differing contexts: direct awareness, indirect awareness, nominal content-based awareness, immediate physical context, and present reality context. Direct awareness occurs at any time during the discourse when the speaker and hearer share the knowledge of the entity referred to directly by a noun or noun phrase (if the noun phrase *the students* as in example (10) occurred in a conversation, then speaker and hearer would be directly aware of the entities referred to and the definite article is employed). Indirect awareness occurs through scope of predication when the speaker and hearer are aware that the entity referred to includes an implied reference to the second entity as in example (15):

(15) *I am not happy with the computer. The keyboard is too small.*

In example (15), the definite article *the* is used with the noun *keyboard* even though it is first-time mentioned, as the noun *keyboard* is shared knowledge that it is part of the noun *computer* which has been mentioned before.

Nominal content-based awareness is achieved through the domain of present reality. The speaker/writer and hearer/reader achieve a shared awareness of the referent due to the meanings and associations of the referent, as shown in example (16):

(16) *The last sentences do not make sense.*

Universal shared knowledge of the present physical reality can be the basis of nominal content-based awareness, as shown in example (17):

(17) *The sky is blue.*

The speaker/writer and hearer/reader must be aware that the noun *sky* refers to a unique and universal fact accepted by many people in different societies and is present currently for the speaker/writer and hearer/reader; and therefore, the definite article can be employed with this noun.

Immediate shared knowledge about some entity the speaker and hearer can sense in some physical way is the basis of immediate physical context.

(18) *The fried vegetables smell wonderful.*

With example (18), the definite article can be used with the noun phrase *fried vegetables,* even if it has been first-time mentioned, as both the speaker and hearer can smell the entity and both would know the entity referred to.

Present reality context corresponds to what Langacker terms a unique instance of a type (Huong 2005). Sentences where the verb *be* or the verb *have* provide definitions that may be based on the type of shared knowledge involved, ranging from universal through regional and local to immediate (Huong 2005).

In summary, Langacker's notions of scope of predication, prominence, and shared awareness in discourse extend the notions of identifiability and locatability by focussing on how speakers and hearers interact with and create their shared knowledge of the entities being referred to in order to identify and locate those entities in conversation. These notions also have great pedagogical utility as they help to explain concepts such as how to identify nouns in contexts such as second time plus mention nouns (see 1.7.4.2. for more details), second mention without first mention nouns (see 1.7.4.3. for more details), and the verbs *have* and *be* with nouns (see 1.7.4.8. for more details).

1.5.5. Specificity and referentiality as explanations of definiteness

Specificity and referentiality have been given a great deal of attention in theoretical explanations of definiteness (Christophersen 1939; Hawkins 1978; Huebner 1979; Ionin et al. 2004; Langacker 1991; Lyons 1999; Master 1997; Quirk et al. 1985; Russell 1905; Searle 1969; Strawson 1971). These concepts have incorporated philosophical and linguistic perspectives (Brinton 2000; Chesterman 1991; Christophersen 1939; Donnellan 1978; Ekiert 2005; Butler 2002; Halliday 1985; Hawkins 1978; Ionin et al. 2004; Jespersen 1949; Langacker 1991; Lyons 1999; Master 1997; Quirk et al. 1985; Russell 1905; Searle 1969; Strawson 1971; Tryzna 2009; Zabor 1993). Their influence has been persuasive enough that these concepts are often employed in traditional grammar textbooks to teach articles. For example, Quirk et al. (1985) employs the concepts of specificity and genericity as the two main features which determine the overarching concept of definiteness which in turn determines article usage. Specificity has usually been defined as differentiating a specific item from a set. Referentiality has often been taken to mean referring or pointing to some object or living thing in the real world. Some theorists such as Ionin posit that specificity is more important than referentiality when the speaker is choosing an appropriate article for a noun (Ionin 2003: 32). Other theorists such as Langacker postulate specificity as an important concept that allows the speaker to conceive and portray entities at "varying levels of precision and detail" (Langacker 1999: 5). For example, a highly specific expression such as *the awful, big, red and black, plastic dog that sits in the back window of her car* describes a situation in fine-grained detail, with high resolution; whereas, less specific units such as *air* are characterized by low resolution, gross features and global organisation (Langacker 2008:55). On the other hand, referentiality has become more prominent with the development of speech act theory and reference (Strawson 1971; Searle 1969). When examining the textbooks, the definitions of specificity and referentiality have not always been so clear-cut. Even linguists have employed the terms as equivalents. For example, Brinton (2000: 292) has said that the purpose of specificity is to deal with descriptions represented by nouns or noun phrases and to check if they refer to a specific person or object in the world. In this definition, the notion of reference is combined with specificity. This is borne out with the following example:

(19) *An adult and three children are sitting at the bus stop.*

In example (19), the word *adult* is a specific person that can be interpreted as definite or indefinite. The lack of clarity between these terms and use of terms as equivalents seems to have arisen from two differing issues: Do definite nouns and indefinite nouns make reference pragmatically, semantically or both? Can definite nouns be non-referring in the same ways as indefinite nouns? Linguists who believe that nouns make reference pragmatically posit that non-specific nouns describe entities only without referring. The first perspective posits that non-specific noun phrases are descriptive, but not referential (Donnellan 1978; Fodor and Sag 1982). This is evidenced by example (20).

(20) *Give me a kiss.*

For these linguists, referentiality is found in the set of proper nouns, demonstratives, and personal pronouns, whose meaning is to delineate a specific person. The other major viewpoint believes that definite phrases have the possibility or not of making reference, but reference is not possible for indefinites. In example (19), the word *adult* cannot be precisely identified by the hearer; thus, it cannot be fully referential in this context.

Two types of semantic/syntactic contexts, opaque and transparent, are crucial in showing the difference between specific/referential and non-specific/non-referential. Opaque contexts are when expressions that are co-referential are not grammatical when an attempt is undertaken to replace the noun phrase. As shown in example (21), a meaning that is non-specific can be assigned to *a Norwegian.*

(21) *Hillie wants to meet a Norwegian, though she hasn't met one / *her yet.*

(Huong 2005: 41)

In example (21), the indefinite pronoun *one* can be used in place of the phrase *a Norwegian* due to the indefinite nature of *one.* However, the pronoun *her* cannot be employed as the phrase *a Norwegian* is non-specific and a co-referential pronoun cannot be associated with the verb *to want* (Huong 2005). This verb reinforces the non-specific nature of the noun as *want* in this context advances a potential, not a real, existing, proposition (Huong 2005).

Other contexts that contain the feature of specificity are transparent contexts. The difference between transparent contexts and opaque contexts is Lyons argues that in some contexts the speaker has not identified a particular entity. The following examples illustrate this:

(22) *I haven't started the class yet; I'm missing a student - Mary's always late.*

(23) *I haven't started the class yet; I'm missing a student - there should be fifteen, and I only count fourteen.*

(Lyons 1999: 170)

The sentences in examples (22) and (23) have two interpretations; one specific and one non-specific. With example (22), the phrase *a student* is specific because the speaker is talking about a particular person, and the second clause has a proper noun, *Mary,* that refers specifically to the student. In example (23), the phrase *a student* is non-specific as the speaker/writer is focussing on the proposition that one student is missing, not that student's identity. Lyons (1999) postulates that pragmatics resolves the differences in meaning between examples (22) and (23). Lyons (1999) notes there is little difference between the semantic/syntactic structures and that the differences in interpretations are determined pragmatically by what the speaker/writer is thinking and wants to communicate in different contexts.

Moving beyond Lyons, it must be noted that some verbs in English have different predications in certain contexts. In conjunction with certain nouns, different results in specificity and referentiality are entailed (Master 1996), which in turn, results in different patterns of article usage with nouns and these verbs. Examples of these verbs are verbs such as *be* and *have* that are predicate/defining verbs; *believe*, *intend*, or *hope* that are verbs that advance propositions or attitudes or verbs such as *look for* that convey intentions are defining, hypothetical, or counterfactual (Huong 2005). These defining or hypothetical verbs often have different patterns of article use with nouns. For example, Master (1996) notes that the verbs *to be* and *to have* are employed to describe general characteristics of classes and groups. The verb *to be* is employed to give classic Aristotelian definitions where the first entity to the left of the verb is described in terms of a category to the right of the verb, as in example (24):

(24) *A computer is a machine.*

The verb *to have* is employed to link general descriptive features to the noun, as illustrated in example (25):

(25) *A human has a head.*

As the verb *to be* in the context of (24) is providing a general definition through classification/categorisation and the verb *to have* in the context (25) is linking general descrip-

tive features, non-specific articles are the appropriate choice (Master 1996). These verbs with the associated propositions can impact the relationships between articles and nouns, and these impacts will be explored further in section 1.7.

Two other verbs whose predication produces different patterns of specificity and referentiality are the verb *to do* and the verb *to play.* The verb *to do* is often used in relation to specific actions and particular types of nouns that stand for specific actions. When *to do* is associated with an action (e.g. *We do the washing),* the speaker/writer is focused on a specific action that is different from others which creates a specific referential context (Lyons 1999; Master 1988). When *to do* is associated with particular types of nouns that stand for specific actions, it creates non-specific referential contexts. This is shown in the following examples:

(26) *Ela does a job.*

(27) *Martin does the dishes.*

(28) *Fred does business.*

In example (26), the verb is associated with a singular, countable noun *job* that represents an action that means completing a task as part of a routine. The noun phrase *a job* is referring to a task that has not been identified yet. With example (27), the plural noun *dishes* refers to the implied action of *washing the dishes*, but the entity is identified as a specific group of dishes that the speaker/writer and hearer/reader are aware of which will undergo this action. In example (28), *to do* is employed with an uncountable noun in this context, *business,* where the activity is not identified specifically. The verb *to play* is used in conjunction with musical instruments:

(29) *Bernard plays the guitar.*

With example (29), the context is specific and definite as the majority of musical instruments are countable nouns and the person playing one or some of these entities is usually identified as playing a specific instrument or specific instrumental category (Król-Markefka 2010). When *to play* is employed with sports nouns, as in example (30), the specificity and referentiality of the nouns can be interpreted in different ways.

(30) *Adrienne plays golf.*

Many sports nouns are uncountable nouns (e.g. *bowling, golf*) or two-way nouns (e.g. *volleyball, football*). When using these nouns with the verb *to play*, the speaker/writer is referring to a specific sport; however, these activities often involve many people, rules,

and equipment, so the speaker may be referring to a non-specific general entity (Langacker 1991).

From the examples (20) through (23) according to Lyons' perspective, specificity occurs in both opaque and transparent contexts and with definite and indefinite nouns and noun phrases. Lyons cites Ludlow and Neale (1991) together with Larson and Segal (1995) in arguing that a referential meaning must be differentiated from specific meaning. Lyons argues a referential meaning exists when the speaker/writer wishes to convey a proposition about an entity and believes the hearer/reader can identify the intended entity. Specific meaning exists when the speaker/hearer does not believe the hearer/reader needs to identify the entity, even a particular entity is pictured in the speaker's/writer's mind. Thus, the primary determining factor for English article usage is whether the noun phrase composed of the article and the noun is definite or indefinite based on the speaker/writer and hearer/reader both identifying the entity referred to. However, as seen in this section, moving beyond Lyons' perspective, the interaction of verb predication with the features of certain nouns and classes of nouns affects specificity and referentiality. From these arguments, specificity can be seen as a crucial aspect in determining article usage.

1.5.6. Inclusiveness as an explanation of definiteness

Another model from a linguistic/discourse perspective, inclusiveness, was propounded by Hawkins (1978) to explain the definite/indefinite distinction. This model was in part formulated to overcome some of these difficulties with familiarity (see section 1.5.7. for more details) explaining definiteness. He posited that the definite article *the* suggests inclusiveness and the indefinite article suggests exclusiveness. For Hawkins, inclusiveness indicated that the speaker "refers to the totality of the objects or mass within the set which satisfy the referring expressions" (Hawkins 1978: 187) and exclusiveness "refer(s) to a proper subset, i.e. not-all, of the potential referents of the referring expressions" (Hawkins 1978: 187).

Examples (31) and (32) from (Chesterman 1991) enumerate the differences between inclusiveness and exclusiveness.

(31) *Bill lost a finger in war.*

(Chesterman 1991: 20)

(32) **Bill lost a head in war.*

(Chesterman 1991: 20)

Example (31) is acceptable as the word *finger* and the indefinite article *a* refers to one item *finger* that is part of a subset *fingers.* Example (32) is unacceptable due to the fact that the *head* is not part of a subset of *heads* as humans do not usually possess more than one head (Chesterman 1991). Therefore, the exclusiveness of the indefinite article clashes with the noun, creating the unacceptability in example (32).

Inclusiveness can be seen to be associated with the concept of uniqueness (see section 1.5.8. for more details). Hawkins extends uniqueness to specify the set of reference shared between the speaker and hearer. In addition, uniqueness is the association between a single countable noun and the definite article *the* (Hawkins 1978). Hawkins` concept of inclusiveness is able to explain some of the issues associated with familiarity model as it does not expect the hearer to always identify the referent and explains many uses of the definite article *the* in terms of associations.

But Hawkins' theory, like familiarity, has difficulties with dealing with non-referential noun phrases. This is shown in example (33):

(33) *I have a head.*

(Chesterman 1991: 22)

Example (33) shows inclusiveness/exclusiveness explanation is weak where the shared set of reference is not a proper subset but a predicate construction that is non-referential. Also, more crucially, Hawkins does not provide detailed descriptions of what he means by *shared set,* his key concept, particularly in terms of how the sets are defined linguistically and pragmatically. Due to these weaknesses with inclusiveness, the pedagogical utility of this model in explaining article usage to learners is not as strong.

1.5.7. Familiarity as an explanation of definiteness

Familiarity is a linguistic theory that accounts for the effects of the speaker/writer and hearer/reader and context on definiteness (Christophersen (1939) and Strawson (1971).

Christophersen (1939) developed this idea by formulating the theory that a noun or noun phrase in conjunction with the definite article *the* demonstrates that the thing referred to by the noun or noun phrase is known or familiar to the speaker/writer and the hearer/reader. This formulation expanded further the concept of familiarity of whom Apollonius Dyscolus (2nd century AD) was one of its first recorded proponents. Apollonius Dyscolus accepted the ideas of identity and the previously mentioned referent as crucial factors that regulate the definite article's presence or absence in Greek (Householder 1981, as quoted in Lyons 1999: 254). Christophersen's formulation, with its basis on Apollonius' ideas, can be demonstrated in the following example:

(34) *A: "I was at the shop today, but I couldn't get the milk"*

B: (surprised) "What milk?"

A: "Oh, the lactose-free milk!"

The what-question in (34) is asked because the hearer is not familiar with the milk introduced by the speaker even though the speaker thought that the hearer was familiar with the topic. Thus, unfamiliarity occurs due to a lack of joint understanding about the referent. Therefore, the speaker/writer needs to ensure that the reader/hearer is familiar with the topic by being more specific and/or detail to ensure the hearer's familiarity with the topic (Christophersen 1939).

Hawkins argues that the concept of familiarity has been found to be lacking as it cannot explain the associations created in example (35):

(35) *I had to get a taxi from the station. On the way the driver told me there was a bus strike.*

(Zabor 2011b: 68)

With this example, Hawkins would say that the scope of predication exists between the *taxi* and the *driver*, but we cannot state with any certainty that the hearer/reader is familiar with the *driver* being referred to.

Another criticism levelled at familiarity theory is that this theory cannot explain non-referential uses of articles. This is illustrated with the following example:

(36) *His mother is an engineer.*

In example (36) in some contexts, the indefinite *an* can be used in conjunction with familiar referents. With these types of defining statements, the hearer/reader may well be familiar with the person being referred to and the profession being referred to. Thus, as the concept of familiarity does not account for definiteness in all contexts, this model

presents with much lessened utility to explain definiteness to learners of English article usage.

1.5.8. Uniqueness as an explanation of definiteness

Uniqueness is one of the first major theories explored to examine the concept of definiteness in English article usage. Philosophers have pondered the concept of uniqueness as it applies to definiteness and referentiality. Russell (1905) reasoned that definiteness and referentiality applied to the logical analysis of propositions as they were key to examining existence and essential to philosophical enquiries into the nature of the word. He examined propositions logically through looking at descriptions that were definite and single countable nouns differentiated between the definite article and the indefinite article through the following famous example:

(37) *The King of France is bald.*

(Russell 1905)

This sentence, according to Russell, is a representation of a union of three premises. The first premise is that an existential claim is being made (*There is a king of France*). The next premise is that the individual is unique (*There is only one king of France*), and the third premise provides additional information (*is bald*) which is true for this existing, unique individual. Russell (1905) posited that the main assertion is true only when all three propositions are true, while if one proposition is false, then the overarching assertion is false. The implication for Russell was that the referent's uniqueness drives the recognition of its definiteness.

Russell's account of uniqueness explaining definiteness can be critiqued in terms of considering definiteness in terms of a philosophical perspective and not accounting for linguistic perspectives. Russell's theory does not deal with the usage of the definite article with plural and uncountable nouns and does not include discussion of the speaker/writer and hearer/reader (Strawson 1950, as quoted in Hawkins 1978: 95–96). Thus, approaching definiteness only from a philosophical perspective and ignoring linguistic viewpoints can be seen to be deficient.

Russell's account of uniqueness explaining definiteness can also be critiqued in terms of problematic formal logic. Strawson (1950) argued strongly against Russell and

his model by noting that the existential premise and unique premise in example (37) are not assertions. Strawson (1950) argues these are presuppositions. The only clear assertion for Strawson is the additional information about the baldness. Thus, he posits that if there is no King of France, then the overriding union based on the three propositions cannot be evaluated in terms of truth or falsehood (Strawson 1950, as quoted in Hawkins 1978: 95).

1.5.8.1. **Uniqueness and reference**

Uniqueness as an explanation of definiteness has been explored from a linguistic perspective through the concept of *anaphoric reference* (Quirk et al. 1985). This concept refers to how concepts expressed as nouns in the discourse have already been referred to in the text. *Anaphoric reference* is further divided into *direct* and *indirect*. Quirk et al. (1985) define *direct anaphoric reference* as follows: *"*definite noun phrase receives DIRECT anaphoric interpretation where the same noun head has already occurred in the text" (Quirk et al. 1985: 267). The authors give the example:

(38) *John bought a TV and a video recorder, but he returned the video recorder*

(Quirk et al. 1985: 267)

In example (38), the definite article *the* is used with the noun phrase *video recorder* as it has been mentioned in the first clause and these two noun phrases are linked through *direct anaphoric reference. Indirect anaphoric reference* explains contexts where there is no direct link between the nouns, as in example (39):

(39) *I lent Bill a valuable book, but when he returned it, the cover was filthy, and the pages were torn.*

(Quirk et al. 1985: 268)

In example (39), the definite article *the* is employed with the noun *cover* and *pages* as they are within the scope of predication (see section 1.5.4.2. 1.5.4. for further discussion of this concept) of the noun *book*.

In contrast to *anaphoric reference, cataphoric reference* is a concept where the definite article is used in "a context where what follows the head noun, rather than what precedes it, enables us to pinpoint the reference uniquely" (Quirk et al. 1985: 268). This

concept relates to the context *post-modified noun* (see section 1.7.4.5. for more details of this context). The following example illustrates this:

(40) *The President of Mexico is to visit China.*

(Quirk et al. 1985: 268)

With example (40), the noun *President* is uniquely defined by the modifying descriptor *of Mexico* to produce a restricted reference for the noun. Therefore, *cataphoric reference* refers to uniqueness, like *anaphoric reference*. However, unlike *anaphoric reference, cataphoric reference* refers to post-modified nouns (Quirk et al. 1985).

Another problem with uniqueness related to article usage in English is uniqueness that is inferred in the spoken or written text through scope of predication relations between nouns (Langacker 1991; Lyons 1999; Master 2003a; Zabor 2011b). These relations are not expressed through direct anaphoric reference nor marked through premodifying or post-modifying clauses (Zabor 2011b). These scope of predication relations can only be satisfactorily described through consideration of the direct context, cultural context, knowledge of the speaker/writer and hearer/reader, and what the speaker/writer assumes the hearer/reader's knowledge to be. Zabor (2011) gives the following example as an illustration:

(41) *I had to get a taxi from the station. On the way the driver told me there was a bus strike.*

(Zabor 2011b: 68)

Zabor posits a context where the noun *driver* in the second sentence has not been mentioned before, but the noun *taxi* in the first sentence has a scope of predication that includes the noun *driver* that allows for the use of the definite article *the.* The speaker/writer assumes the reader/hearer shares this cultural knowledge conveyed linguistically (i.e. the word *taxi* denotes drivers, wheels, engines, and passengers among other features). Thus, consideration of uniqueness in relation to definiteness and article usage in English needs to take into account discourse elements such as text, associations, and the roles of the participants interacting with the texts.

1.5.9. Specific consideration of Master's schema in terms of the major perspectives on definiteness

Returning to Master's schema, the following examples show how the concepts of definiteness and specificity can be neatly folded into a binary schema:

(42) *[+definite] [+specific] The computer is down today.*

(43) *[+definite][–specific] The computer is changing our lives.*

(Master 1990: 466)

With examples (42) and (43), both can be regarded as [± identified] and requiring the definite article *the*. This category of [± identified] can explain how the specific noun in example (42) requires the article *the* and how the generic noun in example (43) also requires the article *the* as the two nouns with this differing feature of [± specific] share the same feature of [+ definite]. Thus, the category of [± identified] subsumes the category of [+ definite] (Master 1990). Thus, identifiability can be seen to be of greater pedagogical utility as it explains many of the English article usage patterns regarding definiteness and provides a simpler, binary schema to explain definiteness. This distinction will become important later in sections 1.7. and 1.8. , which explains identifiability as one of the important practical pedagogical concepts the e-learning tool (Gillian 2015a) will teach the students about article usage.

Master's concept of identifiability has been argued against on the grounds that the concept of *definiteness* "subsumes such notions as familiarity, identifiability, uniqueness, and inclusiveness" (Huong 2005: 154). However, from the sections on definiteness and, in particular, examples (43) and (43), it can be strongly argued that having the distinctions of definiteness and specificity as the primary binary features, they cater for the majority of contexts covered, including familiarity, identifiability, uniqueness, and inclusiveness, and explain the specific and non-specific uses of the article *the* in examples (43) and (43).

Master (1990) also points out a potential flaw with placing together the [+definite] and [+specific] feature as salient features. In this schema, sentences with the generic *the* would be miscategorised as [± identified]. Master (1990) counters this argument by noting that some researchers (Burton-Roberts 1976) regard generic *the* as similar in some features to the specific *the.* With example (42), Master and Burton-Roberts argue that the hearer/reader interpret the class through consideration of the in-

dividual entity. For the hearer/reader, generic *the* can be described as "the identification of a class ... (and be) considered to be [± identified]." (Master 1990: 468). Burton-Roberts (1976: 435) notes that the generic *the* has "the same distribution as other NP's mentioning individuals". Master (1990) provides additional evidence for this point in that the generic *the* is often employed with nouns that are agents of change, in contrast to the generic *a* and zero article.

1.5.10. Research evidence for Master's binary schema with definite articles

To date, a small but interesting body of research exists that indicates that Master's binary schema is effective in teaching English definite article usage patterns. Master, in his 1994 study, indicated that for 47 high-intermediate/low-advanced ESL students at university level, the teaching of the definite article distinction (i.e. the use of *the*) versus the indefinite article distinction (i.e. the use of *a*, *an*, or *no article*) led to significant improvement between the experimental group's pre-test and post-test scores (Master 1994). In another study with 75 intermediate ESL learners, the results were that only the teaching of the binary schema which included specific teaching of definite article usage patterns produced significant improvement between the pre-test and post-test when compared to three other treatment types and a control group (Master 2003b). In a study of 67 advanced ESL learners whose first language was Vietnamese, Huong found that a modified binary schema produced a treatment effect with the experimental group at the immediate post-test stage but not at a delayed post-test stage (Huong 2005).

1.5.11. Definiteness - Conclusion

In summary, the concept of definiteness, which is one of the most important criteria for English article usage, has been explored. The theoretical models that are of most pedagogical utility are those where discourse elements such as the participants in the speech acts and the discourse context have been included (Chesterman, Christophersen, Hawkins, Ionin, Langacker, Lyons, Master, Searle, Strawson). Those models have evolved from strict semantic/syntactic models (Russell) which have limited pedagogical applica-

tions. This concept of definiteness has been explored through examining some aspects of definiteness, including uniqueness, familiarity, specificity and referentiality, identifiability and locatability, and inclusiveness. From the arguments presented, *identifiability* can be seen as most important feature which subsumes *definiteness* and *specificity* to simplify the structure of the theoretical concepts. Hawkins does employ the term *locatability*; however, most theorists prefer the term *identifiability* (Lyons 1999). *Definiteness* and *specificity* placed on a similar feature level to aid the teaching of articles from a pedagogical perspective (Master 1990, 1996). A small amount of positive research evidence was discussed indicating that the use of Master's binary schema can in teaching definite article usage patterns can be effective. The next sections will examine the *indefiniteness* and the key theoretical concepts used to explain *indefiniteness*; particularly *familiarity* and *genericity*.

1.6. Indefiniteness

1.6.1. Outline

The English indefinite article and its usage patterns in English are dependent on the concept of *indefiniteness*. The following section presents and discusses Master's schema for dealing with *indefiniteness*. This section presents how Master's schema employs some of the major perspectives on the concept of indefiniteness when considering the relationships between articles and nouns. These perspectives focus on the more "subjectivist" accounts, which allow for the roles of the speaker/writer, hearer/reader, and the particular context in defining indefiniteness. This section also considers indefiniteness in terms of familiarity and genericity.

When weighing up the approaches, a discourse-based model of definiteness will be seen to be more effective for teaching the article system to ESL learners of English as it incorporates explanations about the context-dependent issues that cause the patterns of indefinite article usage in English to confound many ESL learners of English due to seemingly inconsistent changes in their use.

1.6.2. Concept of indefiniteness

The concept of indefiniteness is not as well developed in linguistics as the concept of definiteness. Often, indefiniteness is defined contrastively in terms of definiteness. For example, a common contrastive definition of indefiniteness describes the noun or noun phrase representing an item in the world as indefinite when it is unknown, unfamiliar, non-unique or assumed not to be identified by the hearer (Ekiert 2007; Król-Markefka 2010; Master 1996; Huong 2005; Zabor 2011b). As can be seen in this definition, it is the obverse of the common definition of definiteness (see section 1.5. for a discussion of definiteness). The next section considers how Master's schema caters for some of the most prominent of these discussions: the ideas of non-familiarity and genericity.

1.6.3. Master's schema for dealing with indefiniteness

In Master's binary schema (Master 1990, 1996), the features of non-specificity and indefiniteness are elevated as the salient features to produce a practical application for teaching articles. This schema postulates the category of [±classified] as the obverse of [±identified]. The category of [±classified] embraces the features of [-definite] and [±specific]. In the next sections, the features of indefiniteness and non-specificity that comprise the feature of [±classified] are presented and discussed.

1.6.4. Non-familiarity as an explanation of indefiniteness

Non-familiarity is the obverse of familiarity theory where a noun or noun phrase in conjunction with the definite article *the* demonstrates that the thing referred to by the noun or noun phrase is known or familiar to the speaker/writer and the hearer/reader (see 1.5.7. for more details on familiarity). The speaker/writer may assume in certain contexts that the hearer/reader is not familiar with the entity being referred to and thus employs the indefinite article with the noun referent. This is shown in example (44):

(44) *Janusz: There is a series about Australian mega-fauna that you would really like.*

Ada: Yes, I read about it.

In example (44), Janusz is not sure if Ada is familiar with the series that Janusz describes with the complex adjectival phrase after the noun and therefore uses the indefinite article *a* to check if Ada is aware of the series. Ada understands this communicative intention of Janusz and signals in her reply that she is familiar with it. Thus, non-familiarity can account for some contexts where the indefinite article is employed. However, non-familiarity cannot account for all contexts for the use of indefinite articles and other theories have been proposed to explain these contexts.

1.6.5. Exclusiveness as an explanation of indefiniteness

Hawkins` location theory expands upon other contexts where specific indefinite references may be the intention of the speaker/writer. He posits two major contexts for specific indefinite references: 1) the speaker "introduces a referent (or referents) to the hearer) (Hawkins 1978: 187) and 2) "the indefinite referent will be optionally located in a shared set" (Hawkins 1978: 187). The first context helps to explain first-time mention nouns and dovetails with the concept of familiarity explained in the previous section, while the second context helps explain referents that may or may not be part of a group. This is shown in the following example from Hawkins:

(45) *Harry spoke to a current member of parliament of England.*

(Hawkins 1978: 190)

Example (45) meets the exclusiveness requirement as this parliament may contain more than one member of parliament and a unique individual may or may not be identified. Due to this latter formulation, the inclusiveness presupposition is not longer met. Therefore, these examples demonstrate that exclusiveness can account for some linguistic contexts that non-familiarity cannot account for. However, there are other indefinite contexts that Hawkins` theory cannot account for; and thus, other theories need to be discussed.

1.6.6. Non-specificity as an explanation of indefiniteness

Non-specificity, in conjunction with referentiality, can explain indefiniteness in three specific contexts: opaque contexts, transparent contexts, and verbs with specific predications that affect the noun referents in terms of indefiniteness/definiteness. Opaque contexts are contexts that contain the non-specific noun phrases and cannot be replaced by other noun phrases that may contain additional connotations that are specific (see section 1.5.5. for specificity and opaque contexts). Transparent contexts are where indefinite articles are employed to give either a specific or non-specific meaning and the meaning is clear depending on pragmatic analyses of the contexts (see section 1.5.5. for specificity and transparent contexts). Finally, verbs such as *be, have*, *do*, and *play* have specific predications in specific contexts that determine the usage of either indefinite of definite articles. As can be noted in this discussion, non-specificity can be seen, along with its obverse, specificity, to explain specificity in some contexts. However, to resolve and explain other usages of the indefinite article, other theories need to be examined.

1.6.7. Non-identifiability as an explanation of indefiniteness

Non-identifiability as an explanation of indefiniteness can be seen to revolve around Searle's second axiom:

b) axiom of identification: the hearer must be given sufficient means to identify the object from the speaker's utterance of expressions.

(Searle 1969: 82)

If the hearer/writer is not given sufficient information about the entity the speaker/writer is referring to, the hearer/writer will not be able to identify the entity. This is shown in the following examples:

(46) *[Kamila is building a table with her friend Freda. There is a group of nails of varying sizes (four long nails and three short nails) next to Freda]*

Kamila: Give me a nail.

Freda: Which one?

Kamila: A long one.

In example (46), the axiom of identification is not met as Freda as the hearer has not been given enough information to identify which nail Kamila wants. Kamila employs the indefinite article *a* as a synonym of the number *one*, making the object desired by Kamila definite. Freda does not find this information sufficient. Thus, Freda asks a question to clarify which nail Kamila wants. Kamila then provides additional information about the length but uses the indefinite article *a* as there are four long nails and Kamila has not provided enough information to identify one specific nail. Kamila does not meet the second axiom of identification for a specific object as in this context her needs are met by a choice from a range of similar objects.

Example (46) demonstrates an initially unsuccessful communication and also exemplifies Hawkins' location theory and its components of set existence, set identifiability, set membership, and set composition. Initially, the speaker and hearer do not have enough common knowledge to identify the existence of the set. Also, Kamila expects Freda to infer which nail is the intention of the speaker. The third component of set membership is met as the *nail* is part of a set that Kamila and Freda know about. The fourth requirement of set composition is not initially met as there are seven nails that meet the criteria of the predicate. To ensure a successful communication, Kamila must provide more information to meet the requirements for set existence, set identifiability, and set composition. Thus, Hawkins' theory extends identifiability theory to explain the indefiniteness of noun and noun phrase referents. However, there is a final important concept that is needed to explain the use of indefinite articles and that is genericity, which is covered in the next section.

1.6.8. Genericity

Genericity is different from specificity in that *a/an*, *the*, and the zero article can mark a generic noun. Linguists believe the most important feature of genericity is that generic nouns or noun phrases refer to a whole set, with the set being constituted from all elements that meet the criteria described by the noun (Lyons 1999; Master 1990). Lyons has commented that research has focused on whether the generic noun refers to an entity, an abstract referent, or to a collection of the entities belonging to the set. In terms of indefinite English article usage patterns, genericity needs to be considered when cre-

ating sentences involving definitions and/or providing descriptions (Master 1988, 1990, 1996, 1997, 2002, 2003a).

Linguists do not agree about when and how generic interpretations of noun phrases and articles can be made. They do not agree about whether plural nouns, the zero article or *a* can have a generic interpretation (Burton-Roberts 1976; Chesterman 1991; Jespersen 1949; Quirk et al. 1985). Next, a more detailed discussion of each possible generic article will be enumerated.

1.6.8.1. **Genericity and the article *a***

While generic interpretations have been made when *a* is used with a noun phrase, not all linguists agree (Burton-Roberts 1976; Chesterman 1991). Examples (47) and (48) show this:

(47) *The bilby is becoming extinct.*

(48) ** A bilby is becoming extinct.*

When the noun is singular and generic, the article *a* is not an acceptable reading, but the article *the* is accepted in example (48). In example (48), *A bilby* is not acceptable due to the predicate *to become extinct* having the semantic feature of needing a class or group as the subject (Chesterman 1991; Huong 2005). The noun phrase *A bilby* has the additional feature of referring to a single entity and this is not acceptable in this context to provide a generic interpretation (Chesterman 1991; Huong 2005). In example (48), *the bilby* is acceptable as it refers to the entire species *bilby* which fits in with the predicate features (Chesterman 1991; Huong 2005).

Another theoretical perspective is that the generic *a* is equivalent to a non-specific *a* (Christophersen 1939; Hawkins 1978). Hawkins postulates that a generic indefinite noun phrase is similar to a non-specific indefinite noun phrase as they refer to a single entity that is not a particular referent that the speaker/writer and hearer/reader both know about (Huong 2005). Supporting Hawkins' view in this regard is Langacker's notion of perspective. Perspective is Langacker's concept about how the subjectivity and viewpoint of the context affect the first time use of articles (Langacker 1991). From his viewpoint, the idea of perspective demonstrates the use of the indefinite article with first mention nouns in that from the speaker's perspective, an entity intro-

duced to the discourse for the first time is marked with an indefinite article to signal to the hearer that the entity may be non-unique and the hearer may have to refer to a generic category or group, or an unrestricted range of examples from that group (Langacker 1991).

However, linguists such as Chesterman (1991) disagree with this conflation of the generic *a* and the non-definite *a*, because at times a generic interpretation is different from a non-specific one. The following example illustrates this:

(49) *An Indian smokes a pipe every night.*

(Burton-Roberts 1981)

The noun in example (49) is ambiguous because the hearer/reader can interpret it in three ways: specific, nonspecific, and generic. Thus, generic indefinites cannot be regarded as equivalent to non-specific indefinites (Burton-Roberts 1981; Chesterman 1991). However, despite this point, the article *a* is often employed with nouns to provide a proposition that is a concept, which is usually non-specific. In terms of practical pedagogical applications, these propositions are often employed as definitions or descriptions.

1.6.8.2. **Genericity and the article *the***

Generic *the* is employed with nouns that are singular or plural. When used with a singular noun, this usage pattern refers to a species. Linguists disagree about plural nouns; they argue that plural generic nouns can refer to more than one species (Burton-Roberts 1981; Hawkins 1978; Master 1990). This is evidenced by the following:

(50) *Among the lizards, iguanas are the most popular as a focal food.*

(Burton-Roberts 1981)

In example (50), the phrase *the lizards* can be "interpreted as a family of lizard subspecies or all lizards" (Huong 2005: 55).

Hawkins (1978) argues that the generic *the* in conjunction with plural nouns is similar to non-generic definite plurals when the inclusiveness principle is considered. His argument is that limiting still occurs when employed with plural nouns. Hawkins supports his arguments with these examples:

(51) *Italians are musical.*

(52) *The Italians are musical.*

In example (51), all the Italians, past, present, and future, are interpreted to be musical. Example (52) is interpreted as "those individuals of Italian parentage who currently inhabit Italy" (Hawkins 1978: 217). The phrase *Italians* designates more individuals than *the Italians*. But, these interpretations rely on the knowledge of the speaker/writer and the hearer/reader. Because this knowledge varies from communicative individual to individual, example (51) can be interpreted ambiguously (Lyons 1999: 193).

As argued in section 1.5.9. , Master provides an alternative explanation for the generic *the* (Burton-Roberts 1976; Master 1990, 1996). Master argues that the generic *the* shares many features with the definite *the* and for pedagogical purposes, can be treated in the same manner as the definite *the.* In terms of practical pedagogical applications, the generic *the* is often used in definitions to refer to species (e.g. iguanas) or groups sharing similar characteristics (e.g. Italians).

1.6.8.3. **Genericity and the zero article**

When the generic zero article is used, linguists disagree about usage as a generic noun due to the possible effects of the noun features and/or predicate features. There is disagreement over whether the noun phrase with the generic zero article or elements such as the verb phrase convey the generic meaning. Example (53) from (Huong 2005) illustrates this:

(53) *Rabbits like carrots.*

(Huong 2005: 58)

The reader/hearer is not sure that *all* rabbits like carrots in example (53). Many semantic synonyms such as *in general* (Huong 2005) or a generic verb such as *tend to* (Lawler 1972) can be used as paraphrases with examples such as (53). Thus, a generic interpretation for the zero article plus noun may not be the most complete interpretation.

Extending this point, at times, it can be difficult to decide if the noun is generic or non generic when marked by the generic zero article. By way of example, one proposal by Burton-Roberts (1976) puts forward the notion that nouns and noun phrases can be thought of as non-generic when accompanied by the generic zero article. These are examples provided by Burton-Roberts:

(54) *a. In Canada, the beaver is hunted by professionals.*

b. In Canada, beavers are hunted by professionals.

(55) *a. In Canada, professionals hunt the beaver.*

b. In Canada, professionals hunt beavers.

(Burton-Roberts 1976: 443)

The definite generic noun phrase in example (54) a) and the noun phrase without an article in (54) b) are generally interpreted as generic. However, in the examples (55) a) and (55) b), the definite noun phrase is considered generic, and the bare plural noun phrase is not. With *beavers* in example (55) b), there seems no difference between the generic and non-specific and there this distinction is not useable (Burton-Roberts 1976).

In terms of practical pedagogical applications, the zero article is often used with the verb *have* or other verbs to provide descriptions that refer to species (e.g. rabbits, beavers) or groups sharing similar characteristics.

1.6.8.4. **Differences between the zero article and null article**

When no article is used with nouns in English, the usage can be one of two subtypes: the zero article and the null article (Chesterman 1991). Chesterman postulated a continuum between the zero article and the null article, as described in Table 3.

Table 3. Chesterman's continuum for the zero and null article.

most indefinite				most definite
zero (Ø1)	some	a	the	null (Ø2)

(Chesterman 1991: 182)

According to this schema, the zero article (Ø1) is the most indefinite and the null article (Ø2) is the most definite. The Ø1 article is associated most often with uncountable nouns such as milk and plural countable nouns like eggs (Master 2003a). The Ø1 article is also employed to aid the description of generic or nonspecific nouns, especially in the plural count form, such as the noun *cheese* in example (56):

(56) *Mice like cheese.*

(Master 2003a: 4)

On the other hand, the Ø2 article can be regarded as the most definite of the articles (Master 2003a). This article is associated more often with "bounded singular proper nouns, that is, entities with "an exterior boundary that ...is limited a priori (Chesterman 1991, p. 86)" (Master 2003a: 4). Master gives an example of this, outlined in example (57):

(57) *Italy is a fascinating country.*

(Master 2003a: 4)

In example (57), the noun *Italy* is a proper noun that is singular and represents a geographical entity with a recognised border. The Ø2 article is utilised with certain types of singular countable nouns such as rank, position or post, as exemplified by example (58):

(58) *She was hired as special assistant to the president.*

(Master 2003a: 4)

The noun phrase *special assistant to the president* is marked by the Ø2 article as it is [+definite] and [+specific] entity being referred to.

The Ø2 article can be used to mark familiar nouns in terms of time and place, as shown in examples (60) and (60):

(59) *It usually snows in winter.*

(60) *I left it at home.*

(Master 2003a: 4)

In example (60), the noun *winter* referring to the season is universal shared knowledge between the speaker/writer and hearer/reader about the time of year (see section 1.7.4.3. about universal shared knowledge). The noun *home* in example (60) refers to local shared knowledge about a particular place (see section 1.7.4.3. about local shared knowledge).

The use of the same form for the zero and null article (i.e. no article) for two very different functions (i.e. indefinite and definite) represents a possible pedagogical problem for teaching articles using Master's binary schemata. However, when Master (2003) analysed the data from 15 ESL learners who were at three different levels of English and coming from five native language (L1) backgrounds (Chinese, Japanese, Russian, Spanish, and German), he found that the subjects coming from an L1 background which did not have articles present in L1 employed Ø1 articles appropriately 88.6% of the time and Ø2 articles 90.2% (Master 2003a). The figures for Ø1 articles and Ø2 articles respectively for the subjects whose first language had articles were

88.4% and 94.3% (Master 2003a). These results indicating a lack of significant difference in ESL learners acquiring these forms led Master to conclude that the learners were not aware of the Ø1 and Ø2 articles (Master 2003a). Consequently, Master (1997, 2003) argued that the intermediate learners of English should be taught articles using Master's binary schema and the difference between the Ø1 and Ø2 articles should be presented only to ESL learners at an advanced level of English. Specifically, the use of the Ø2 article needs to be taught for specific article usage patterns such as first-time-mention plural and uncountable nouns, sports nouns, geographical nouns, political nouns, cultural nouns, and names of people and companies.

1.6.8.5. **Genericity – conclusion**

Genericity, like definiteness and indefiniteness, is a concept that is difficult to define. Each of the three generic articles: *a/an*, *the*, and the zero article can be easily identified as being used in a prototypical way in exemplars. For example, *a* can refer to one entity which represents all others e.g. *A beaver builds dams*. But due to the influence of predicates, it cannot be employed in extended generic interpretations e.g. *A beaver is becoming extinct*. The generic *the* refers to a whole set, e.g. *The beaver builds dams*, can be used generically, as it refers to all members of a set e.g. *The beaver is becoming extinct*. However, under the extended generic interpretation, *the* cannot be employed with all predicates such as *The book fills leisure time of many people* because humans do not have the time or resources to satisfy the predicate of reading all books. The zero article is ambiguous and when associated with a noun, allows full generic reference based on its predication. Therefore, the generic zero article can be employed in a non-specific interpretation (e.g. *Beavers may be dangerous*) or in a full generic sense (e.g. *Beavers are becoming extinct*). In each of these examples, the predicate features and/or noun phrase features interact with the generic article forms to produce different interpretations.

1.6.9. Specific consideration of Master's schema in terms of the major perspectives for indefiniteness.

Resuming again with Master's schema, the category of [±classified] embraces the features of [-definite] and [±specific]. Master justifies this schema through the argument that generic nouns refer to a class as a whole. These referents are therefore [-definite]. However, these nouns can be specific, especially when the nouns are first mentioned. Master explains the use of the indefinite article *a* or zero article with noun first mentioned in the discourse as the hearer/reader interpreting these entities "as a member of a group or class of like others" (Master 1996: 215). Master provides the following examples and explanations:

(61) *Once upon a time, a king lived in a stone castle.*

(Master 1996: 217)

Master, with example (61) asserts that the noun *king* and the noun *castle* are first-time mention nouns "and, without further information, we interpret the king to be simply someone classified as a king and the castle to be something classified as a castle" (Master 1996: 217). Thus, Master explains this context of first-time mention as when "we are introduced to a new noun, it is simply a member of a class" (Master 1990: 471).However, this explanation ignores the evidence that the speaker/writer is referring to two entities that are specific and are not members of a group or class.

A stronger argument is that these entities introduced for the first time are [+specific] and [-definite] (i.e. classifying nouns) because the speaker/writer assumes the hearer/reader has not encountered these entities before by employing the notion of non-familiarity (see section 1.6.4. for more details) or its similar formulations: exclusiveness (see section 1.6.5. for more details) or non-identifiability (see section 1.6.7. for more details). If example (62) is used by the speaker for the first time in a discourse and the speaker is not sure that the hearer is aware of this tick, the speaker employs the indefinite *a* to indicate to the hearer that s/he has a specific tick in mind but is aware the hearer may not be aware of this specific tick.

In this classifying schema, classified nouns are treated as nouns that could be any (i.e. generic) or ones the speaker and hearer have no common referent for (i.e. first-time mentioned). Generic *the* is treated as a special example of [±identified] (as dis-

cussed in section 1.6.8.2. and therefore with Master's schema, the generic *a* and generic zero article are treated similarly. The following sentences illustrate this:

(62) *[–definite] [+specific] A tick entered my ear.*

(63) *[–definite][–specific] A tick carries disease.*

(64) *[–definite][–specific] Ticks carry disease.*

(Master 1990: 466)

In example (62), the noun *tick* refers to a specific tick that has entered the ear of the speaker/writer (Master 1990). In example (63), the noun refers to a non-specific *tick* i.e. the noun refers to any entity that can be categorised as belonging to the class of *ticks* (Master 1990). Examples (62) and (63) employ the indefinite article *a* as the noun has the feature [–definite] and both nouns are singular. By contrast, example (64) has the plural form *ticks* which employs the generic zero article. Example (63) and example (64) share the same features of [–definite] and [–specific], but the countability feature of the noun determines the use of the article; the generic *a* as in example (63) and the generic zero article as in example (64).

This category of [±classified] explains the use of the generic *a* and the generic zero article as examples of classes or categories. The generic *the* is explained as a special occurrence of [-classified] and [+identified] has in common many characteristics with the definite *the* and for pedagogical purposes, can be treated in the same manner as the definite *the*, as noted in section 1.5.6.

1.6.10. Research evidence for Master's binary schema with indefinite articles

Currently, a limited but interesting body of research exists that indicates that Master's binary schema can produce positive results when teaching English indefinite article usage patterns (see section 1.5.10. for more details). As stated in section 1.5.10. three studies have been carried out looking at the effectiveness of Master's binary schema in teaching indefinite article usage patterns: two by Master (Master 1994, 2003b) and one by Huong (2005). All three studies produced evidence of significant improvement in the experimental group between their pre-test and post-test results (see section 1.5.10. for more details).

1.6.11. Indefiniteness - conclusion

To sum up, the idea of indefiniteness, which is other of the most important criteria for English article usage, has been presented and discussed. The theoretical models presented are not as detailed as the models for definiteness. The models are often treated as a complement of the models for definiteness. However, it is noted that the majority of the models to explain indefiniteness incorporate discourse elements such as the participants in the speech acts and the discourse context have been included (Chesterman, Christophersen, Hawkins, Ionin, Langacker, Lyons, Master, Searle, Strawson). This concept of indefiniteness has been explored through examining some aspects of indefiniteness, including non-uniqueness, non-familiarity, exclusiveness, non-specificity, non-identifiability, and genericity. From the arguments presented, *non-identifiability* can be seen as the most important feature which subsumes *indefiniteness* and *non-specificity* to simplify the structure of the theoretical concepts. *Indefiniteness* and *non-specificity* are placed on a similar feature level to aid the teaching of articles from a pedagogical perspective (Master 1990, 1996). *Genericity* is treated as a separate component in terms of linguistic theory as the concepts embodied in this model are at times quite different from *indefiniteness* and *non-specificity* (Master 1990, 1996). Limited research evidence was presented showing positive indications for the use of Master's binary schema in teaching indefinite article usage patterns.

1.7. Applying Master's schema to the e-learning tool

The following sections give explanations about how Master's binary schema is applied to usage of the indefinite and definite articles in the e-learning tool (Gillian 2015a). These sections discuss how Master's schema groups the major concepts into three major groups: the foundational concepts associated with nouns and the binary schema dealing with indefinite articles (classifying articles according to Master's binary schema) and definite articles (identifying articles according to Master's binary schema). These sections examine, in particular, how these concepts apply to contexts of first usage of nouns in a discourse (first-mention nouns), second usage and beyond of nouns (second-mention-plus nouns), second mention of nouns in a text without first mention of the

entity (second-mention-without-first-mention nouns), pre-modified nouns, post-modified nouns, the verbs *do, play, have,* and *be,* and proper nouns. The following sections will discuss how the patterns of first mention nouns, second mention plus nouns and second mention without first mention nouns have primacy when pre-modified and post-modified nouns are employed by the speaker/writer. These sections also present and discuss how Master's binary schema has been adapted for use in the e-learning tool (Gillian 2015a).

1.7.1. Master's approach to concepts related to nouns

This section discusses how Master's pedagogical approach to the concepts related to nouns have been organised in the e-learning tool in a slightly different way to Master's schema and the rationales for this re-organisation.

Master, in his pedagogical approach, recommended that teachers start the teaching of articles in the area of basic concepts with nouns, particularly the countable/uncountable noun distinction (Master 1988, 1990, 1996, 1997). As part of the countable/uncountable noun distinction, Master advised that students be made aware that some nouns can be uncountable or countable depending on the context (Master 1988: 209). Master then recommended once students had mastered the countable/uncountable noun distinction, the students were then to be taught about the singular /plural feature of countable nouns as a subset of the countable noun distinction (Master 1990: 469–470). Master stated in his binary schema that the countable/uncountable noun distinction and the singular/plural feature are elements that can be placed under the classifying articles section of the binary schema. The researcher mainly agrees with this approach to teaching noun features on a theoretical basis. However, the present research places these features outside the binary schema on the basis of two rationales: 1) these concepts are foundational and the students need to know these concepts before moving onto article concepts; 2) to enable tracking of the participants' growth in these skills separate from article concepts. The e-learning tool (Gillian 2015a) was created with three initial submodules concerning these noun concepts: countable/uncountable nouns, two-way nouns, and the indefinite articles *a* and *an* with singular countable

nouns. These submodules are the first that the students complete in the e-learning tool before moving onto the article concepts.

1.7.2. Master's binary schema

This section discusses how Master's binary schema organises the major teaching concepts for articles and how these teaching principles are catered for in the e-learning tool.

Master divides the major concepts relating to English articles into two major groups in order to simplify the learning process for students regarding this complex grammatical topic in English (Master 1988, 1990, 1996, 1997). Table 4 outlines how these concepts are organised according to Master's schema developed in 1990.

Table 4. Master's binary schema for teaching articles (adapted from Master 1990: 470).

Classification (a, no article)	**Identification (the)**
count/noncount	
first mention	Subsequent mention
	Ranking adjectives
	Shared knowledge
Defining post-modification	Limiting post-modification
Partitive *of*-phrase	Descriptive *of*-phrase
Intentional vagueness	
General Characteristics	
Existential *there* and *it*	
	Generic *the*
	Proper nouns (no article and *the*)
Idiomatic phrases	Idiomatic phrases

The e-learning tool (Gillian 2015a) includes the concepts of count/noncount, first mention, and subsequent mention under the headings of countable/uncountable nouns, first-time-mention nouns, and second-time-mention nouns, respectively. Also included in the e-learning tool are ranking adjectives, shared knowledge, and proper nouns under the headings of special second time nouns 1, special second time nouns 2, and proper nouns, respectively. Master provides further specification of ranking adjectives in his later work (Master 1996). The e-learning tool (Gillian 2015a) follows this later specification of ranking adjectives (Master 1996: 221) as superlative adjectives (e.g. *the <u>best</u> meal*), sequence adjectives (e.g. *the <u>first</u> book*), and unique adjectives (e.g. *the <u>only</u> woman*) and places them within the submodule special second-time-mention nouns 1. Master also presents further details of shared knowledge in his later article (Master 1996). The e-learning tool (Gillian 2015a) also follows this later specification of shared

knowledge (Master 1996: 222–223) as universal knowledge i.e. description of features in the universe most people can agree upon such as *the sun*; regional/local knowledge i.e. "geographical aspects that every person in a certain region or location can identify" (Master 1996: 222); and immediate knowledge i.e. "features that every person in a room would be able to identify" (Master 1996: 223). These concepts are contained in the special second-time-mention nouns 2. Defining post-modification, or in other words, where complex adjectival phrases are placed after the noun in order to help define the noun, are catered for in the e-learning tool, as in example (65):

(65) *Houdini was a man who could open any lock.*

(Master 1990: 473)

Example (65) provides a definition of who Houdini was by linking the noun *man* to the name *Houdini* through the agency of the copular verb *be*. The noun *man* is post-modified with the relative clause *who could open any lock.* Defining post-modification is catered for in the submodules *have* or *be* with nouns and describing words after nouns. Limiting post-modification differs from defining post-modification in that the information in the complex adjectival phrase specifies the noun, as in example (66):

(66) *The water in this glass is dirty.*

(Master 1990: 472)

Master names this specification to be a limiting of the noun and thus this limiting of the noun is identifying the noun (Master 1990: 472). The e-learning tool covers the topic of limiting post-modification in the describing words after nouns submodule. Partitive *of*-phrases i.e. "the headnoun of the of-phrase represents a portion, part (hence the term *partition),* or measure of the object of the preposition *of* (e.g., *a cup of coffee*)" (Master 1990: 473) are catered for in the first-time-mention nouns and the describing words after nouns submodules. Descriptive *of*-phrases where the word or phrase after the preposition *of* describe the noun before the preposition are placed in the identifying section of the schema as these phrases often function "to identify it because there is usually only one" noun only (Master 1990: 473). These descriptive *of*-phrases are covered in the describing words after nouns, political nouns, geographical nouns, and cultural nouns submodules.

Intentional vagueness, according to Master (1990), is the use of descriptive *of*-phrases in advanced scientific texts. This concept is not included in Master's (1988,

1990) journal articles related to specific pedagogical techniques for teaching articles and is therefore not included in the e-learning tool (Gillian 2015a).

General characteristics refers to the description of features that are often associated with the verb *have* (Master 1990: 474) and thus are included in the *have* and *be* with nouns submodule.

The use of existential *there* and *it* occurs with classifying nouns in examples such as example (68) and example (68):

(67) *There is a book on the table.*

(68) *It's a boy.*

(Master 1990: 474)

Examples of existential *there* and *it* have been included in the first-time-mention nouns submodule and the *have* and *be* with nouns submodule.

Generic *the* is most often associated with giving formal definitions (Master 1996: 218); and therefore, examples of this usage are included in the *have* or *be* with nouns submodule.

Proper nouns refer to the use of personal names to refer to people, animals or objects or specific name to refer to companies. The e-learning tool (Gillian 2015a) follows Master's binary schema as treating them as a special case of identifying nouns and this concept is catered for in the proper names submodules.

Idiomatic phrases such as *in case of fire* or *in the case of fire* can be either classifying or identifying according to Master (1990). Thus, Master (1990) argues that they do not fit in easily to the binary schema. Due to this difficulty and the fact that this concept is not included in Master's (1988, 1990) journal articles related to specific pedagogical techniques for teaching articles, these concepts are not included in the e-learning tool (Gillian 2015a).

1.7.3. Organisation of the modules in the e-learning tool

As a result of the organisational structure outlined in sections 1.7.1. and 1.7.2. , the e-learning tool (Gillian 2015a) contained the teaching structure for nouns and articles presented in Table 5:

Table 5. Noun and article concept groupings.

Category	Test submodules
Noun concepts	countable/uncountable nouns two-way nouns *a* or *an* with nouns
Classifying concepts	first-time-mention nouns *have* and *be* with nouns sports nouns
Identifying concepts	definite article with nouns second-time-mention nouns *do* with nouns *play* with nouns describing words before nouns describing words after nouns special second time nouns 1 special second time nouns 2 political nouns geographical nouns cultural nouns proper names

As stated in section 1.7.2. , the e-learning tool (Gillian 2015a) was organised to present the concepts in the assessment and teaching stages according to Master's binary schema. However, as noted in section 1.7.1. , the noun concepts were presented in the same order as specified in Master's binary schema but were separated out from the classification element of the schema as basic concepts that were worthwhile to track in terms of participant development.

1.7.4. Description of individual submodules in the e-learning tool

The following sections discuss the characteristics of the major individual submodules in terms of Master's binary schema. Table 6 presents the individual submodules in the e-learning tool (Gillian 2015a) and the noun and article concepts covered in each submodule.

Table 6. E-learning tool and concepts covered from Master's binary schema.

Individual Submodule	concepts covered
countable/uncountable nouns	the difference between nouns that can be single or plural and those that cannot such as abstract nouns (e.g. *information*) and mass nouns (e.g. *macaroni*)
two way nouns	nouns such as *hair* that can be countable (e.g. *There are 2 hairs in my soup)* or uncountable (e.g. *She has blond hair*) depending on the context

Individual Submodule	concepts covered
a or *an* with nouns	the use of *a* or *an* with single, countable nouns depending on whether the nouns start with a consonant sound or vowel sound
first-time-mention nouns	nouns said or written for the first time in discourse and/or a text
have and *be* with nouns	the use of the verb *have* to associate characteristics with nouns and the use of the verb *be* to define nouns
sports nouns	the use of names of sports such as *football* or *archery*
definite article with nouns	the use of *the* with nouns regardless of whether they are single, countable; plural, countable; two-way; or uncountable
second-time-mention nouns	nouns said or written after the first time in discourse and/or a text
do with nouns	the use the verb *do* with: singular and plural countable nouns, uncountable nouns, and verbs of action
play with nouns	the use of the verb *play* with musical instruments and sports
describing words before nouns	simple adjectives preceding the noun that can either classify or identify the noun
describing words after nouns	complex adjectival phrases following the noun that can either classify or identify the noun
special second-time-mention nouns 1	superlative adjectives, sequence adjectives, and unique adjectives
special second-time-mention nouns 2	shared knowledge – universal, regional/local, immediate
political nouns	nouns related to politics including continents, countries, states, cities, and government departments
geographical nouns	nouns related to geography including rivers, lakes, seas, oceans, islands, mountains, deserts, and canals
cultural nouns	nouns related to culture including holidays, streets names, university departments, groups of peoples such as *the Poles,* and languages
proper names	names of people and companies

1.7.4.1. **First-mention nouns**

A first-time mention noun, or first-mention noun, can be treated as [+classified] i.e. [-definite] and [+specific] in discourse as the speaker/writer may be uncertain if the entity first referred to in the text is definitely known by the hearer/reader (see sections 1.6.8.1. and 1.6.9. for more discussion of this point). While the e-learning tool will employ Master's binary schema for teaching articles, the e-learning tool will present first-mention nouns as nouns that are [-definite] and [+specific] as the speaker/writer may not be sure that the hearer/reader is aware of which specific entities are being referred to in the dis-

course when they are first mentioned by the speaker/hearer (see sections 1.5.5. 1.5.4. and 1.6.9. for more discussion of this point).

1.7.4.2. **Second-mention-plus nouns**

Second-mention-plus nouns can be treated as [+identified] i.e. [+definite] and [+specific] as they have been identified by the participants in the discourse through prior mention (see sections 1.5.5. 1.5.4. and 1.5.9. for more discussion of this point). As the entities referred to by these nouns have already been mentioned in the discourse, the speaker/writer and hearer/reader share the same knowledge about these referent nouns (Ekiert 2007; Langacker 1991; Master 1988, 1996; Huong 2005). The context of second-mention-plus nouns also includes indirect reference due to scope of predication and prominence (Langacker 1991); thus, in example (41) where definite article *the* is employed with the noun *driver* because the noun *taxi* has the noun *driver* within its scope of predication. Thus, the definite article *the* is employed as an instance of second-time-mention even though the noun *driver* has not been directly mentioned in the discourse before.

1.7.4.3. **Second-mention-without-first-mention nouns**

A noun can be treated as [+identified] i.e. [+definite] and [+specific] when mentioned for the first time in discourse and require the definite article *the* rather than the indefinite article in certain contexts (Master 1988, 1996). These contexts are significant when certain types of adjectives are placed before the noun phrase or prominence and/or shared knowledge between the speaker/writer and hearer/reader obviates the requirements for first mention nouns (see section 1.7.1. for more details). These nouns are often referred to as second-mention-without-first-mention (SMWFM) nouns (Master 1988, 1996). These nouns and their specific contexts have not been examined in such detail in pedagogical research to date as will be undertaken in the current research.

The adjective types have been referred to as ranking adjectives (Frank 1972; Master 1988, 1996). There are three types of ranking adjectives. The first are *superla-*

tive adjectives, which represent "the most extreme member of a group, identifying the noun through its unique position at the top (or bottom) of a hierarchy" (Master 1996: 221). Some examples of *superlative adjectives* are: *the smallest*, *the most beautiful*, and *the friendliest*. The second type are *sequence adjectives* which refer to "an object's place in a sequence, identifying the noun through its position relative to those that come before or after it" (Master 1996: 221). Examples of *sequence adjectives* include: *the first*, *the thirty third*, *the next*, and *the last*. The third type are *unique adjectives*; these adjectives do not refer to scales or hierarchies; instead, "they identify nouns of which there is only one example" (Master 1996: 221). *Unique adjectives* are the largest group of these types and include: *the same*, *the only*, and *the principal*. All three of these types of adjectives when combined with a noun or noun phrase create a [+definite] and [+specific] context and require the definite article *the*, regardless of when they are first or second mentioned in the discourse.

Prominence is an area that has not been examined in detail in article research, particularly as it applies to teaching the use of the definite article without first mention of the noun (Master 1988, 1990). Prominence can affect the usage of articles; however, as it is expressed as an assumption made by the speaker in regard to the hearer's knowledge; and thus, ESL learners can find it a slippery and elusive concept to understand (see section 1.6.8.1. for more discussion of this point).

Shared knowledge has been acknowledged as one of the problematic contexts for ESL learners to master when learning English articles and SMWFM nouns (Master 1988, 1996). Shared knowledge can change from context to context and many ESL learners find this concept to be seemingly arbitrary and without rules and patterns (Master 1988, 1996). Shared knowledge refers to the idea that if the speaker/writer assumes the hearer/reader knows the referent being discussed, then the referent is [+identified] and can be employed with the definite article the without reference to first-time mention (see section 1.7.1. for more details). Shared knowledge can be categorised into three types: universal, regional/local, and immediate (Master 1996). Universal shared knowledge refers to "aspects of the universe that every person on the planet can automatically identify, including *the universe*, *the sun*, *the moon*, *the earth*, *the sky*, and *the ground*" (Master 1996: 222). This knowledge is often culturally dependent e.g. *the moon* is regarded in many cultures as being unique and can vary depending on the speaker's/writer's and hearer's/reader's point of view. For example, a speaker/writer

who is an astronomer may not regard the moon of the earth as unique as they are aware of many other moons in the galaxy; and as a result, do not employ articles as the earth's moon is not unique. Regional/local shared knowledge may represent "geographical aspects that every person in a certain region or location can identify" (Master 1996: 222). Words such as *the river*, *the beach*, *the mountains*, *the capital*, and *the desert* can describe geographical features at a regional level that the speaker/writer assumes the hearer/reader to know about (Master 1996: 222). Words such as *the lake* and *the park* can describe geographical features at a local level that the speaker/writer assumes the hearer/reader to know about (Master 1996: 222). Again, the usage of the shared knowledge at a local/regional level depends on the points of view of the speaker/writer and hearer/reader and any particular speaker/writer may decide for any given context whether this type of shared knowledge applies or does not apply. Immediate shared knowledge can refer to "features that every person in a room would be able to identify, including *the ceiling*, *the floor*, *the door*, *the window*, *the light switch*, *the black-board*, *the telephone*, and *the refrigerator*" (Master 1996: 223). Immediate shared knowledge, depending on the context, can be straightforward in that the entity that is [+identified] for the speaker/writer and hearer/reader is referred to by one noun or noun phrase and is often a concrete object that is in the immediate view of the participants in the discourse. However, scope of predication (see section 1.5.4. for further discussion of this concept) may affect this immediate shared knowledge and makes it one of the one of the most challenging feature of shared knowledge. The following example from Master (1988) illustrates this:

(69) *I was driving home yesterday when the radiator burst.*

(Master 1988: 211)

In example (69), the primary entity *the car* is not directly referred to, but is indirectly referred to by the verb *driving* (i.e. some type of vehicle is associated with this verb) and the noun *radiator* (i.e. the speaker/writer assumes the hearer/reader knows that radiators can be parts of cars through scope of predication and shared knowledge). Thus, the speaker/writer is presupposing more information on the part of the hearer/reader (Master 1988) and the hearer/reader has to infer the [+identified] nature of the noun radiator from their own shared knowledge and scope of predication. Thus, ESL learners can find this aspect of shared knowledge to be very difficult to learn as the [+identified] nature of the entity must be derived from a number of indirect referents in the discourse.

1.7.4.4. **Pre-modified nouns**

First-mention nouns, second-mention-plus nouns, and second-mention-without-first-mention nouns all have a number of effects on article choice with pre-modified nouns in English (Master 1988, 1996). These pre-modified nouns and the effects of these discourse features and their specific contexts have not been examined in such detail in pedagogical research to date as will be undertaken in the current research.

Pre-modification of nouns refers to the words in English that precede the noun or noun phrase (Master 1988) (see section 1.5.8.1. for more discussion of *anaphoric reference*; the foundational concept underlying pre-modification). These words can include quantifiers such as *both, all,* and *twice*, cardinal numbers (e.g. *the one god),* ordinal numbers (e.g. *the forty seventh step),* adjectives, and possessives such as *my*, *mother's,* and *kid's*). Some types of adjectives, quantifiers and ordinal numbers and their effects on article choice have already been discussed in section 1.5.4. Pre-modification of nouns has effects on article choice that can be straightforward and some of which are subtle and indirect (Ekiert 2007; Master 1988; Król-Markefka 2010; Master 1996; Huong 2005). Firstly, ESL students need to be taught that adjectives start with a vowel sound (Master 1990, 1996; Quirk et al. 1985) or with a consonant sound (Master 1990, 1996; Quirk et al. 1985). This pattern is straightforward and ESL students need to be informed about this pattern as, like nouns, the first sound of certain types of adjective influence the usage of the indefinite article *a* or *an.*

Adjectives that are descriptive, not superlative, sequential, or unique, interact with first-mention nouns (see section 1.7.1. for more details), second-mention-plus nouns (see section 1.7.4.2. for further discussion) and SMWFM nouns (see section 1.7.4.3. for more information) to produce implied effects on article choice that must be deduced by the hearer/reader from the context (Ekiert 2007; Master 1988; Król-Markefka 2010; Master 1996; Huong 2005). The following examples from Master (1988: 212) illustrate these effects:

(70) *Your battery needs water.*

(71) *Your battery needs distilled water.*

(72) *Your battery needs the distilled water.*

(73) *I spilled (some) water on the table. The water [i.e., which I spilled] ruined the finish.*

In example (70), the noun *water* can be described as uncountable, indefinite, and first mention; thus, no article is employed. Example (71) may also be described in the same way as example (71) even though the noun water is described by the adjective *distilled* if the speaker/writer decides that the context of the discourse warrants that the entity of *distilled water* is a topic that is introduced for the first time. However, the usage of the article *the* in example (72) may also be appropriate if the speaker/writer decides that due to the context, the topic *distilled water* could be a SMWFM noun to distinguish it from other types of water. The noun in the second sentence in example (73) is uncountable like example (70); however, the article *the* is used by the speaker/writer in example (73) as the speaker/writer wishes to signal the hearer/reader that they are referring to [+identified] water that was mentioned previously, unlike example (70) where *water* is indefinite and first mention.

A special pattern of pre-modification that is usually associated with [+identified] nouns is the Saxon genitive employing the possessive *'s* to link two nouns to indicate possession. The possessive indicates to the reader/hearer that the second noun belongs to the first noun, as exemplified by example (74):

(74) *the committee's chairman*

(Kreyer 2003: 171)

The Saxon genitive can be employed with the indefinite article but usually it is employed with the definite article as these nouns are usually regarded as [+identified] by the speaker/writer and hearer/reader (Kreyer 2003).

Thus, with most types of pre-modification, the ESL learner needs to be made aware that pre-modified nouns, especially when the pre-modification of the nouns is consummated with descriptive adjectives, are not always specific, necessitating the definite article. ESL learners need to learn that article usage with nouns pre-modified by descriptive adjectives should be checked first in terms of the context, particularly in regard to first-mention, second-mention-plus, and second-mention-without-first-mention patterns.

1.7.4.5. **Post-modified nouns**

Like pre-modification of nouns, first-mention nouns, second-mention-plus nouns, and second-mention-without-first-mention nouns have a number of effects on article choice with post-modified nouns (Master 1988, 1996). These post-modified nouns and the effects of these discourse features and their specific contexts have not been examined in such detail in pedagogical research to date as will be undertaken in the current research. Post-modification of nouns in English includes descriptive words or more often descriptive phrases that come after a noun or noun phrase (Master 1988) (see section 1.5.8.1. for more discussion of *cataphoric reference*; the foundational concept underlying pre-modification). Post-modification includes: relative clauses with or without a relative pronoun, relative clauses without a relative pronoun and introduced by verbs ending in the present participle (e.g. *ing*) or the past participle (e.g. *ed*), prepositional phrases, and the Saxon genitive (Kreyer 2003).

Like pre-modification, post-modification interacts with first-mention nouns (see section 1.7.1. for more details), second-mention-plus nouns (see section 1.7.4.2. for further discussion) and SMWFM nouns (see section 1.7.4.3. for more information) to produce implied effects on article choice that must be deduced by the hearer/reader from the context. Relative clauses such as in example (75) from Master (1988: 213) often provide complex descriptions that make the noun [+identified] and can follow the patterns of second mention plus nouns and SMWFM nouns.

(75) *The man who lives next door is a doctor.*

Example (76) shows how the descriptive phrase about the topic *man* can be introduced by the present participle.

(76) *The man living next door is a doctor.*

However, example (77) shows that even though a complex descriptive phrase about the entity *woman* follows it while being introduced by the past participle, the indefinite article *a* can be employed when the speaker/hearer decides to employ the first mention nouns pattern.

(77) *A woman caught speeding was fined 100 dollars.*

(78) *She felt the spasms under the skin.*

(79) *She felt spasms under the skin.*

Example (78) shows the use of the definite article with the plural countable word *spasms* and introduced through the preposition *under* as the speaker/writer wishes to indicate to the hearer/reader that the spasms are specific and definite and have already been referred to. However, equally, the speaker/writer may employ either example (78) or (79) when the topic of *spasms* first appears in the discourse. Example (78) may occur as a SMWFM noun as the speaker/writer feels sure that the hearer/reader knows what specific spasms are referred to. Conversely, example (79) is valid in the context where the speaker/writer is uncertain that the hearer/reader knows which spasms are being referred to when the topic is introduced for the first time. The Saxon genitive when it employs the preposition *of* to indicate that the first noun is possessed by the second noun also follows these patterns, as illustrated in example (80):

(80) *the chairman of the committee*

(Kreyer 2003: 171)

However, this form of the Saxon genitive, often in association with the possessive marker, is employed in greater numbers than the other form of the Saxon genitive with the indefinite article to indicate first mention, as shown in the following example:

(81) *A friend of Ann's was found drunk on the doorstep. The friend of Ann's was known to be unhappy.*

In example (81), the speaker/writer chose to use the indefinite article to introduce the topic *friend of Ann's* for the first time and then use the definite article *the* in the second sentence as the topic has been already referred to. Thus, like pre-modified noun phrases, ESL learner needs to know that the patterns of first-time mention, second-time-plus mention, and SMWFM apply to post-modification of nouns.

1.7.4.6. **The verbs *do* and *play* with the definite article**

The verb *to do* is often associated with distinct nouns that refer to specific actions (see section 1.5.5. and example (27) for more details). In these contexts, the verb *do* and plural countable nouns, the definite article *the* is the appropriate choice of article as the plural countable noun is [+identifiable] when it refers to the action through scope of predication (see section 1.5.4.2. 1.5.5. and example (27) for more details).

The verb *to play* is often used in conjunction with musical instruments. The discourse context of the verb *play* and the musical instrument as the object of the verb form a context that is [+identifiable] to the speaker/writer and hearer/reader (see section 1.5.5. and example (27) for more details).

1.7.4.7. **The verbs *do* and *play* with the indefinite article and no article**

The verb *to do* can be employed with singular countable nouns that stand for specific actions (see sections 1.5.5. and example (27) for more details). In these contexts, the indefinite article *a* is the appropriate choice of article as the singular countable noun is [+classified] when it refers to the action through scope of predication (see section 1.5.4.2. 1.5.5. and example (26) for more details).

The verb *to play* can be used together with sports with no article. The discourse context of the verb *play* and the sports noun as the object of the verb form a context that is [+classified] to the speaker/writer and hearer/reader (see section 1.5.5. and example (30) for more details).

1.7.4.8. **The verbs *have* and *be* with the indefinite article and no article**

The verb *to be* is used in contexts of definitions to associate one noun with the features of another noun (see section 1.5.5. and example (24) for more discussion). The verb *to be* is often employed with generic uses of articles to convey the concept of genericity in definitions of nouns (see section 1.6.8.1. , 1.6.8.2. , and 1.6.8.3. and example (50) for more details). The indefinite article is the appropriate choice when the noun to the right of the verb is singular and countable (see example (24) for more details). However, when the noun to the right of the verb *be* is a plural countable, as in example (82), or uncountable, as in example (83), then no article is the appropriate choice.

(82) *Sharks are predators.*

(83) *Books are information.*

The verb *to have* is employed to link general descriptive features to the noun, (see section 1.5.5. and example (25) for more discussion). As with the verb *be,* the in-

definite article is the appropriate choice when the noun to the right of the verb *have* is singular and countable (see example (25) for more details). Again, as with the verb *to be, t*he verb *to have* is often employed with generic uses of articles to convey the concept of genericity in descriptions of nouns (see section 1.6.8. for more details). Like the verb *be,* no article is the appropriate choice when used descriptively with plural countable nouns, as in examples (84) and (85):

(84) *Humans have heads.*

(85) *Books have information.*

Example (85) shows that the verb *have* and an uncountable noun leads to the zero article being the appropriate choice.

1.7.5. Proper Nouns

For pedagogical purposes, *proper nouns* (see section 1.4. for more discussion) can be divided into two groups according to article usage (Master 1988; Huong 2005); specifically, those that do not require the definite article *the* and those that do. The first group consists of names of living and non-living objects, cultural events, transport and communication, day's time, seasons, meals, diseases, sports, and some types of political/geographical features. The second group consists of some geographical names (e.g. canals, deserts, oceans, and seas), public institutions (e.g. *the Louvre*), planes and ships (e.g. *the Titanic*), newspapers/websites (e.g. *the New York Times, the Guardian*), and groups of political/geographical features such as mountains, islands, and lakes, and cultural features such as nationalities. However, this division requires some types of proper nouns such as political and geographical features to be split, possibly making it more difficult for students to deal with the article usage patterns associated with these nouns. Instead, the e-learning tool (Gillian 2015a) follows the specification that is provided in Master's (1996) article on pedagogical techniques for English articles. There, four major groups of proper nouns are listed: political nouns, geographical nouns, cultural nouns, and proper names.

1.7.5.1. **Political nouns**

Political nouns are defined as nouns related to politics including continents, countries, states, cities, and government departments (Master 1996: 226). Political nouns are further organised in terms of those that require no article such as single countries e.g. *Poland* and those that require the definite article *the* e.g. *the continent of Africa.* This pattern is presented by Master (1996) as the distinction between *names* and *titles* when referring to *proper names*. This distinction of *titles* is a pattern is marked in a regular manner by the definite article *the* and the preposition *of* for political nouns (Master 1996: 226).

1.7.5.2. **Geographical nouns**

Geographical nouns are presented as nouns related to geography including rivers, lakes, seas, oceans, islands, mountains, deserts, and canals (Master 1996: 226). Geographical nouns are further organised in terms of those that have a singular/plural distinction such as islands, mountains, and lakes and those that require the article *the* with the singular form including oceans, seas, rivers, canals, and deserts (Master 1996: 226).

1.7.5.3. **Cultural nouns**

Cultural nouns are defined as nouns related to culture including holidays, streets names, university departments, groups of peoples such as *the Poles,* and languages (Master 1996: 226). Cultural nouns are further organised in terms of those that require no article such as holidays e.g. *Christmas* and those that require the definite article *the* e.g. *the fourth of July.* This pattern is presented by Master (1996) as the distinction between *names* and *titles* when referring to *proper names*. This distinction of *titles* is a pattern is marked in a regular manner by the definite article *the* and the preposition *of* for cultural nouns (Master 1996: 226).

1.7.5.4. **Proper names**

Proper names are defined as the names of people, animals, objects, and company names (Master 1990: 473). These noun types are most often marked with no article in discourse and texts (Master 1990: 473).

1.8. Types of English articles

As noted in earlier sections, English articles are used in conjunction with various types of nouns to indicate semantic/pragmatic concepts such as specificity, definiteness, and genericity. Therefore, in this discussion, the types of nouns and these concepts were discussed before discussing the types of articles in English. Now, attention can be turned to the articles themselves.

There are three recognised types of English articles that learners of English need to learn how to use appropriately according to the context. The following sections will describe briefly the main features of each type of article in English.

1.8.1. The definite article *the*

The definite article in English is represented by the word *the* (Ekiert 2007; Król-Markefka 2010; Langacker 1991; Master 1988, 1990, 1996; Quirk et al. 1985; Huong 2005). The definite article is employed with common nouns that are countable singular and plural nouns (see sections 1.4. and 1.4.1. for more discussion), uncountable nouns (see sections 1.4. and 1.4.1. for more discussion), and two-way nouns when they are used as either countable singular or plural nouns or uncountable nouns (see sections 1.4. and 1.4.1. for more discussion).

When the definite article *the* is employed with common nouns, it has the function of identifying the nouns for both the speaker/writer and hearer/reader in discourse (see section 1.5.4. for discussion of the theoretical concept of identification). This function is deployed in a number of contexts in discourses; namely, second-time-mention-plus nouns (see section 1.7.4.2. for more discussion of this context), SMWFM nouns

(see section 1.7.4.3. for more discussion of this context), pre-modified nouns (see section 1.7.4.4. for more discussion of this context), post-modified nouns (see section 1.7.4.5. for more discussion of this context), and the verbs *do* and *play* (see sections 1.7.4.6. and 1.7.4.7. for more discussion of this context).

On some rare occasions, the article *the* can be employed in a generic function (see section 1.6.8.2. for more details of this function).

1.8.2. The indefinite article

In English, the indefinite article in English has two forms: *a* and *an* (Ekiert 2007; Król-Markefka 2010; Langacker 1991; Master 1988, 1990, 1996; Quirk et al. 1985; Huong 2005). The indefinite article is employed with common nouns that are countable singular nouns (see sections 1.4. for more discussion). The indefinite form *a* is used with countable singular nouns that begin with a consonant sound (see section 1.4. for more discussion) and when a countable singular noun is preceded by any descriptive word or a descriptive phrase where the first word in that phrase begins with a consonant sound (see section 1.7.4.4. for more details). The indefinite form *an* is used with countable singular nouns that begin with a vowel sound (see section 1.4. for more discussion) and when a countable singular noun is preceded by a descriptive word or a descriptive phrase where the first word in that phrase begins with a vowel sound (see section 1.7.4.4. for more details).

When the indefinite article is utilised with countable singular nouns, it takes on the function of classifying the nouns for both the speaker/writer and hearer/reader in discourse (see section 1.6.9. for discussion of the theoretical concept of classification). This function is deployed in a number of contexts in discourses; namely, first mention nouns (see section 1.7.4.1. for more discussion of this context), pre-modified nouns (see section 1.7.4.4. for more discussion of this context), and post-modified nouns (see section 1.7.4.5. for more discussion of this context).

Often, the indefinite article can be employed in a generic function (see section 1.6.8.1. for more details of this function). Also, the indefinite article can be utilised in conjunction with countable singular nouns and the verbs *do* and *play* (see section

1.7.4.7. for more discussion of this context); and additionally, the verbs *be* and *have* (see section 1.7.4.8. for more discussion of this context).

1.8.3. No article

In English, the lack of an article before a noun can represent a number of functions in a variety of contexts (Ekiert 2007; Król-Markefka 2010; Langacker 1991; Master 1988, 1990, 1996; Quirk et al. 1985; Huong 2005). As a number of these contexts are recommended to be taught to advanced learners of English; in particular, the difference between the zero and null article (see section 1.6.8.4. for more discussion of this difference) and the subjects of this study will be intermediate learners of English (see section 3.3.4. for more details), not all aspects of the use of no articles with nouns will be covered by this research.

The contexts of no article usage with [+identified] nouns that will be covered by the research will be with proper nouns (see section 1.7.5. for more details), first mention nouns (see section 1.7.1. for more discussion of this context), pre-modified plural countable and uncountable nouns (see section 1.7.4.4. for more discussion of this context), post-modified plural countable and uncountable nouns (see section 1.7.4.5. for more discussion of this context), the verbs *do* and *play* (see section 1.7.4.7. for more discussion of this context), and the verbs *be* and *have* (see section 1.7.4.8. for more discussion of this context).

No article with generic nouns can be utilised in a generic function, particularly when providing definitions or giving descriptions (see section 1.6.8.3. for more details of this function). This latter aspect will addressed in the e-learning tool through the verbs *be* and *have* (see section 1.7.4.8. for more discussion of this context).

Chapter 2: English article teaching approaches

2.1. Outline

This chapter will present and discuss the two major English article teaching approaches that were investigated in this research. The first approach is the e-learning tool (Gillian 2015a) designed by the researcher and the second approach will be a traditional teaching procedure employing pen and paper and utilising traditional grammar concepts.

The first approach will be presented in terms of the pedagogical and linguistic principles underpinning the e-learning tool. The first approach will commence with a definition and discussion of game based learning (GBL), and then proceed to a discussion of specific pedagogical elements in the game design, including interaction theory, focus on form, comprehensible input, the output hypothesis, and feedback. Next, a discussion of a GBL model, the Game Rules scEnario Model (GREM) (Zarraonandia et al. 2015), will be offered. Finally, a detailed description of the e-learning tool (Gillian 2015a) will be given and the way in which specific pedagogical and linguistic elements and the GREM model principles were incorporated into the design and programming of the e-learning tool will be discussed.

The second approach, a traditional teaching procedure employing pen and paper, will be presented in terms of the essential concepts and research evidence. The second approach will be described and discussed in two sections: an introductory handout and usage handouts plus associated exercises. Each of these two sections will be discussed in terms of strengths and weaknesses and in terms of rationales from Quirk et al.'s usage classification (Quirk et al. 1985).

2.2. Definition of Game Based Learning

Game based learning (GBL) is a learning approach where learning and interactive entertainment are combined to create a fun and engaging experience for students in learning contexts designed by teachers (Liang et al. 2010; Prensky 2005). There are three major aims of GBL. The first aim is to develop teaching skills for difficult subjects that are more enjoyable and effective through employing educational games (Prensky 2005; Van Eck 2006; Wouters et al. 2011). Enjoyment is developed by means of storylines, characters and gameplay to try to ensure the students' level of interest and motivation remains high (Wouters et al. 2011). To achieve this, the storylines must be engaging and stimulating and the game play must be rewarding and challenging for the users (Wouters et al. 2011). The second aim of GBL is to facilitate educational game design to aid more efficient and less costly design and production (Zarraonandia et al. 2012). The third aim of GBL is to strive to advance the students' self-directed learning skills via the player of the educational game acquiring the skills of an independent learner (Obikwelu et al. 2012). One major output of GBL is to combine and integrate effective learning theory and principles with fun and exciting game environments to create positive, quality educational outcomes (Liang et al. 2010). As seen in earlier sections, the article system of English is complex; and therefore, teaching these difficult structures to teenage ESL learners requires novel, motivating, and effective techniques to develop the learners' skills in this area (Król-Markefka 2010). By teaching articles using a GBL approach, the students' interest in learning is stimulated and sustained through the game being interactive, the support of explicit feedback, and the excitement of game play to the players (Wouters et al. 2011).

However, GBL is a developing and evolving paradigm with a diverse range of theoretical perspectives and techniques (Obikwelu et al. 2012). As this research has as its target group Polish learners of English, other teaching perspectives need to be examined to provide additional theoretical and evidentiary support for this paradigm. Pertinent to this topic is that as the English article system is particularly complex, ESL learners will need explicit and structured assistance to develop a better understanding of these concepts (Pawlak 2006; Obikwelu et al. 2012). The following sections will examine interaction theory (Long 1983, 1991, 1996) as a theoretical underpinning for the ESL pedagogical elements in the game design. A major practical application of interac-

tion theory, focus on form (Long 1991), will be discussed to provide strong theoretical justification for the selection of one target structure, articles, in the pedagogical intervention in this research. Also, the specific types of feedback and their impact on guiding the learners from an inappropriate answer to an appropriate answer will be considered, as well as how feedback can strengthen the effectiveness of the learning experience in writing needed to aid the effective learning of the target structure. Another major component of this theory, comprehensible input, will be discussed in terms of how input flooding, enhancement and modification and types of feedback can improve the pedagogical elements needed in the game design. The pedagogical elements of the design will be strengthened by examining the acquisition process from the other side by looking at aspects of the output hypothesis (Swain 1985) in terms of student awareness of the target structure and feedback. Also, aspects of one of the major models associated with interaction theory, Vygotsky's socio-cultural theory, will be examined to show how they deepen and strengthen interaction theory. Vygotsky's theory, like interaction theory, postulates that learning is developed through social interaction and that learning and mastery of any structure occurs on a continuum starting with cooperation between teachers and students and ending with students employing the structures individually (Vygotsky 1978). This is achieved through the concept of the Zone of Proximal Development (ZPD), and its principles of explicit concept teaching, scaffolding, chunking of instructions, and the support of visual and auditory feedback (Harker 2002; Obikwelu et al. 2012; Troia and Graham 2002) and how they support and dovetail with GBL. Also, corrective feedback, focusing on different perspectives such as a socio-cultural perspective and GBL perspective, and different types of feedback such as focused and unfocused, direct and indirect, explicit and implicit, and immediate and delayed will be presented and discussed, particularly in terms of the research evidence supporting these perspectives and types.

2.3. Specific pedagogical elements for game design

2.3.1. Interaction theory

Interaction theory (Long 1983, 1996) focuses on modification to the input presented to the learner in order to prevent potential or compensate for current breakdowns in communication and negotiation of meaning between the teacher and student in interactions in order to avert or repair conversational breakdowns. The theory is underpinned by a focus on psycholinguistic processes such as attention and motivation and the social features of the acquisition and use of language (Long 1983, 1996; Pawlak 2006). Through focussing on how the language structures are acquired through the interaction between the teacher and students, the theory focuses on what is actually happening in the classroom when learning occurs (Long 1983, 1996; Pawlak 2006). Associated with interaction theory is the theory of focus on form (Long 1991, 1983, 1996; Doughty and Williams 1998; Pawlak 2006), often seen as the practical application of interaction theory in ESL pedagogical instruction. The next section presents some of the major features of focus on form.

2.3.2. Focus on Form

The focus on form approach, first postulated by Long (1991), is an approach that "overtly draws students' attention to linguistic elements as they arise incidentally in lessons whose overriding focus is on meaning or communication" (Long 1991: 45–46). As this initial definition was too theoretical for practical classroom use, a more operational pedagogical definition was put forward: "focus on form often consists of an occasional shift of attention to linguistic code features – by the teacher and/or one or more students – triggered by perceived problems with comprehension and production" (Long and Robinson 1998: 23). This approach has similarities to meaning-based teaching methods in that a syllabus is used to plan the target structures to be taught and uses language to convey those structures. The focus on interaction means that any target structure taught

must be delivered while trying to present a communicative message (Long 1983; Long and Robinson 1998; Long 1991).

Also, the focus on form approach highlights the needs to analyse the student's strengths and weaknesses to pinpoint target structures that require remediation (Long 1983, 1991; Long and Robinson 1998; Pawlak 2006). As discussed in sections 1.2.1. 1.2. and 1.2.2. the target structure of English articles is an appropriate grammatical structure for remediation as these structures are frequent and complex in their usage and Polish ESL learners find them more complex to learn as these forms do not exist in Slavic languages such as Polish and Russian.

To extend this analysis of the appropriateness of remediating the target structure of articles, Ellis and Pawlak's criteria for determining the difficulty of grammatical structures should be employed to provide a more fine-grained pedagogical suitability analysis. The criteria in Table 7 can indicate the intrinsic difficulties of a target structure in terms of its "formal and functional complexity, reliability, scope, the need to use technical terminology in explaining it, and the degree of its similarity to the learners" (Pawlak 2006: 339).

Table 7. Criteria for determining the difficulty of grammatical structures as explicit knowledge (adapted from Pawlak 2006: 340).

Criteria	Definition	Example
1. Formal complexity	The extent to which the complexity structure involves just a single or many elements.	Plural '-s' is formally simple; relative clauses involve many elements.
2. Functional complexity	The extent to which the meanings realized by a structure are transparent	Plural '-s' is transparent; articles are opaque.
3. Reliability	The extent to which the rule has exceptions.	Third person '-s' is very reliable; the rule for periphrastic genitives has many exceptions.
4. Scope	The extent to which a rule has a broad or narrow coverage.	The present simple tense has broad scope; the future perfect tense has narrow scope.
5. Meta-language	The extent to which the rule can be provided simply with minimum meta-language.	Plural '-s' is simple; reflexive pronouns are more difficult; subject-verb inversion is even more difficult.
6. L1/L2 contrast	A feature that corresponds to an L1 feature is easier than a feature that does not.	For French learners of English, the position of adverbs in sentences is difficult.

In analysing articles against these criteria, the article system of English has lower formal complexity, consisting of a few elements i.e. article choice - *a, an, the*, or *no article*, plus nouns. The functional complexity of this system is high as the meanings real-

ised by these structures are opaque. The reliability of the article system is quite low as the rules governing articles contain many exceptions; one being the idea of second mention without first mention, as discussed in section 1.7.4.3. and another being the idea of generic *the* and generic zero articles (see sections 1.6.8.2. and 1.6.8.3. for more details). The scope of the article system is quite broad as the rules apply to the use of nouns in a larger range of contexts. The need for meta-language in the explanations can be quite complex in order to explain concepts such as two-way nouns (see sections 1.4.1. and 1.4.2. for more details) specificity (see section 1.5.5. for more details) and genericity (see section 1.6.8. for more details). Finally, there is great contrast between L1 (Polish) and L2 (English) as these target structures do not exist in Polish. In summary, according to this analysis, the teaching of the target structure of English articles to Polish ESL learners is justified as the scope of the system is broad and functional complexity, unreliability, meta-language required, and the L1/L2 contrast are all very high. Only the surface formal complexity of the target structure is low.

Having explored the rationales for remediating these target structures according to the interaction theory and focus on form model, the next sections discuss how the target structures will be remediated; namely, discussing an important element of the focus on form model, comprehensible input, presenting an alternative perspective, the output hypothesis, and aspects of a theory, Vygotsky's socio-cultural theory, which has strong links to interaction theory and a strong evidence base.

2.3.3. Comprehensible input

Long argues that the students need comprehensible input in order to benefit from the learning experience (Long 1983, 1996; Pawlak 2006). Comprehensible input, also known as input-oriented options, structured input techniques, or comprehension-based instruction, is where the students receive specially formulated input that focuses their attention on the target structures which aids their understanding of the structure and its meanings (Long 1996; Ellis 1991; Pawlak 2006). Production is not the main focus; the aim is to encourage the learner to analyse the form and function of the structure and internalise those patterns to form mental constructs about the language structures (Long 1996; Vygotsky 1978; Ellis 1991; Pawlak 2006). This notion of comprehensible input is

based on the earlier work of Krashen, particularly his notion of the input hypothesis (Krashen 1985). Krashen puts forward an extremely strong position on comprehensible input, stating that "comprehensible input is the only causative variable in second language acquisition" (Krashen 1985: 62). However, the research evidence indicates that this ignores the role of incidental comprehension (Pawlak 2006) and that comprehensible input facilitates L2 acquisition but is neither necessary nor sufficient in all contexts for acquisition of target language structures (Pawlak 2006; Ellis 1991; Long 1996; Swain 1985). In relation to the current research, the e-learning tool would present the comprehensible input through giving the users many exemplars of the target structure, articles, by spoken and written inputs in sentences to make it more prominent. The users would demonstrate their comprehension of the structure through use of a keyboard, a mouse, or a touch screen to choose non-verbal choices in the exercises presented in the e-learning tool.

There are different types of comprehensible input discussed in the research literature. The most basic type is input flooding where the learners will become more aware of the target structure if they receive more opportunities in the input provided to them (Doughty and Williams 1998). The rationale behind input flooding is that the perceptual salience of the target structure is increased in order to guide the learner's selective attention towards the target, in turn, increasing comprehension (Doughty and Williams 1998; Pawlak 2006). In relation to the current research in the gameplay module (Gillian 2015a), the users are presented with multiple examples of the English article system without additional texts to explain their usage. This latter point is a major weakness of this type of comprehensible input in that input flooding does not give additional instruction to the learner. Thus, this type of input relies on the student focusing their attention on the input and constructing their own mental representations of the form and function (Doughty and Williams 1998; Pawlak 2006).

A more advanced type of comprehensible input is input enhancement (Sharwood-Smith 1991, 1993). This type is more advanced than input flooding in that the target structures are marked in distinctive ways, including explicit and meta-linguistic instruction, and visual and auditory highlighting of target structures (Sharwood-Smith 1991, 1993; Pawlak 2006). The rationales behind input enhancement are that the learner may become more aware of the target structure due to visual and auditory highlighting and be more likely to construct their own mental representations of the form and func-

tion as a result of the explicit and meta-linguistic instruction (Sharwood-Smith 1991, 1993; Pawlak 2006).

Another advanced type of comprehensible input is input modification (Vygotsky 1978). This type is also more advanced than input flooding in that the input is altered, often during a pedagogical interaction, to ensure that the learner understands the input and perceives the new input in order to compare it to their own output. The major features of input modification are explicit instruction, scaffolding, chunking, and fading. The next sections discuss these major features of input modification.

2.3.3.1. **Explicit Instruction**

Complex target structures such as articles may need comprehensible input in the form of explicit instruction. Explicit instruction means direct and clear instruction of specific target structures where information input is clear and simple with a minimum of meta-linguistic detail and specific feedback on the students' performance (Troia and Graham 2002). Explicit instruction is usually classified as positive evidence in language interactions as it provides appropriate target structures in authentic language contexts to students (Gregg 2001; Pawlak 2006). The target structures are presented to the students along with rules or patterns to explain the usage of the target structures in context (Pawlak 2006). For example, the e-learning tool explicitly highlights that the articles 'a', 'an', and 'the' are associated with 'nouns' and 'nouns' are words that represent people, animals, and things (Gillian 2015a). The language explaining the concepts of *nouns* is clear, simple, and direct in order to aid the students' comprehension of these concepts needed to understand the target structure of articles.

2.3.3.2. **Scaffolding**

Scaffolding can be defined as the assistance provided during a learning task which is individually tailored for students and aids students in accomplishing their learning goals (Dennen 2004) and is a specific teaching strategy that can bridge this gap (Vygotsky 1978; Obikwelu et al. 2012). Supplying scaffolding during teaching of written language,

especially in the area of articles, enables students to complete sentence writing tasks with appropriate articles and assists the students to track their use of articles after the instruction process has been absorbed (Coufal 2002; Gillian 2008; Król-Markefka 2010; Obikwelu et al. 2012; Huong 2005).

2.3.3.3. **Chunking**

The instruction process should include an additional component to assist the students; namely, chunking of instructions. Chunking can be defined as the separation of longer instructions into smaller segments that the students can more easily process (Coufal 2002). Chunking of instructions harmonises well with ZPD through the instructional concept presentation in small segments at diverse levels of difficulty for each student. This type of chunking permits each individual instruction to act as a scaffold that generates an individual ZPD for an individual student (Coufal 2002).

2.3.3.4. **Fading**

Fading is the progressive decrease of scaffolding in learning tasks to enable the student to be independent with tasks (Obikwelu et al. 2012). Fading of scaffolding at the right rate and time is important when teaching as the student's independence in learning is the final goal and additionally, too much or too little assistance can retard the student's progress (van Merrienboer et al. 2003). Fading of assistance is vital for the process of teaching articles as students will need varying support types and levels during the journey to gaining mastery with the skills of English article usage (Master 1997; Pawlak 2006).

2.3.4. Evidence for comprehensible input

The evidence for comprehensible input in terms of explicit instruction is well-developed and extensive, particularly for ESL students learning complex grammatical structures in

writing and speaking. A study conducted by Fogel and Ehri (2000) showed that explicit teaching of concepts was found to be effective when explicit instructions for Standard English (SE) written structures were employed and follow-up practice using those forms was also used. The subjects were African-American students in the third and fourth grades (8 to 9 years of age). The subjects had been reported to produce Black English Vernacular (BEV) features in their written compositions and had not mastered writing Standard English (SE) grammatical structures. The study results demonstrated that explicit teaching and practice of oral and written grammatical structures was more effective in aiding the students to write appropriate SE grammatical forms when compared to implicit pedagogical methods (Fogel and Ehri 2000). Also, explicit teaching of written language concepts has been found to be effective in computer assisted language learning. The author conducted a study using writing prompt software that showed that explicit teaching of the target forms (sentence construction and punctuation) was one of the factors that aided the subjects' written language skills with the target structures (Gillian 2008).

Conversely, ESL teaching of writing has been found to be ineffective when explicit instruction regarding oral language terms has not been included. A study conducted by de la Luz Reyes (1991) looked at sixth grade Hispanic bilingual students and their written language in their first language and English. The study used a whole language teaching model and the author concluded that "mere exposure to standard writing conventions did not improve the students' use of them" (de la Luz Reyes 1991: 291). The results of another study showed that middle school students presenting with limited English proficiency needed their attention "drawn explicitly to English forms and conventions in order for their skills to improve" (Sperling 1996: 15) when writing journal entries containing dialogue. In summary, students from bilingual backgrounds and limited English needed explicit instruction, and not techniques such as input flooding, in the appropriate use of the conventions of written English.

The evidence for comprehensible input in terms of input flooding and input enhancement is encouraging but not conclusive. For input flooding, research into the placement of adverbs has indicated that it aids the development of target structures but not the suppression of inappropriate patterns (Trahey and White 1993). Studies carried out into the effectiveness of input flooding versus input enhancement found that both were equally effective and that complex structures may require more explicit instruction

(White 1998; Williams 1995). In conclusion, while input flooding and enhancement were found to be effective, the type of structure may affect the effectiveness of these strategies and explicit instruction may be most effective with complex structures.

Within the input enhancement area, visual and auditory feedback has been noted to be an effective pedagogical tool, particularly with computer aided learning. Visual and auditory feedback has been found to be an effective teaching tool in a number of educational studies. Feedback that was delivered in visual and auditory modes and was delivered immediately was found to aid the engagement of the students in learning tasks and aid the retention of the information being taught (Beale 2005). Another study employing writing prompt software found that immediate visual and auditory feedback was one of the factors that aided Grade 1 and 2 students' development of written sentence and punctuation skills (Gillian 2008).

Input modification has been found to be of benefit in a wide range of studies in ESL pedagogical instruction. For example, scaffolding techniques were utilised in a study of 113 fifth grade students in the United States in a project to expand skills in writing simple sentences (Bui et al. 2006). The analysis of post-test writing measures, which included percentage of complete sentences and percentage of complicated sentences, showed that the experimental group subjects achieved substantially higher results for the majority of the measures.

Chunking of instructions was found to be an effective teaching technique in a meta-analysis conducted by Swanson et al. (1999). The meta-analysis examined studies that were group and single-subject design focussing on students with learning disabilities and found that smaller number of instructional components predicted larger effect size estimates. More specifically, chunking of instructions was noted in the meta-analysis to be effective in challenging the students, regulating student failure risk, and minimising the instructions when teaching necessitates multiple concepts. However, in contrast, the evidence from GBL research is in its infancy. Researchers have acknowledged the need for chunking when delivering instructions (Alklind Taylor 2013; Bangert-Drowns et al. 1991; Deo 2016; Egenfeldt-Nielsen 2007; Van der Kleij et al. 2015); however, to date, only a handful of experimental studies have examined the effectiveness of chunking as an instructional strategy in GBL (Munyofu et al. 2007; Van der Kleij et al. 2015). Of those, the study conducted by (Munyofu et al. 2007) with 85 subjects assigned to three treatment groups to examine the effects of different chunking

strategies to facilitate achievement of higher order learning objectives found significant differences using ANOVA analyses. The study found that specifically designed chunking strategies aided animated instruction to facilitate higher order learning aims and complex chunking was more effective in decreasing the cognitive load present in an animated instructional environment (Munyofu et al. 2007).

The evidence for fading in ESL teaching of writing is not detailed even though a number of researchers state the students need this process as a step towards independence with understanding and producing appropriate grammatical forms (Bitchener 2012; Doughty and Williams 1998; Krashen 1981, 1985; Long 1996; Long and Robinson 1998; Vygotsky 1978). A recent meta-analysis of scaffolding in teacher-student interaction concluded that fading of scaffolding was important in teaching; however, the findings were only indicative as the meta-analysis only examined qualitative studies with the authors noting that "(a)lmost all of the studies included in this review used transcriptions of video or audio observations to analyze scaffolding" (van de Pol et al. 2010: 285).

Additionally, the evidence for fading with computer assisted learning environments is not extensive despite researchers arguing for its importance in aiding the student towards mastery of target structures (Kebritchi and Hirumi 2008; Obikwelu et al. 2012; Puntambekar and Hubscher 2005; van Merrienboer et al. 2003). A recent systematic review of the effects of scaffolding in the domain of science education with computer-based learning environments reported that fading was not included as a major research focus in the majority of the studies as studies referred to scaffolding but not fading and measurement of scaffolding over time was not carried out (Devolder et al. 2011).

2.3.5. Output hypothesis

The output hypothesis was put forward by Swain (1985) in response to research into Canadian French immersion programs that reported that the provision of comprehensible input did not lead to the students achieving a high level of L2 proficiency, particularly in terms of language production (Allen et al. 1990; Hammerly 1987; Harley and Swain 1978; Izumi et al. 1999; Pawlak 2006; Donesch-Jezo 2011). Following on from

this research, Swain (1985) argued that L2 learners produced numerous inappropriate responses because the focus on comprehensible input meant that the students produced small amounts of language in the classroom. She then postulated that while comprehensible input is important for receptive language acquisition, expressive language acquisition, in terms of fluency and accuracy, needs comprehensible output (Swain 1985). She also argues that comprehensible output enables L2 development in writing, stating that comprehensible output develops skills "in speaking and writing, learners can 'stretch' their interlanguage to meet their communicative goals" (Swain 2000: 99). As a result, Swain put forward the output hypothesis and then broadened the hypothesis with three functions of output (Swain 1985, 1993, 1995, 2000). The first function is a hypothesis-testing function where students test the understandability and grammatically appropriate structure of their interlanguage against feedback from speakers in their language environment. The students perform this testing through producing utterances and comparing their output to the feedback and modifying their interlanguage constructs. The second function of output is meta-linguistic in that the student may employ the feedback to undertake syntactic processing in order to reformulate interlanguage form and function constructs for possible future altered output (Swain 1995). The third function of output is noticing or triggering attention. With the output received from the environment, the student may notice a difference between their actual responses and intended responses; therefore, leading to the students becoming more aware of their language difficulties (Swain 1995).

As can be seen from this discussion, the output hypothesis places a great deal of emphasis on two factors: language production and feedback to stimulate changes to the interlanguage form and function constructs to enable more fluent and accurate reformulated language output. Feedback has been the focus of much current research to determine its effectiveness in aiding language acquisition as a direct pedagogical application of comprehensible input and output (Bitchener 2012; Bitchener and Knoch 2009, 2010b, 2010a; Donesch-Jezo 2011; Ferris et al. 2013; Rassaei 2013; Sheen 2007; Shintani and Ellis 2013; Yilmaz 2013; Zabor and Rychlewska 2015). The next section presents a definition of feedback, its different types, and discusses some of the latest research in this area.

2.3.6. Feedback - definition

Feedback can be defined in terms of its instructional function (Bitchener and Knoch 2009, 2010a, 2010b; Bitchener 2012; Donesch-Jezo 2011; Long 1991, 1996; Pawlak 2006; Nassaji and Swain 2000; Pica 1987, 2003; Rassaei 2013; Sachs and Polio 2007; Sheen 2007; Shintani and Ellis 2013; Yilmaz 2013) and its GBL motivational function (Gillian 2008; Obikwelu et al. 2012; Prensky 2005; Van Eck 2006; Wouters et al. 2011; Zarraonandia et al. 2012, 2015). The next sections will discuss feedback in terms of its instructional function. These sections will provide a definition of instructional feedback, discuss some of the types of instructional feedback, and present evidence about the types of feedback discussed.

2.3.7. Feedback - instructional function

When talking about its instructional function, feedback can be defined as an interaction between the student and the learning agent, whether a teacher, a peer, and/or an e-learning tool which provides assurance to the learner if they have given an appropriate answer and guide the learner towards an appropriate answer if they have provided an inappropriate answer. Feedback is usually classified as negative reactive evidence in language interactions as it is provided in response to inappropriate target structures produced by the students (Gregg 2001; Pawlak 2006). Instructional feedback can have a socio-cultural aspect (Vygotsky 1978; Nassaji and Swain 2000; Obikwelu et al. 2012; Zarraonandia et al. 2015). Feedback can be defined in terms of the following parameters: focused or unfocused in its scope (Bitchener and Knoch 2009, 2010a, 2010b; Bitchener 2012; Ferris 2010; Ferris et al. 2013; Pawlak 2006), and explicit or implicit in its delivery (Bitchener and Knoch 2009, 2010a, 2010b; Bitchener 2012; Ferris 2010; Ferris et al. 2013; Pawlak 2006). Feedback, when given to students, may embrace some or all of these parameters (Ferris et al. 2013; Pawlak 2006). In terms of interaction theory, feedback may align with the input hypothesis, the output hypothesis, or both (Krashen 1985; Long 1991; Pawlak 2006; Swain 1985, 1995). The next sections will discuss feedback in terms of these parameters and hypotheses and the evidence supporting feedback in terms of these parameters and hypotheses.

2.3.7.1. **Feedback from a socio-cultural perspective**

The socio-cultural theory, as propounded by Vygotsky (1978), is predicated on the assumption that the acquisition of language is a cognitive-linguistic development, which entails a process of evolution from biologically determined mental functions to more complex cognitive-linguistic skills. This process occurs concurrently with development of consciousness and the cognitive skills required for problem solving (Vygotsky 1978; Pawlak 2006). Social interaction is the medium through which learning occurs (Vygotsky 1978; Pawlak 2006). The learning process starts with functions such as target language structures and forms being understood and produced with the assistance of the others and ends with the mastery of the target structure, resulting in comprehension and production of the function without assistance (Vygotsky 1978; Pawlak 2006). This process is centred around the idea of the "zone of proximal development" (ZPD), which is the area between the level of performance a student can achieve independently and the level of performance a student can achieve with adult assistance (Vygotsky 1978). The process of learning means a learner and teaching agent create a ZPD that is constantly changing and fluctuating according to the learner's goals, attitudes, motivation, target function, and level of mastery (Vygotsky 1978). In turn, the ZPD is mediated by scaffolding (see section 2.3.3.2. for more details) where the interactants in the learning context aid each other to achieve learning goals and master target forms that the learner is not able to produce independently at the start of the process (Vygotsky 1978; Pawlak 2006).

2.3.7.2. **Research evidence for feedback from a socio-cultural perspective**

There has been a great deal of research into the use of feedback from a socio-cultural perspective that has shown it to be an effective pedagogical technique. In particular, scaffolding (see section 2.3.4. for details) has been shown to be an effective technique when employed in computer based learning (Coufal 2002; Dennen 2004; Gillian 2008; Puntambekar and Hubscher 2005; van Merrienboer et al. 2003; Obikwelu et al. 2012; Zarraonandia et al. 2012, 2015).

2.3.7.3. **Focused and unfocused feedback**

Focused feedback is where the learner is provided with information about specific inappropriate responses that the learner has produced (Ferris et al. 2013; Bitchener 2012). This type of feedback dovetails with the focus on form instructional approach (see section 2.3.2. for more details) and involves the teaching agent in selecting only specific forms for feedback based on the student's needs (Ferris et al. 2013; Bitchener 2012). The rationale behind this is that students are not overwhelmed with information about all inappropriate responses they have produced (Ferris et al. 2013; Bitchener 2012). This may be particularly important for students with learning difficulties as "it places a lighter attentional load on their processing capacity" (Bitchener 2012: 856). On the other hand, unfocused feedback is where feedback is provided for all inappropriate responses produced in spoken or written texts (Ferris et al. 2013; Bitchener 2012).

2.3.7.4. **Research evidence for focused and unfocused feedback**

In terms of writing, focused feedback has provided stronger research evidence than unfocused feedback in aiding the students' skills in producing more appropriate target structures (Bitchener and Knoch 2009, 2010a, 2010b; Bitchener 2012; Ellis et al. 2008; Sheen 2007; Sheen et al. 2009; van Beuningan et al. 2012). In particular, the studies (Bitchener and Knoch 2009, 2010a, 2010b; Sheen 2007; Ellis et al. 2008) found that focused feedback was more effective in improving the skills in appropriate use of English article of students who presented with a range of English proficiency ranging from low-intermediate to advanced.

2.3.7.5. **Direct and indirect feedback**

Direct feedback for written texts is a response placed by the teacher above, below, or near the inappropriate target structure (Bitchener and Knoch 2010b). Examples of direct feedback may include the crossing out of unneeded morphemes, words, and phrases and the addition of missing morphemes, words, and phrases (Bitchener and Knoch 2010b).

Additional feedback may include written or oral meta-linguistic feedback about the target structure (Bitchener and Knoch 2010b). By contrast, indirect feedback is where the inappropriate target structure is marked in some manner (i.e. circling or underlining) and the student must analyse the feedback to determine how to repair the inappropriate structure (Bitchener and Knoch 2010b; Ferris and Roberts 2001).

2.3.7.6. **Research evidence for direct and indirect feedback**

A number of studies in the area of ESL writing have indicated that direct feedback is of more benefit to the learner as it provides understandable data about the target structure in contexts where language acquisition, not writing development, is the primary goal (Bitchener and Knoch 2010a, 2010b; Bitchener 2012; Ferris and Roberts 2001; Ferris et al. 2013; van Beuningan et al. 2008, 2012).

However, some studies have indicated that indirect feedback may be of more benefit to long term development of writing skills as the learner needs to process and problem-solve the feedback and as a result of this learning experience, may develop better skills with self monitoring their written production (Ferris 2006; Ferris et al. 2013; Hendrickson 1980; Lalande 1982).

2.3.7.7. **Explicit and implicit feedback**

Explicit feedback incorporates two components: the first of which is direct feedback informing the learner about the inappropriate target structure (see section 2.3.7.5. for more details) and the second of which is meta-linguistic information to explain what is or are the appropriate target structures (Bitchener and Knoch 2010a; Bitchener 2012; Ferris and Roberts 2001; Ferris et al. 2013; Rassaei 2013; Zabor and Rychlewska 2015). On the other hand, implicit feedback includes indirect feedback (see section 2.3.7.5. for more details) and recasts (i.e. the rephrasing of the inappropriate structure using the correct structure while maintaining the original meaning) plus additional pragmatic strategies such as confirmation and comprehension checks and clarification requests

(Bitchener 2012; Ellis et al. 2008; Ferris and Roberts 2001; Sheen 2007; Sheen et al. 2009).

2.3.7.8. **Research evidence for explicit and implicit feedback**

There is a large body of evidence that explicit feedback where meta-linguistic feedback is incorporated is more beneficial for learners than implicit feedback, especially when one of the target structures is the appropriate use of English articles (Bitchener and Knoch 2009, 2010a, 2010b; Bitchener 2012; Ellis et al. 2008; Ferris and Roberts 2001; Ferris 2006; Ferris et al. 2013; Gillian 2008; Long and Robinson 1998; Pawlak 2006; Rassaei 2013; Sheen 2007; Sheen et al. 2009; Yilmaz 2013; Zabor and Rychlewska 2015). These findings may particularly apply to Polish learners of English who have been presented with large amounts of formal grammar instruction during their schooling (Ferris et al. 2013; Pawlak 2006; Zabor and Rychlewska 2015).

2.3.7.9. **Immediate and delayed feedback**

Immediate feedback is when the learner receives a response from the teaching agent as soon as an inappropriate target response is produced (Hattie and Timperley 2007; Timmers and Veldkamp 2011; Timmers 2013). Delayed feedback is when the learner receives a response later in the teaching context; for example, at the end of a class, task, or computerised learning module (Hattie and Timperley 2007; Timmers and Veldkamp 2011; Timmers 2013). Immediate feedback is often employed in learning contexts such as the classroom so that the learner can match the feedback to the inappropriate target structure (Hattie and Timperley 2007). Delayed feedback is often employed in GBL as part of an external reward or recompense system (i.e. opportunities to play bonus episodes, gaining of special prizes, accumulation of points) that are in place as part of the reward and persistence elements of the game (Prensky 2005; Van Eck 2006; Wouters et al. 2011; Zarraonandia et al. 2012, 2015).

2.3.7.10. **Research evidence for immediate and delayed feedback**

Immediate feedback has been found to aid student's speed of acquisition of target structures in a number of meta-analyses conducted in this area (Bangert-Drowns et al. 1991; Kulik and Kulik 1988; Shute 2008; Van der Kleij et al. 2015). The latter meta-analysis looked at "the effects of methods for providing item-based feedback in a computer-based environment on students' learning" (Van der Kleij et al. 2015: 1) across 40 studies. The results of the meta-analysis were that "(w)ith regard to feedback timing, the effects for immediate feedback were larger than for delayed feedback" (Van der Kleij et al. 2015: 16). A large scale study into computer based formative assessment with first year bachelor level students at a Dutch university of applied sciences studying Health (N = 151), Law (N = 218), and Business Administration (N = 241) found that students' average feedback time for an assessment item was 9.412 seconds when the students were independently clicking pop up pages to gain feedback on answers (Timmers and Veldkamp 2011; Timmers 2013). This indicated that students preferred immediate feedback rather than delayed feedback. However, these findings were not directly applicable to the current research as the e-learning tool (Gillian 2015a) employed the automatic provision of feedback; whereas, the Dutch study employed student initiated feedback (Timmers and Veldkamp 2011; Timmers 2013).

However, the research has also found that delayed feedback can be effective in some contexts (Bangert-Drowns et al. 1991; Clariana et al. 2000; Hattie and Timperley 2007; Kulik and Kulik 1988). Clariana et al. (2000) found that "retention of initial lesson responses is greater for delayed feedback compared to immediate feedback across all item difficulties, but especially with difficult items (Clariana et al. 2000: 18). The study reported that the delayed feedback effect sizes expressed as multiples of the standard deviations of lesson scores were -0.06 for easier stimuli, 0.35 for midrange stimuli, and 1.17 for more difficult stimuli (Clariana et al. 2000) which were calculated "using a mixed 3 x 2 ANOVA with one between-subjects factor, feedback type ... and one within-subject factor, lesson correctness" (Clariana et al. 2000: 17). These results indicate that delayed feedback also has a role to play in teaching difficult structures such as English articles.

2.4. Application of specific pedagogical elements in the e-learning tool design

Based on the evidence presented in the preceding sections, the e-learning tool is based on the following theoretical models: interaction theory in terms of comprehensible input, particularly input flooding and enhancement (see section 2.3.3. for more details) in terms of meta-linguistic instruction and socio-cultural theory in terms of input modification (see section 2.3.3. for more details) and the creation of ZPDs for instruction and feedback through scaffolding (see sections 2.3.3. 2.3.3.2. and 2.3.7.1. for more details); the output hypothesis in terms of meta-linguistic feedback (see section 2.3.5. for more details); focus on form in terms of targeting articles (see section 2.3.2. for more details); and feedback that is focused, direct, and explicit (see sections 2.3.7.3. 2.3.7.5. and 2.3.7.7. for more details). For the instruction modules, the e-learning tool (Gillian 2015a) employs input flooding and enhancement (see section 2.3.3. for more details), input modification (see section 2.3.3. for more details), explicit instruction (see section 2.3.3.1. for more details), scaffolding (see section 2.3.3.2. for more details), chunking (see section 2.3.3.3. for more details), visual and auditory highlighting (see section 2.3.3. for more details), and fading (see section 2.3.3.4. for more details). For the exercise modules, the e-learning tool employs feedback that has two functions: pedagogical and motivational. The pedagogical component of the feedback will be focused, direct, and explicit (see sections 2.3.7.3. 2.3.7.5. and 2.3.7.7. for more details).

2.5. Technical description of the e-learning software

2.5.1. Outline

The technical description will present a basic summary of the design elements of the e-learning tool and then present the design elements of the GREM model (Zarraonandia et al. 2015).; while concurrently, presenting and discussing how the design of the e-learning tool was completed according to the design elements of the GREM model (Zarraonandia et al. 2015).

2.5.2. Basic technical summary of the e-learning tool's design elements

The e-learning tool (Gillian 2015a) was web-based learning software which incorporated stop-motion animation accessible through the Internet and the major web browsers: Google Chrome, Firefox, and Microsoft Explorer. The basic elements for the visual stimuli were Portable Network Graphics (.PNG files) created in CorelDraw Essentials 4 (Corel 2014). The basic auditory stimuli elements were recorded in a quiet room with carpeting at Państwowa Wyższa Szkoła Zawodowa im. Jakuba z Paradyża (PWSZ) in Gorzów Wielkopolski using Audacity version 2.0.6. (Ash et al. 2004). The animated videos for the instructional and gameplay modules were created with Microsoft Powerpoint 2007 (Microsoft 2007b) and Microsoft Windows Movie Maker 2012 (Microsoft 2012). The instructional videos were then converted into Sharable Content Object Reference Model (SCORM) version 1.2 (Advanced Distributed Learning 2001) modules using iSpring Free 7 version 7.1.0 Build 8810 (iSpring Solutions 2017). The pre-test, learning, gameplay, and post-test exercises were created with Hot Potatoes version 6.3 Release 0 Build 5 (Arneil and Holmes 2017), a computer program to create educational exercises for the web. The exercises were then converted into SCORM version 1.2 modules using the Hot Potatoes program (Arneil and Holmes 2017). The SCORM modules for the instructional videos, pre-test, learning, gameplay and post-test exercises were uploaded into a learning management system (LMS) which was Moodle release 3.1.1+ (Build: 20160817) (Dougiamas 2016).

2.6. Games Rules scEnario Model

The teaching elements needed to provide sound and effective instructional content for the e-learning tool were discussed in sections 2.3. and 2.4. and the specific linguistic elements in the e-learning tool were examined in section 1.7. This section discusses the specific GBL elements required to create an interesting and motivating teaching agent for instruction and learning of the English article system.

The Games Rules scEnario Model (GREM) (Zarraonandia et al. 2015) and its predecessor, the Adaptive and Reusable Educational Games (AREG) model (Zarraonandia et al. 2012) are educational games creation models proposed by Zarraonandia

and his colleagues within the GBL approach which were employed during the e-learning tool design.

Both models put forward a number of layers grounded in the concepts of game rules and game scenarios. These sections interact with the goals and mechanics of the game to provide a description of the game rules. These concepts allow the design team members to design and create basic modules such as missions, mini-games, and/or bonus stages which can function as separate modules or be combined to create more complex scenarios or storylines (Zarraonandia et al. 2012, 2015). The model hopes to decrease the increasing costs associated with the production of educational games and produce games that have "a set of adaptation and personalization rules which determine the sub-design that should be active for a given learner profile and progress during the game" (Zarraonandia et al. 2012: 559). This conceptualisation of the rules for sub-design mesh very well with the concept of each learner having a constantly changing ZPD (Vygotsky 1978) while learning.

Both models look at game design from a programming and learning theory perspective (Zarraonandia et al. 2012, 2015). The game rules layer has components such as a mechanics layer for specifying the basic elements of the game, a goals layer to specify the goals of the game, a rewards section which incorporates socialisation and feedback, and a persistence section which incorporates storytelling and debriefing (Zarraonandia et al. 2012, 2015). Through incorporating a mechanics layer, the model can be associated with a focus on form approach (Long 1991; Long and Robinson 1998) as the target structures can be specified in this layer. Through the goals layer, comprehensible input (see section 2.3.3. for more details) can be specified as one of the design features of the game. By including a feedback layer, focused, explicit, direct, immediate and delayed feedback (see section 2.3.7. for more details) can be included as components in the game.

The games scenario layer features the game interface and interaction which connect with the scenes, characters, and context to produce a scenario best suited to the game player (Zarraonandia et al. 2012). The game representation level allows the designer to specify the scenes, characters, and context to be used in the game, which means that the designer can control the types of social interaction permitted between the teaching agent and learner.

The GREM and the AREG models propose a number of modularised design layers constructed around a game rules sub-model and game scenarios sub-model, which will be discussed in the following sections. Also, in the following sections, how specific components of the e-learning tool were designed employing the GREM model will be presented and discussed.

2.6.1. Game rules sub-model

The game rules sub-model is constructed with a number of layers that the game designer is meant to deploy from the innermost layers to the outermost (Zarraonandia et al. 2015). This sub-model enables quicker and more efficient design through the designer specifying in more complete detail the specifications need to program the software required of the particular GBL context.

2.6.1.1. **Mechanics layer**

The innermost layer is the mechanics where the basic entities and their components in the game are created and described. These entities are usually the characters or avatars that appear in the games, and their components are the states and actions that these entities are defined with (Zarraonandia et al. 2015). The states of the entities can reflect rules of the game such as *completed a module* or parameters such as *sound file* which specify the audio files for instructions, exercises, and feedback. The states of entities are stored in a section of a modularised relational database (Gillian 2015a). This part of the database stores the information in terms of instructional modules, exercise modules, and gameplay modules. The database records for each module the visual and auditory files for each module and when a user has completed a module (see section 2.6.2.2. for more details).

The actions of the entities refer to the operations the entities can carry out in the game environment (Zarraonandia et al. 2015). There are a number of action entities in the e-learning tool (Gillian 2015a) that are of a major focus which are the target structures of articles, nouns, and adjectives. A modularised relational database containing a

section for the exercise stimuli has been created to store each item (see section 2.6.2.2. for more details). Each item has been annotated with a special code which the e-learning tool was to read and process in order to give the learner either meta-linguistic and/or explicit pedagogical feedback (see section 2.6.2.2. for more details).

The mechanics layer of the e-learning tool (Gillian 2015a) consisted of the entities and actions within the e-learning tool. According to the GREM model, entities were "game token(s) defined through attributes and states. (They) might carry out actions and can either be controlled by the player or the computer" (Zarraonandia et al. 2015: 4545). The e-learning tool (Gillian 2015a) included two types of game entities: game response entities and game exercise entities. The game response entities of the e-learning tool (Gillian 2015a) were the English words, phrases, and sentences stored in the database (see section 2.6.2.2. for more details) and the article choices embedded within them (see section 2.6.2.2. for more details). The entities were defined in terms of attributes (i.e. the entities are defined in terms of pairs of attribute values (Zarraonandia et al. 2015: 4545) and states (i.e. "the possible situations and conditions of the entit(ies)" (Zarraonandia et al. 2015: 4545). The game response entity attributes of the English word, phrases, and sentences were countable/uncountable nouns, countable singular nouns starting with a consonant sound, countable singular nouns starting with a vowel sound, countable plural nouns, two-way nouns, and uncountable nouns and the article choices appropriate for each type of noun (see section for more details). The states of the article choice for each noun were dependent on the attributes of each noun entity. Table 8 outlines the states for each game response entity:

Table 8. Game response entities and their states.

Entity	**States**
1. Countable nouns	2 states - countable or uncountable
2. Two-way nouns	2 states - yes or no
3. Countable singular nouns starting with a consonant sound	2 states - the article *a*, the article *the*
4. Countable singular nouns starting with a vowel sound	2 states - the article *an*, the article *the*
5. Countable plural nouns	2 states - no article, the article *the*
6. Uncountable nouns	2 states - no article, the article *the*

As shown in Table 8, the actions that can be carried out on these entities to modify their states are the responses the user/game-player can select based on the states for each entity. For example, for the learning exercise of countable nouns, the user/game-player can select the buttons *countable* or *uncountable* which represent the state choices for the noun entity in the exercise. Another example is the describing words after nouns exer-

cise. The user/game-player has the choice of four buttons: *a*, *an*, *the*, or *x (`x` means no article).* These four choices can select two possible correct states for the article and this noun based on the sentence context.

The other type of game entity were game exercise entities that had attributes and states that enabled actions within the pre-test, learning, gameplay, and post-test exercises to occur. Table 9 describes the game exercise entities and their states:

Table 9. Game exercise entities and their states.

Entity	States
1. Screen forward	2 states - user advances to the next item in the exercise, user remains on the current exercise item
2. Screen backward	2 states - user returns to the previous item in the exercise, user remains on the current exercise item
3. Show all questions	2 states - yes, no
4. Show questions one by one	2 states - yes, no

These game exercise entities and their states were needed for the user to provide responses for the game response entities within the pre-test, learning, gameplay, and post-test exercises.

2.6.1.2. **Goals layer**

The goals layer was needed to specify the intended educational and gaming outcomes of the software. The GREM authors argued that goals layer followed the mechanics layer due to the fact that "by starting from a given definition of game mechanics it is possible to design many different games simply by replacing the definition of the goals proposed" (Zarraonandia et al. 2015: 4541). The researcher found this concept of the goals following the mechanics problematic and did in fact formulate the overall game objective first (i.e. teaching the appropriate use of English articles) before formulating the specific details included in the mechanics layer of the GREM model. This followed a top-down design approach where the overall goals were formulated first before proceeding to more specific design elements.

The e-learning tool (Gillian 2015a) contained a goals layer which consisted of the objectives and restrictions within the e-learning tool. The main objective of this tool

was to teach the appropriate use of English articles with words, phrases, and sentences. The main objective was accomplished through achieving the situations in the e-learning tool and are "described through the states and values of the attributes of the entities" (Zarraonandia et al. 2015: 4545) (see section Table 8 for more details). The e-learning tool (Gillian 2015a) had a number of secondary objectives which the user/game-player needed to achieve to accomplish the main objective; namely, completion of the pre-test exercises, watching of the instructional videos, completion of the learning and gameplay exercises, and completion of the post-test exercises (see section 2.6.1.8. for more details).

The restrictions within the e-learning tool were number of attributes of the tool i.e. the noun types and the article choices appropriate for each noun type (see Table 8 for more details) and states of the game entities (see Table 8 for more details). An example from the e-learning tool (Gillian 2015a) of a situation to achieve would be for the user to click on an appropriate article in an exercise in the e-learning tool. A situation to avoid would be to click on the *countable* option when in fact the noun was uncountable.

2.6.1.3. **Socialization layer**

The socialisation element is the design layer which enables the game to move beyond single player game experiences (Zarraonandia et al. 2015). By including a socialisation element, the game designer is able to specify social interaction in terms of levels and types. In the GREM model, the first design element of socialisation is role. According to GREM, role "defines the set of entities controlled by a player and the objectives to be achieved" (Zarraonandia et al. 2015: 4545). In this e-learning tool, the researcher used the Moodle LMS to set up different roles such as administrator, teacher, and student. The administrator role allowed the researcher to communicate with the users through the Moodle messaging system about completion of topics such as the pre-test module completion. The teacher role allowed teachers at the schools to monitor subjects' progress through the e-learning tool. The student role allowed subjects to monitor their own progress through the Moodle reporting system while preserving the confidentiality of their results through not allowing them access to their peers' results. The e-learning tool did not employ the group feature of the GREM model and Moodle LMS to allow sub-

jects to collaborate as the research was focussed on subjects' individual performance. The e-learning tool did employ a synchronisation design element to specify that the subjects' actions with entities occurred in real time (e.g. when the subjects clicked a button during an exercise, a pop-up window appeared in real time to provide feedback (see section 2.6.2.2. for more details).

2.6.1.4. **Feedback layer**

The designer can create and detail feedback that the user will gain in response to the inputs the user will give and feedback to tell the user about their progress in achieving the goals of the task (Zarraonandia et al. 2015). This layer is comprised of information that will be triggered when specific feedback criteria are achieved. These criteria will be based on programmed conditions that apply to the goals, actions, and states of the game entities (Zarraonandia et al. 2015). Feedback can have a variety of purposes, incorporating motivation, assistance and/or educational, and can be presented in a variety of modes, including text, images, audio, video, and/or the combination of these modes (Zarraonandia et al. 2015). The relational database created for Gillian (2015a) has a section storing all the praise words, meta-linguistic feedback, and explicit feedback (see section 2.6.2.2. and Appendix B for more details). As discussed in section 2.3.7. , feedback had an instructional function that was incorporated in the e-learning tool. However, feedback could also have a GBL motivational function. The next section discusses the GBL motivational function of feedback.

2.6.1.5. **Feedback - GBL motivational function**

In GBL research, the use of delayed feedback has been found to be effective in promoting motivation through gameplay (Prensky 2005; Dyer 2013; Liang et al. 2010; Wouters et al. 2011; Zarraonandia et al. 2015). Prensky and other researchers in this field have noted that modern advanced economies have generations of young people who can be regarded as "digital natives"; people who have grown up with computers and software to mediate their lives and learning experiences and who are accustomed to receiving

delayed feedback when accessing, for example, computer games, which provide rewards and access to new levels at the end of gameplay modules (Prensky 2005; Dyer 2013; Liang et al. 2010; Wouters et al. 2011; Zarraonandia et al. 2015). The concept of feedback as having a motivational function will be explored in the next section.

When regarding feedback from this GBL motivation function perspective (Prensky 2005; Wouters et al. 2011; Zarraonandia et al. 2012, 2015), feedback can be seen as providing motivation to continue with the learning interaction by providing an appropriate level of praise commensurate with the response (Burnett 2002; Burnett and Mandel 2010; Hattie and Timperley 2007). An appropriate and measured amount of praise is important so that the learner feels and knows the level of praise is realistic (Burnett 2002; Burnett and Mandel 2010; Hattie and Timperley 2007). Also, research has shown that when praise is provided without pedagogical content or gameplay feedback, it is ineffective (Hattie and Timperley 2007; Wouters et al. 2011; Zarraonandia et al. 2015). Feedback should therefore consist of a reinforcer giving measured praise and the comment on the level of performance. To ensure that the praise is measured and commensurate with the level of performance, the words chosen as praise feedback should be considered in terms of their emotional content i.e. *great* has higher positive emotional content than *good,* and *wrong* has a stronger negative value than *incorrect.* As the e-learning tool (Gillian 2015a) will be employing adjectives as praise words, a list of positive and negative adjectives was entered into SENTIWORDNET 3.0, "an enhanced lexical resource explicitly devised for supporting sentiment classification and opinion mining applications" (Baccianella et al. 2010: 2200). This database was created through examining programmatically all the synsets, or set of synonyms, of WORDNET (Fellbaum ed. 1998), a lexical database for the English language, using the parameters of "positivity", "negativity", and "neutrality". Each adjective chosen for the e-learning tool has a synset based on "three numerical scores Pos(s), Neg(s), and Obj(s) which indicate how positive, negative, and "objective" (i.e., neutral) the terms contained in the synset are" (Baccianella et al. 2010: 2200). The e-learning tool (Gillian 2015a) will use these rankings and the user's current level of performance in exercises in the exercise modules to provide measured and realistic praise to the user (see section 2.6.2.2. for more details).

2.6.1.6. **Feedback in the e-learning tool**

The feedback, according to the GREM model, is "information provided by the game state or the actions carried out. It can have an educational or entertainment purpose" (Zarraonandia et al. 2015: 4545). In this e-learning tool (Gillian 2015a), the feedback purpose is educational i.e. to provide the user with assistance to choose the appropriate article for the noun (see sections 2.3.6. 2.3.7. 2.6.1.3. and 2.6.1.5. for more details). Feedback is defined by conditions i.e. "(the) combination of values of actions, objectives, restrictions, (and) entities' attributes and/or states" (Zarraonandia et al. 2015: 4545) and the feedback entity i.e. "the way in which the feedback will be presented" (Zarraonandia et al. 2015: 4545). In this e-learning tool (Gillian 2015a), the feedback conditions are governed by a number of factors. The first factor is the type of exercise. The e-learning tool contains two types of exercises: learning and gameplay. The learning exercises consist of two types. Type *a* learning exercises provide meta-linguistic feedback to increase understanding of underlying concepts. Figure 1 provides an example of meta-linguistic feedback:

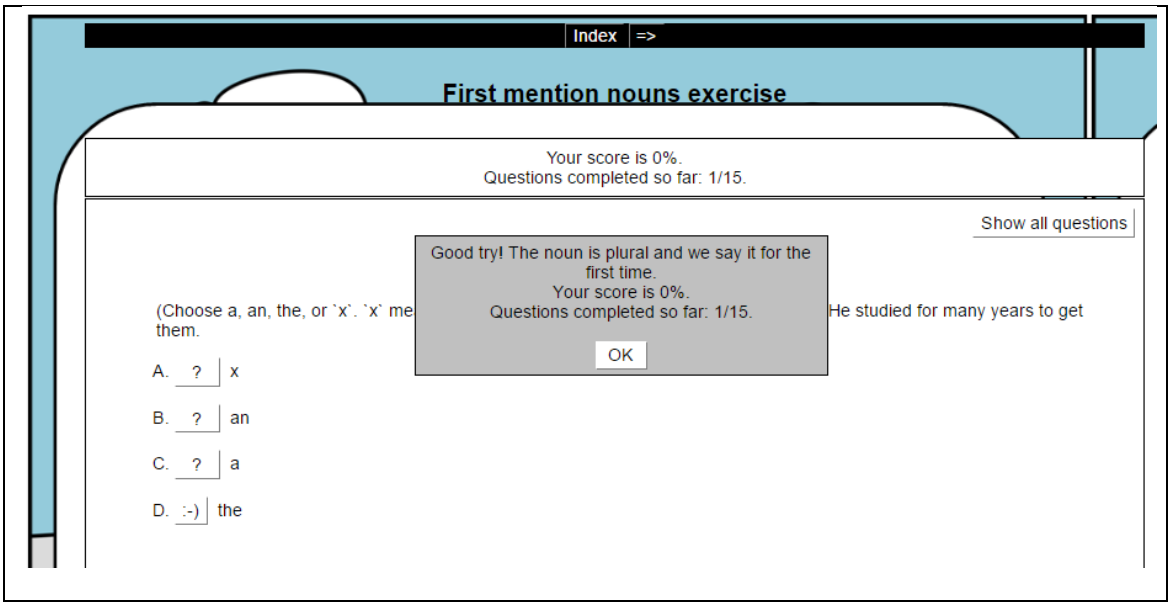


Figure 1. Meta-linguistic feedback screenshot.

As can be seen in Figure 1, the meta-linguistic feedback provides information on the type of noun and the context for the appropriate article with first-time-mention nouns. Type *b* learning exercises provide explicit feedback to give the user the appropriate answer with a minimum of feedback. Figure 2 provides an example of explicit feedback:

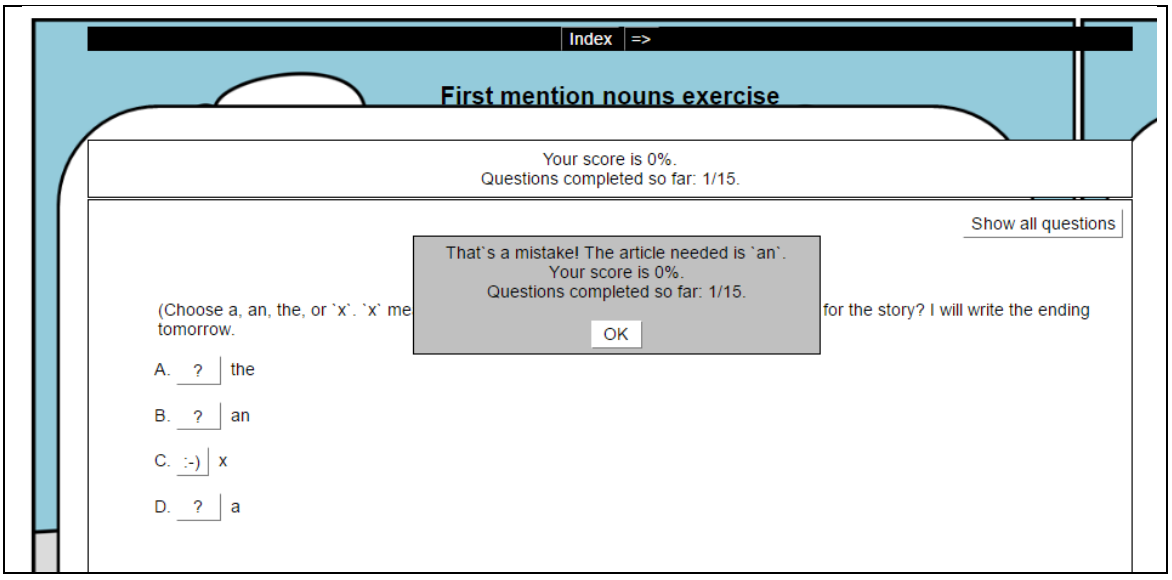


Figure 2. Explicit feedback screenshot.

As is shown in Figure 2, the explicit feedback provides information on the appropriate article only. The type of feedback had no restrictions within the exercise as this type of feedback was provided when the user enters an inappropriate response. The restrictions for the provision of feedback in the learning exercises in the original design were meant to be based on scores achieved in type *a* exercises i.e. if a user achieved less than 60%, then the user would be directed to type *b* exercises. However, due to the Moodle LMS grade completion restriction access logic not working correctly, the feedback restriction is more general and based on activity completion only; thus, users complete both type *a* and type *b* exercises while playing the game regardless of score achieved during the game. Gameplay exercises provide feedback only as to whether the answer was correct or not and give a running total for the percentage correct score. Figure 3 provides an example of a running total:

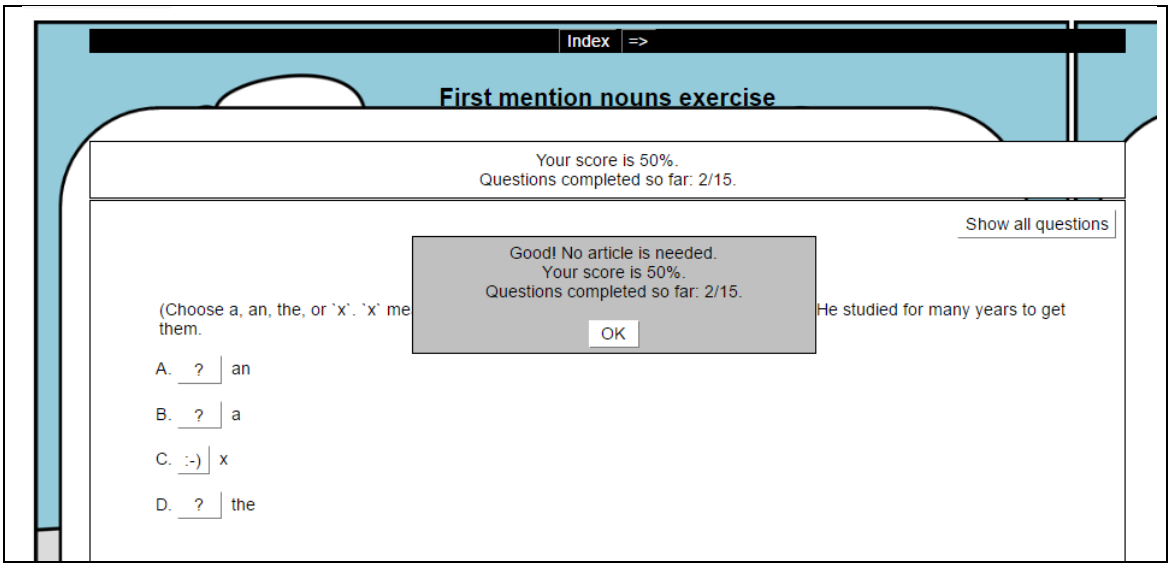


Figure 3. Running total screenshot.

Figure 3 shows that the user has completed two items in the exercise, one of which is correct. Thus, the current total score is 50%. The type of feedback is also determined by the type of entity (e. g. countable noun, uncountable noun) (see Table 8 for more details) and the state of the entity (e. g. countable singular nouns starting with a consonant have two states in the e-learning tool (the article *a*, the article *the*)) which allow the user to achieve a positive score for an appropriate answer (see Table 8 for more details).

This e-learning tool has a limited feedback entity in that the feedback is visual only as the Hot Potatoes web exercise creation software (Arneil and Holmes 2017) does not allow for audio files to be attached to individual exercise items.

2.6.1.7. **Debriefing layer**

Debriefing can be incorporated into the design to facilitate learning and/or educational outcomes. Learning outcomes can be fostered through connecting the lessons learned in the virtual world with their application in real life (Zarraonandia et al. 2015: 8). This can be achieved through the users writing comments about the learning experiences in a variety of modes such as forums, essays, and/or emails (Zarraonandia et al. 2015).

Debriefing to aid programming outcomes can be accomplished through questionnaires completed by the users. For example, the story-telling and feedback layer can

be strengthened through the use of questionnaires in a pilot study to gain user opinions about these layers.

Debriefing was included in the pilot study for the e-learning tool (Gillian 2015a) in the form of a questionnaire (see Appendix C for more details) in order to assess 1) whether the educational concepts in the e-learning tool create a ZPD appropriate for Polish speakers of English; and 2) to test the technological requirements of the e-learning tool on a web-based server so as to observe and mediate any technological problems. The main study did not include a debriefing layer in the design.

2.6.1.8. **Story-telling layer**

While working within the story-telling layer, the game designer can create episodes of the story through organising and sequencing the goals of the educational task. The designer can specify episodes or modules to articulate and organise the goals specified in the goals layer and the rules for the storyline which specify the order in which the modules are shown to the user (Zarraonandia et al. 2015). The relational database created for the e-learning tool (Gillian 2015a) has the instructional modules and associated exercise and gameplay modules stored in a particular order of learning ranging from basic foundational concepts such as *noun* and *article* to complex later developing rules such as *second mention without first mention* which determine the order of presentation to the user (see section 2.6.2.2. for more details).

The e-learning tool (Gillian 2015a) was designed to include a simple, linear storyline to enhance the game experience and organise the different goals specified in the goals design element (see section 2.6.1.2. for more details) to aid with the research design. The e-learning tool organised the goals into episodes defined by GREM as the "stage or part of the game storyline in which a subset of objectives, entities, roles and groups take part" (Zarraonandia et al. 2015: 4545). The e-learning tool episodes were: the pre-test section, the learning section, and the post-test section.

These episodes and the modules contained in each episode were an adaptation of Master's schema (see sections 1.5.9. , 1.6.9. , 1.7. , 1.7.5. , and 1.8. for more details). Master's binary schema was chosen to be the basis of linguistic elements for teaching articles as it was the most extensive schema for teaching articles (Huong 2005) which

was supported by the most comprehensive research to date (Huong 2005; Master 1988, 1990, 1996, 1997, 2002, 2003a).The areas recommended by Master (Master 1988, 1990, 1996, 1997, 2002, 2003a) were: uncountable nouns, countable nouns, two-way nouns, indefinite articles with vowels, indefinite articles with consonants, classifying nouns, first mention nouns, the verbs *have* and *be* with nouns, sports nouns, identifying nouns, definite articles, second-mention nouns, the verbs *do* and *play* with nouns, nouns with adjectives before them, nouns with adjectives after them, special second mention nouns, special names (e.g. politics, geography, and culture), and personal names. Each pre-test and post-test episode checked the subjects' knowledge of articles in these areas. Additionally, each learning episode taught the appropriate use of English articles in these areas.

This simple linear storyline allowed the creation of a simple three-button menu interface within the Moodle LMS, as shown in Figure 4:

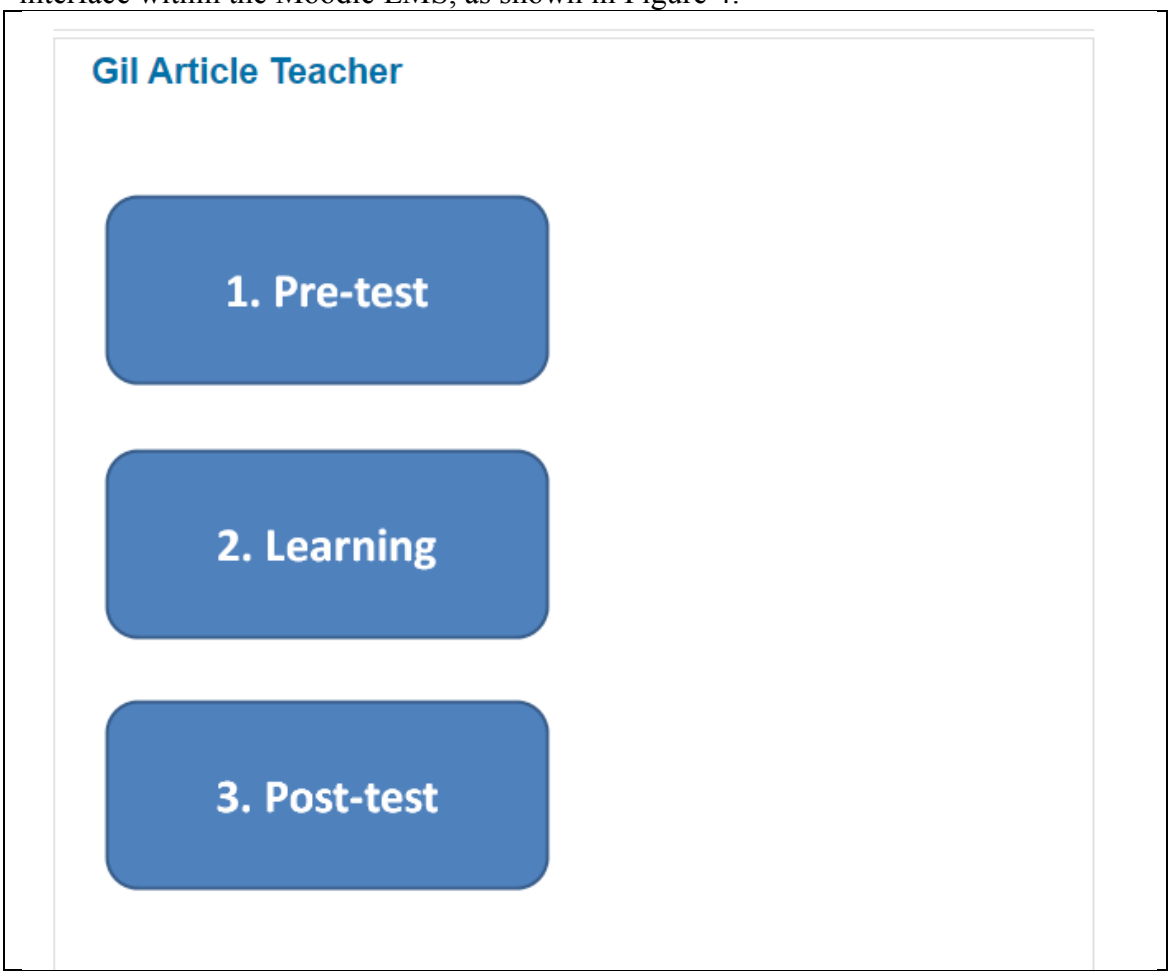


Figure 4. Menu interface screenshot.

This simple interface allowed the subjects to access the e-learning tool with a minimum of assistance. Also, this interface assisted with the research design as the researcher could close off the pre-test section easily after all subjects completed the pre-tests by simply hiding this topic in the Moodle LMS, as presented in Figure 5:

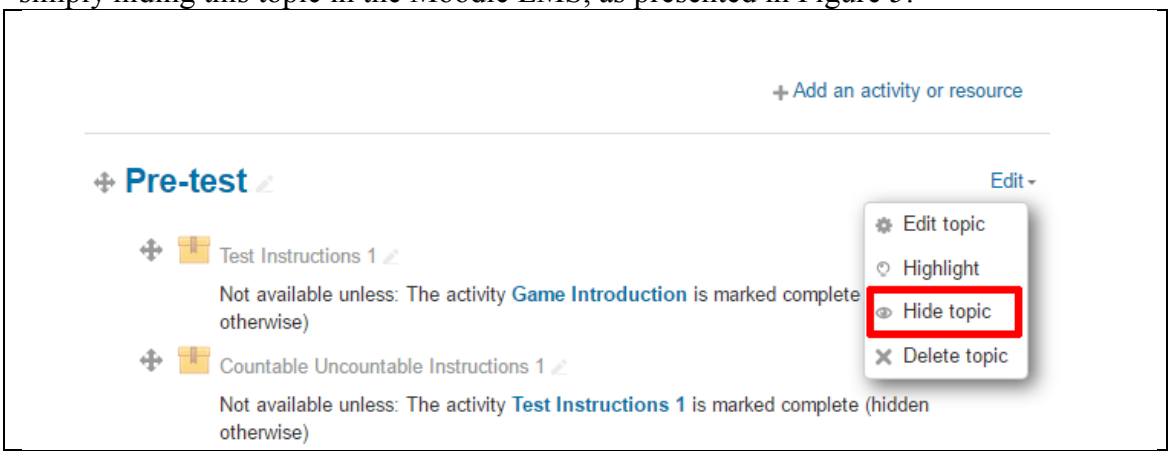


Figure 5. Hide topic screenshot.

Thus, the researcher was able to ensure that the pre-test results did not contaminate the post-test results as the subjects could not access their results in the pre-test after completing this section.

The e-learning tool's storyline layer includes presentation elements i.e. "non-interactive multimedia elements used to set up the context of the story" (Zarraonandia et al. 2015: 4545). The e-learning tool (Gillian 2015a) included two types of instructional presentations. The first type was instructional videos outlining how to complete the exercises, including how to enter and exit activities and how to use the buttons to provide responses, as shown in Figure 6:

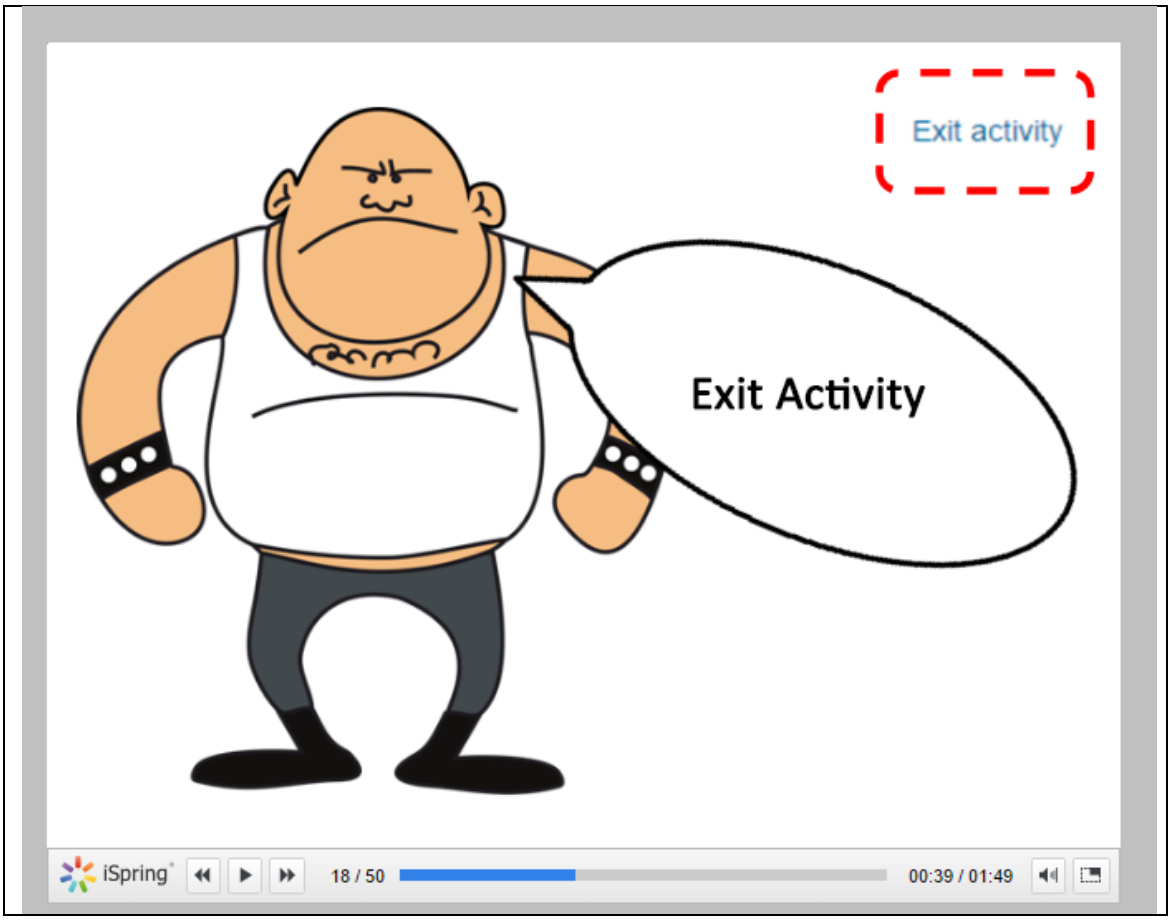


Figure 6. Exit activity screenshot.

Figure 6 shows an instruction that tells the user which button to click when an exercise is completed. The second type was instructional videos to aid the user to learn the article concepts, as presented in Figure 7:

Figure 7. Instruction video screenshot.

As seen in Figure 7, the user sees and hears an instruction to explain the concept of classifying nouns. The instruction in this speech bubble is only three words long to satisfy the pedagogical principle of chunking (see section 2.3.3.3. for more details). All speech bubbles for the instructional videos had eight words or less to meet the teaching principle of chunking (see section 2.3.3.3. for more details). All the presentations employed speech bubbles that incorporate input flooding and enhancement (see section 2.3.3. for more details), input modification (see section 2.3.3. for more details), explicit instruction (see section 2.3.3.1. for more details), scaffolding (see section 2.3.3.2. for more details), chunking (see section 2.3.3.3. for more details), visual and auditory highlighting (see section 2.3.3. for more details), and fading (see section 2.3.3.4. for more details).

The storyline layer also provides the storyline rules; in other words, the "set of rules that define the way that episodes, presentations and debriefing activities are sequenced" (Zarraonandia et al. 2015: 4545). In the e-learning tool (Gillian 2015a), the rules deployed through the Moodle LMS to sequence the episodes and presentations were activity completion rules i.e. when one activity is completed, the next activity is

unlocked. The original design called for the storyline rules to be based upon grade restriction i.e. the user must achieve a specific percentage score (60% or more) for the next set of submodules to be unlocked. However, this storyline design was impossible to implement due to problems with the Moodle LMS.

The other main storyline rules applied to the pre-test, learning, post-test, and game-play scenes. The users had one attempt to complete an individual activity in the first three scenes. The rationale for having one attempt for the pre-test and post-test scenes was to follow the usual conditions for conducting testing. For the learning scenes, the rationales for one attempt were to minimise the time spent on these scenes, and to be able to test more precisely which type of feedback was more effective: meta-linguistic or explicit. For the game-play scenes, the users had unlimited attempts with these activities. The rationale was these game-play activities were for reinforcing the skills with appropriate use of articles learnt during the learning activities.

2.6.1.9. **Rewards and persistence layers**

The game design in terms of the games rules can be finished by including activities that encourage user persistence and rewards. Rewards and persistence components augment and intensify the game experience through affecting the playability of the game, difficulty levels and the user's motivation (Zarraonandia et al. 2015).

Rewards are compensation for the user as returns for their investment of time and energy in the game. Rewards can come in the form of opportunities to play bonus episodes, accumulate points, and/or receive special prizes. These rewards are triggered by reward rules, which are programmatically defined in terms of achievement of goals (see section 2.6.1.2. for more details) and/or progress through the storyline (see section 2.6.1.8. for additional details). Rewards can be stored in a database and, more importantly, displayed to the user to encourage persistence and aid motivation (Zarraonandia et al. 2015).

While progressing through the e-learning tool (Gillian 2015a), the users could receive rewards based on their scores achieved and progress through the episodes. The users could access prizes through what the GREM model calls *unlocks*. The prizes were in the form of surprise videos. The unlocks were programmed through the Moodle LMS

activity completion rules selected for restricting access to specific instructional videos, learning exercises, and/or gameplay exercises.

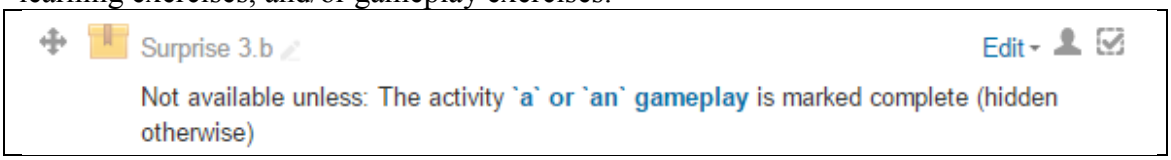


Figure 8. Activity completion screenshot.

Figure 8 displays the activity completion rule for the *Surprise 3.b* video. This video is only available if the activity *a or an gameplay* has been completed by the user. The other type of reward that the e-learning tool offered was running scores when learning and gameplay exercises were in the process of being completed (see Figure 3 for more details) and final scores when learning and gameplay exercises were completed, as displayed in Figure 9:

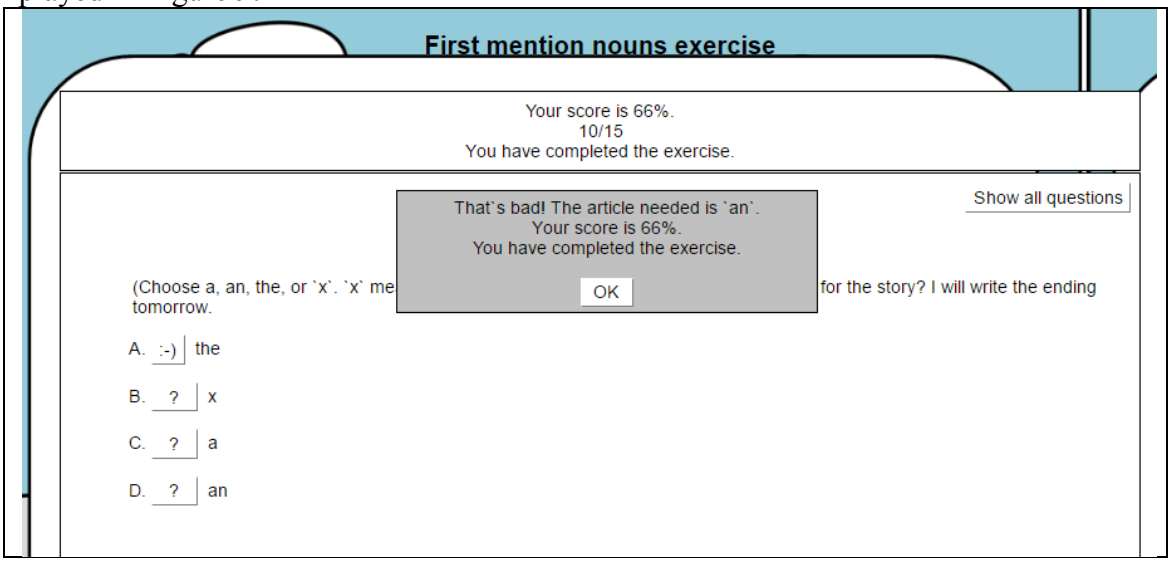


Figure 9. Final total screenshot.

Persistence refers to the user continuing to play the game despite any difficulties the user may encounter or experience while playing the game. Persistence can be programmatically defined by the designer through the specification of different persistence scopes. By specifying differing objective, module or play scope, the designer can create different levels for the status of particular elements of the game to be controlled (Zarraonandia et al. 2015). Examples of these types of specification are an instructional module can be restarted at the beginning when not completed or an exercise module could be resumed where the user finished it. This latter type of persistence scope can be programmatically facilitated through save and restore break points. These break points

allow the users to start, finish, and resume the game without having to redo portions of the game already completed, a feature of commercial games.

Persistence can be aided through storing and displaying information about the user's current state in the game (e.g. modules completed) and progress towards achieving the goals (Zarraonandia et al. 2015).

The e-learning tool (Gillian 2015a) incorporated elements to develop the users' persistence. Breakpoints were included to "define a point in the game in which the game state can be saved (save point) or retrieved (restore point) from previous plays" (Zarraonandia et al. 2015: 4545). The e-learning tool (Gillian 2015a) employed the Moodle LMS feature *Exit Activity* so that the user could complete activities and resume playing the game from the last completed submodule, as shown in Figure 10:

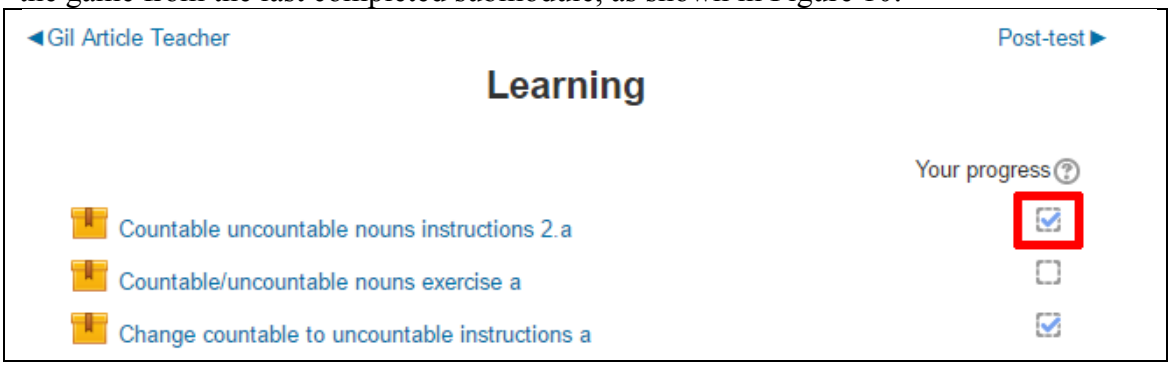


Figure 10. User progress screenshot.

The tick in the box outlined in red in Figure 10 tells the user what activities they have completed and tells the LMS where to resume when the user logs in again. The persistence conditions in the e-learning tool (Gillian 2015a) were based on the user satisfying the objectives of watching the instructional videos and completing the learning and gameplay exercises to unlock the next set of submodules.

2.6.2. Game scenarios sub-model

The game scenarios sub-model contains the representation layer, the services layer, and the interaction and interface layer (Zarraonandia et al. 2015). The following sections will describe each of these layers in turn.

2.6.2.1. **Representation layer**

The representation layer is the innermost or foundation layer and describes the "set of elements and assets that can be used to represent the entities defined in the game rules" (Zarraonandia et al. 2015: 4540). The representation layer is the innermost as it describes the basic components of the game entities. The representation layer is comprised of scenes, characters, and contexts. The scenes describe the environment where the game occurs and includes the background elements and the programming links that trigger the scene transitions (Zarraonandia et al. 2015). Characters/avatars are important for the game playability as characters that excite interest and identification enhance interest in the game. Character definitions are comprised of physical appearance and psychological descriptions that delineate personality, abilities, and behaviour (Zarraonandia et al. 2015). According to the GREM model, the game scenario can be further upgraded through contextual elements such as introductory videos, background music, additional pictures and videos, and *Easter eggs* (i.e. secret messages or screens hidden in the software) (Zarraonandia et al. 2015).

The e-learning tool (Gillian 2015a) incorporated scenes, characters, and contexts to represent the definition of the e-learning tool (Zarraonandia et al. 2015). This representation layer included six different types of scenes. These scenes represent the visual representation of the e-learning tool. The scenes also contain scene entities (i.e. "objects or areas of the scene that can be interacted with" (Zarraonandia et al. 2015: 4546)) , links (i.e. "connections within two or more scenes" (Zarraonandia et al. 2015: 4546)), and background elements (i.e. "non-interactive elements that set the atmosphere of the scene" (Zarraonandia et al. 2015: 4546)). The first scene types are the login scenes. These login scenes were created by Moodle LMS through HyperText Markup Language version 5 **(**HTML) and JavaScript version 1.7. When the user types in the web address http://www.gil-article-teacher.pl/moodle/, the user sees the available courses, as displayed in Figure 11:

Figure 11. Available courses screenshot.

This scene with the available courses included a web link as a scene entity which the user could click to choose the desired course. Once the user has chosen the desired course, the user was directed to the next login scene with the login to the site (see Figure 12 for more details).

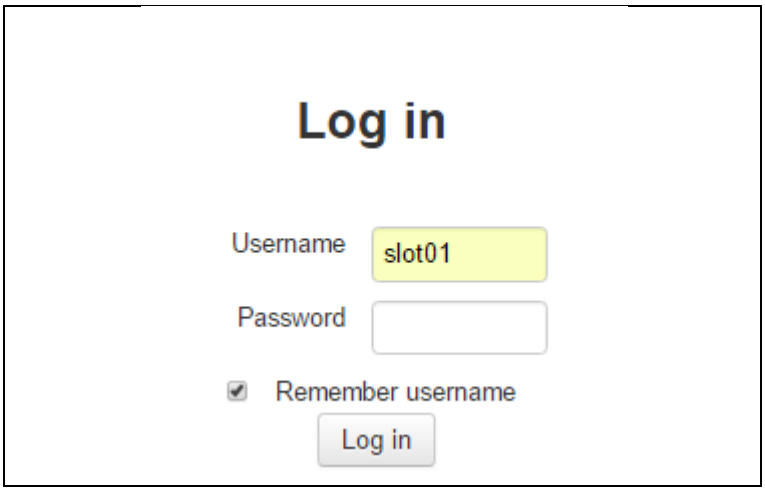


Figure 12. Login screenshot.

This scene contained the scene entities of *Username* and *Password* that the user employed to gain secure access to the e-learning tool. Once the user had logged in, the user was linked to the course scene (see Figure 13 for more details).

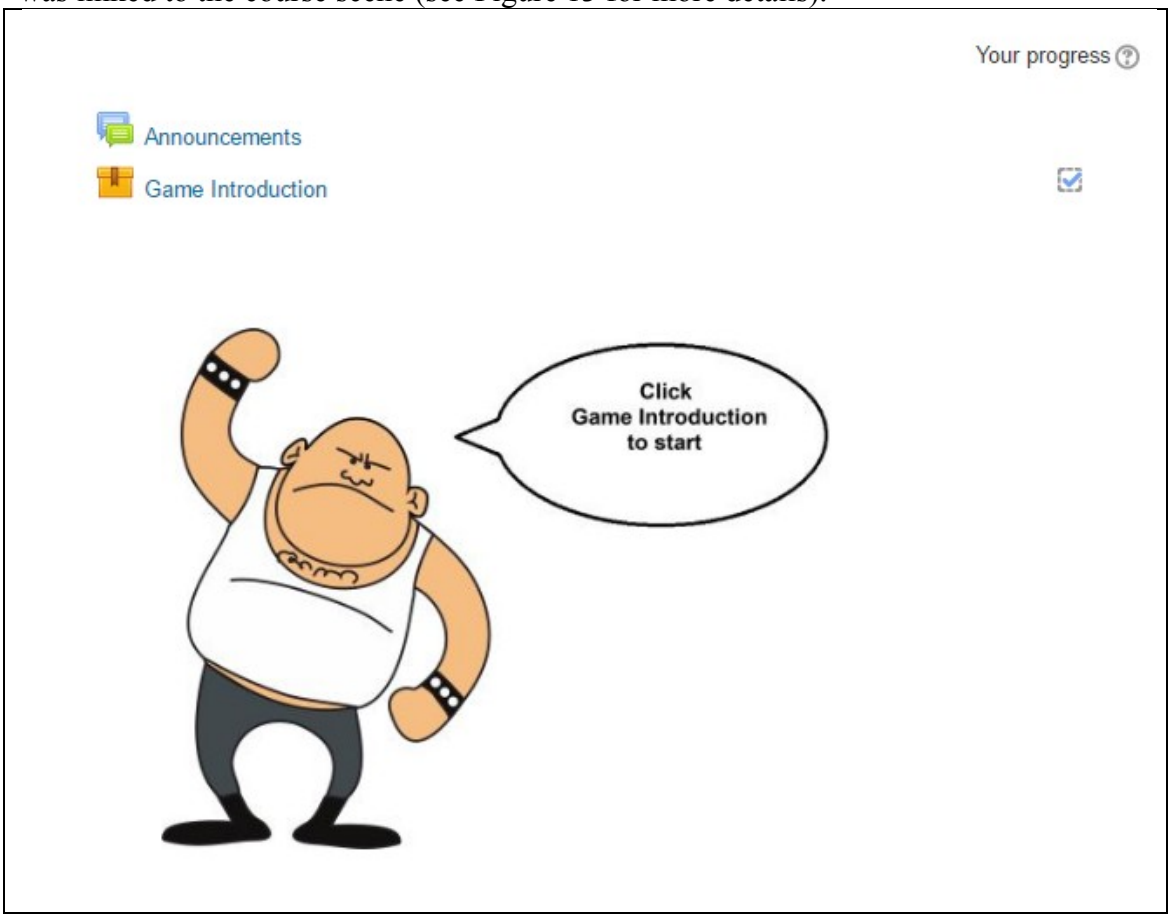


Figure 13. Game introduction screenshot.

This scene had the scene entities *Game Introduction,* a SCORM 1.2 module, explaining how to access the course and three clickable buttons which linked to the Moodle topics of pre-test, learning, and post-test. When the user clicked on a button to access a Moodle topic, the user was linked to the chosen topic scene (see Figure 10 for more details). The topic scenes for the learning topic included clickable links to the SCORM 1.2 modules for instructional modules, learning and gameplay exercises. The course scenes and topic scenes employed the Moodle plugin SCORM player to access the SCORM 1.2 modules.

The instructional scenes for the instructional videos included two types of instructional videos (see section 2.6.1.8. for more details). Both types of instructional videos were created as SCORM 1.2 (Advanced Distributed Learning 2001) submodules through Microsoft PowerPoint (Microsoft 2007b), Microsoft Windows Movie Maker 2012 (Microsoft 2012), and iSpring Free 7 HTML converter (iSpring Solutions 2017). The creation of these instructional videos as SCORM 1.2 meant that the submodules were created with the following scene entities: rewind, play, pause, next slide, slider, sound volume, and re-size functions as interactive SCORM functionality (see Figure 14 for the respective scene entities/functions as SCORM functionalities).

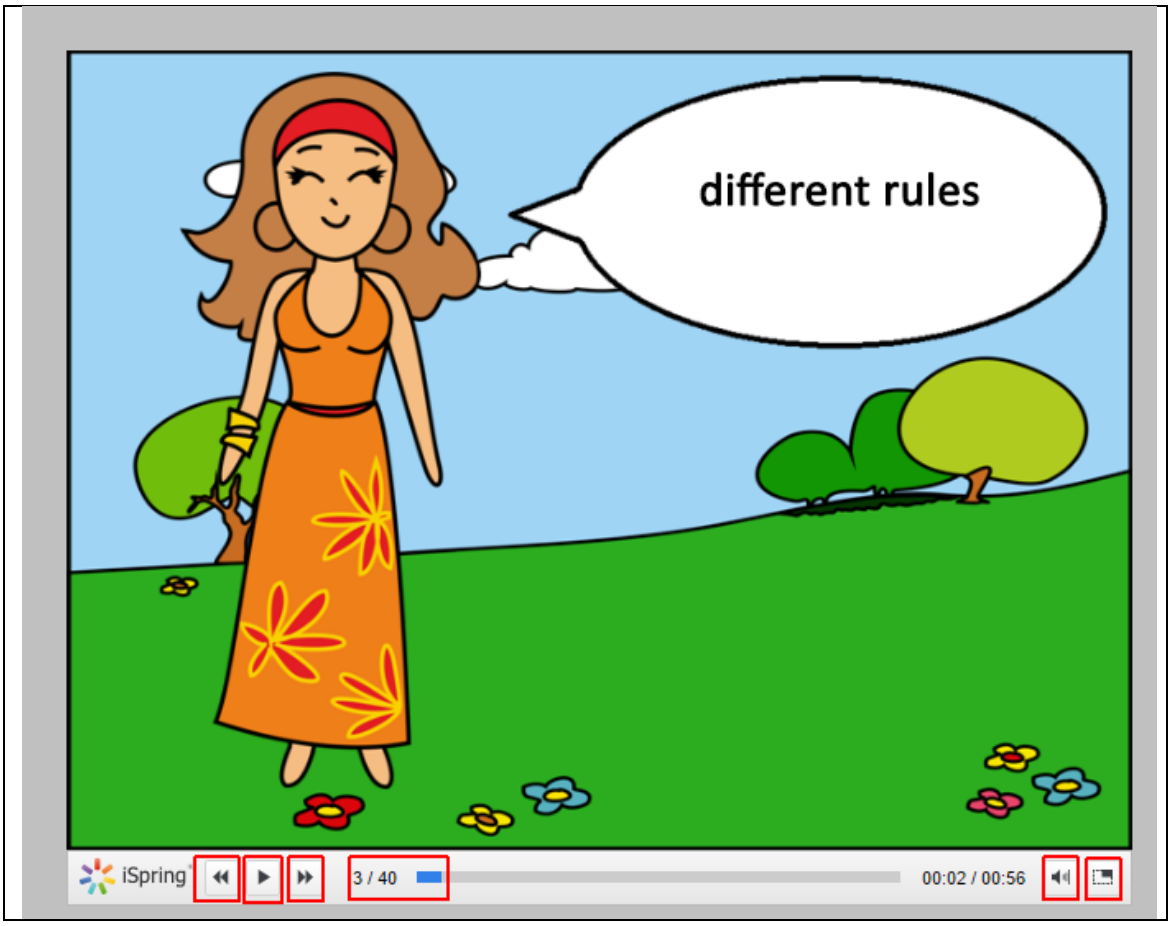


Figure 14. SCORM functionality.

The scene entity interaction occurred through the rewind, play, pause, and next slide buttons created by the iSpring Free 7 HTML converter as SCORM 1.2 module elements and were accessed by the Moodle Plugin - SCORM player, as shown in Figure 14.

The exercise scenes for the article exercises included two types of exercises: learning and gameplay (see sections 2.6.1.5. 2.6.1.6. and 2.6.1.8. for more details). Both types of article exercises were created as SCORM 1.2 (Advanced Distributed Learning 2001) submodules through the Hot Potatoes interactive web exercises creation program (Arneil and Holmes 2017). The scene entity interaction occurred in two types of scene entities. Firstly, the Hot Potatoes program (Arneil and Holmes 2017) created scene entities representing the game response entities (see section 2.6.1.1. and Table 8 for more details).

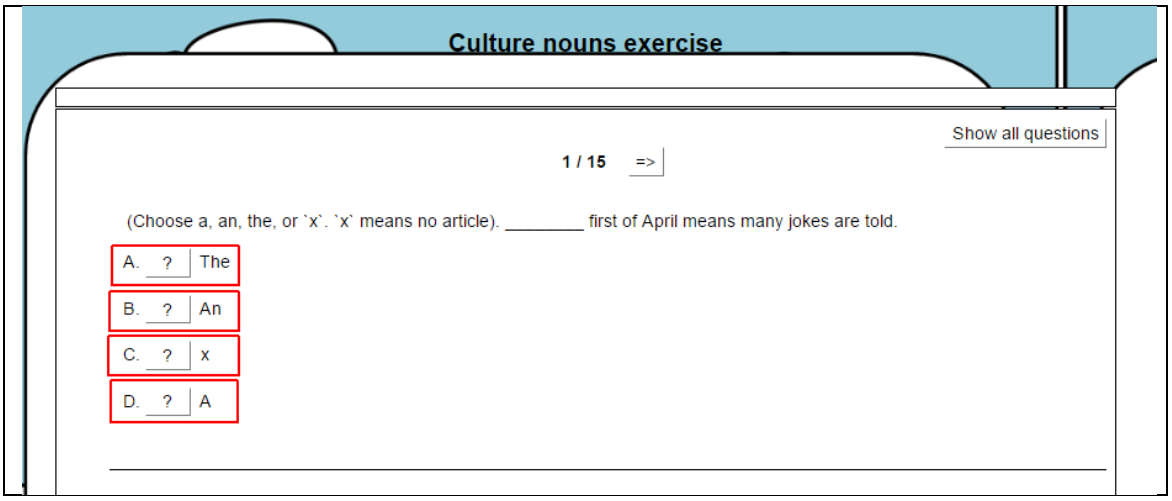


Figure 15. Game response buttons screenshot.

Figure 15 shows an example from the culture nouns exercise. Culture nouns may be associated with the definite article *the* or no article as these nouns can be single and countable, plural and countable, or uncountable. Thus, these game response entities have the game response states as outlined in Table 8 for elements 4, 5, and 6 represented by the buttons outlined in red in Figure 15. These scene entities were in the form of clickable response buttons and the states of these game response entities were recorded in the Moodle LMS system database as appropriate or inappropriate responses and were used to provide feedback to the users in terms of running and final percentage scores (see section 2.6.1.6. for more details). The second type of screen entities represented the game exercise entities (see section 2.6.1.1. and Table 9 for more details).

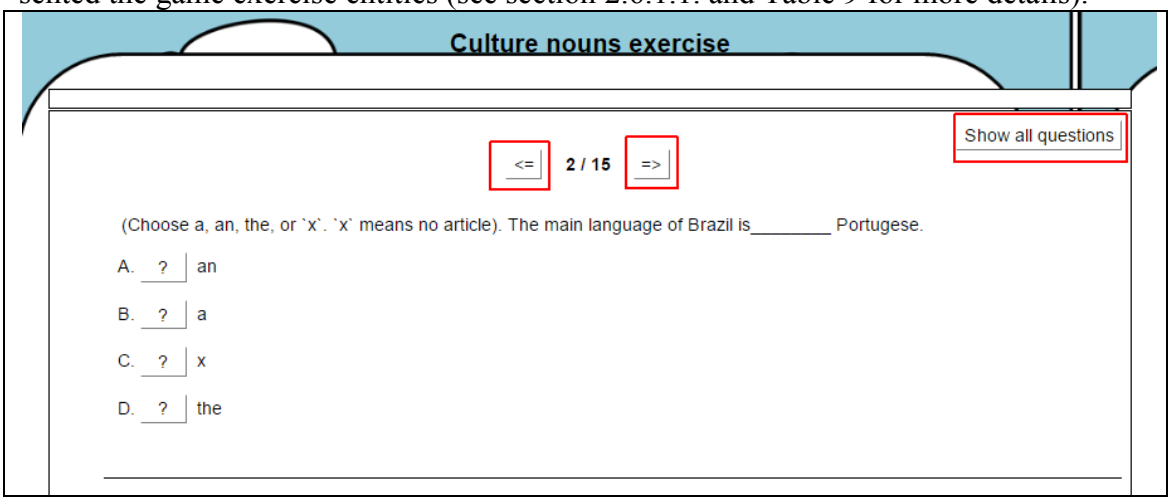


Figure 16. Game exercise buttons screenshot.

Figure 16 details another example from the culture nouns exercise. The buttons outlined in red marked the game exercise entities: screen backward, screen forward, and show all questions (see Table 9 for more details). When clicked, the *Show all questions* changed

its state to *Show questions one by one*. Therefore, these game exercise entities had the game response states as detailed in Table 9. The clickable buttons for the game response entities and game exercise entities were created with the Hot Potatoes program (Arneil and Holmes 2017) as SCORM 1.2 module elements and were accessed by the Moodle Plugin - SCORM player.

The last type of scene in the e-learning tool (Gillian 2015a) was the surprise video scene. This scene formed the prize entity in the rewards layer (see section 2.6.1.9. for more details). These videos were created using the same techniques as the instructional videos.

The e-learning tool (Gillian 2015a) contained background elements for these scenes. The login scenes had background elements that were defined by the cascading style sheet (CSS) that the Moodle LMS employed. The instructional scenes had a variety of Portable Network Graphics (PNG files) created in CorelDraw Essentials 4 (Corel 2014) that served as background images.

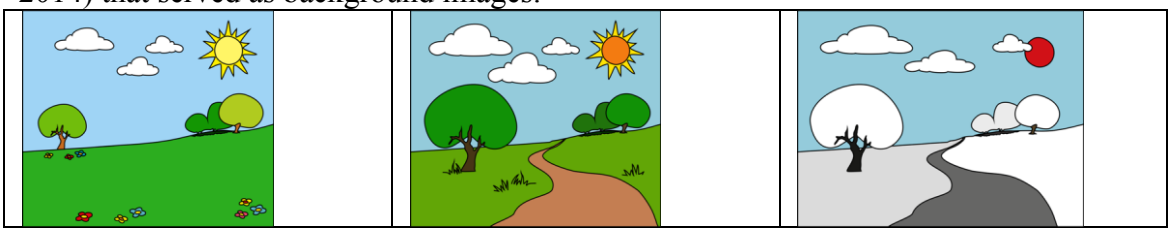
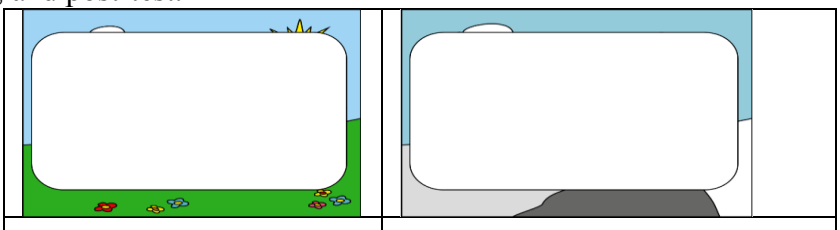


Figure 17. Background images screenshots.

Figure 17 presents a sample of the background images employed in the instructional videos. The graphic designer created the background images based on these criteria: city vs. country and the seasons: spring, summer, fall, and winter. When the instructional videos were created using Microsoft PowerPoint (Microsoft 2007b), one background image was selected per module and added to serve as the general background for all slides in the animation. This was done to minimise the users being distracted by changes in the visual background to aid them to focus on the visual text in the speech bubble. One particular background image was chosen for each type of exercise: pre-test, learning, gameplay, and post-test.



Pre-test	Learning

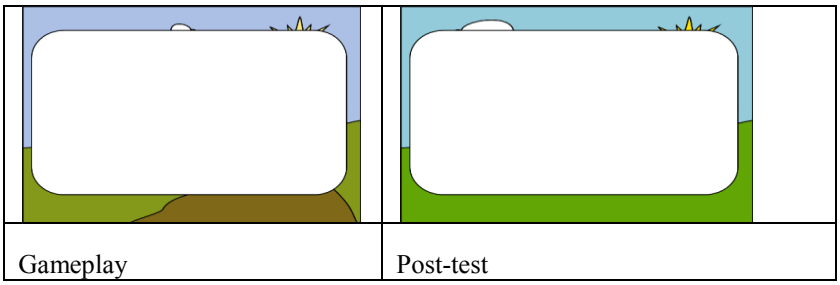


Figure 18. Backgrounds for topics screenshots.

Figure 18 gives the backgrounds and associated topics. The rationale for this was to visually code the exercise type to differentiate it from the others. When the exercises were created using the Hot Potatoes program (Arneil and Holmes 2017), one background image was selected per exercise type and added to serve as the general background for the exercise.

The e-learning tool (Gillian 2015a) contained four characters that appeared in the instructional scenes and the surprise video scenes (see Figure 19 for more details).

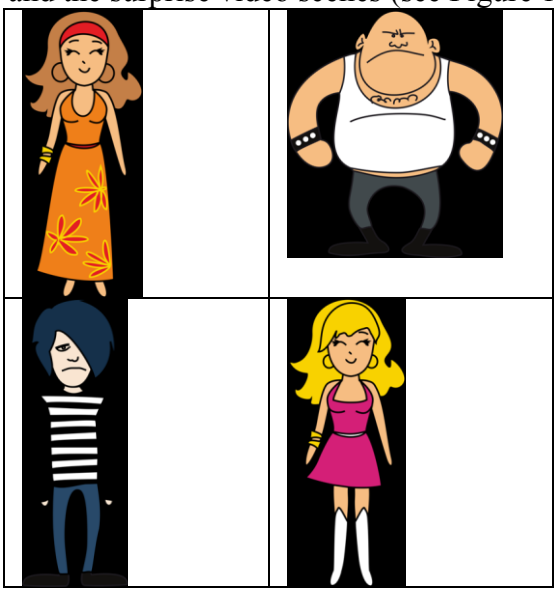


Figure 19. Narrator screenshots.

The main functions of the characters were to serve as narrators of the instructional videos and characters in the surprise videos. The character components of body parts, clothing, and instruments were created by the graphic designer through the medium of PNG files created in CorelDraw Essentials 4 (Corel 2014).

The last element of the representation layer in the e-learning tool (Gillian 2015a) were the contextual elements that helped "to set the context of the scenes and its atmosphere through audio, animation, pictures or textual information resources" (Zarraonandia et al. 2015: 4544). Audio elements (.mp3 files) for the text in the speech bubbles

created through Audacity sound editing software (Ash et al. 2004) were incorporated into the instructional scenes to create enhanced input (see section 2.3.3. for more details) for the users. Music and audio elements (.mp3 files) created through Audacity sound editing software were incorporated into the surprise videos to enhance the game-playing experience (Zarraonandia et al. 2015).

2.6.2.2. **Services layer**

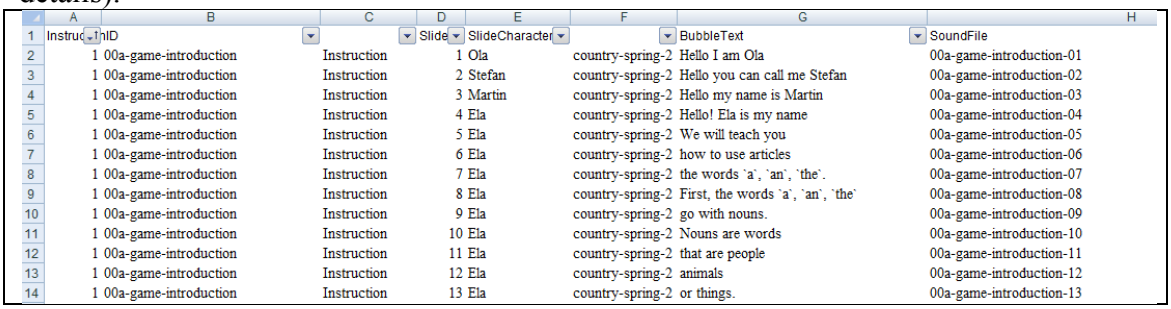
The services layer provides the specifications for the services employed to support the activity of the game (Zarraonandia et al. 2015). More specifically, these are the essential "tools and applications that provide support for carrying out certain activities associated (with) the game" (Zarraonandia et al. 2015: 4546).

The service layer for the e-learning tool (Gillian 2015a) was created with a number of tools and applications. Firstly, the Moodle LMS (Dougiamas 2016) was employed to carry out a number of functions. Those functions were: to ensure the privacy and confidentiality of user responses through secure logins; to calculate and store user responses for exercises in the topics of pre-test, learning, gameplay, and post-test; and to direct, track, and to monitor student progress throughout the e-learning tool's storylines. The service layer also included SCORM 1.2 (Advanced Distributed Learning 2001) functionality which was accessed by the Moodle LMS through a plugin application. The SCORM 1.2 functionality allowed the e-learning tool to create the interface layer (see section 2.6.2.3. for more details); more specifically, the UI element (e.g. "(the) virtual element that provides (the) means to interact with scenes and services or to represent its current state and output" (Zarraonandia et al. 2015: 4546)) and the interaction layer (e.g. "actions or combination of actions that the player performs in order to interact with the scenario" (Zarraonandia et al. 2015: 4546)) (see section 2.6.2.3. for more details).

To access the SCORM functionality for the instructional scenes and surprise video scenes, the SCORM 1.2 modules were created with Microsoft Powerpoint 2007 (Microsoft 2007b), Microsoft Windows Movie Maker 2012 (Microsoft 2012), and iSpring Free 7 HTML converter (iSpring Solutions 2017). To enable access to SCORM functionality for the learning and gameplay exercise scenes, the SCORM 1.2 modules

were created by Hot Potatoes web interactive quiz making software (Arneil and Holmes 2017). All SCORM 1.2 modules were uploaded to the Moodle LMS.

To enable the SCORM 1.2 modules to be created, data for the instructional videos, pre-test/post-test exercises, learning exercises, gameplay exercises, reinforcers, and feedback (meta-linguistic and explicit) had to be created, validated, and stored. The researcher, a native speaker of English with a Master of Health Science (Honours) degree, a Bachelor of Speech Pathology degree, 10 years experience working as a speech-language pathologist in Australia, and six years experience working as an English lecturer at a college in Poland, created the noun and adjective items with associated article choices according to the article usage patterns of Master's binary schema as set out in section 1.7. A number of Microsoft Excel (Microsoft 2007a) spreadsheets were created to store this data. For the instructional videos, a spreadsheet was created to store the data to be loaded into the speech bubbles for the instructions (see Figure 20 for more details).



	A	B	C	D	E	F	G	H
1	Instruc	hID		Slide	SlideCharacter		BubbleText	SoundFile
2	1	00a-game-introduction	Instruction	1	Ola	country-spring-2	Hello I am Ola	00a-game-introduction-01
3	1	00a-game-introduction	Instruction	2	Stefan	country-spring-2	Hello you can call me Stefan	00a-game-introduction-02
4	1	00a-game-introduction	Instruction	3	Martin	country-spring-2	Hello my name is Martin	00a-game-introduction-03
5	1	00a-game-introduction	Instruction	4	Ela	country-spring-2	Hello! Ela is my name	00a-game-introduction-04
6	1	00a-game-introduction	Instruction	5	Ela	country-spring-2	We will teach you	00a-game-introduction-05
7	1	00a-game-introduction	Instruction	6	Ela	country-spring-2	how to use articles	00a-game-introduction-06
8	1	00a-game-introduction	Instruction	7	Ela	country-spring-2	the words `a`, `an`, `the`.	00a-game-introduction-07
9	1	00a-game-introduction	Instruction	8	Ela	country-spring-2	First, the words `a`, `an`, `the`	00a-game-introduction-08
10	1	00a-game-introduction	Instruction	9	Ela	country-spring-2	go with nouns.	00a-game-introduction-09
11	1	00a-game-introduction	Instruction	10	Ela	country-spring-2	Nouns are words	00a-game-introduction-10
12	1	00a-game-introduction	Instruction	11	Ela	country-spring-2	that are people	00a-game-introduction-11
13	1	00a-game-introduction	Instruction	12	Ela	country-spring-2	animals	00a-game-introduction-12
14	1	00a-game-introduction	Instruction	13	Ela	country-spring-2	or things.	00a-game-introduction-13

Figure 20. Instructions stimuli screenshot.

The speech bubble data was created with the two criteria in mind. The first criterion was to use vocabulary that was high frequency, familiar to the subjects of the study (see section 3.3.6.1. for more details), and direct to meet the theoretical requirement of explicit input (see section 2.3.3.1. for more details). The second criterion was the text in each speech bubble needed to be eight words or less to satisfy the theoretical requirement of chunking (see section 2.3.3.3. for more details). The data was coded by instruction video module to allow for the instruction video modules to be created in accordance with object-oriented programming (see Figure 20 for more details). The data was coded with additional information: the name of the character who would be represented graphically in the instruction video module and provide the voice for the audio files, the name of background graphic in the instruction video module, and the name of the associated audio file for the text in the speech bubble (see Figure 20 for more details).

The data for the pre-test/post-test exercises, learning exercises, and gameplay exercises were stored in the Excel spreadsheet in the *Stimuli* column (see Figure 21. for more details).

	A	B	C	D	E	F
1	ID	Stimuli	Choice	CorrectRes	Error Code	Exercis
2624	2624	We didn`t join <x; NC> <N; Facebook>.	a; an; the; x	x	NC	79
2625	2625	Who owns <x; NC> <N; Apple>?	a; an; the; x	x	NC	79
2626	2626	Have you tried the cheeseburgers at <x; NC> <N; McDonald`s>?	a; an; the; x	x	NC	79
2627	2627	Did you see the picture on <x; NC> <N; Instagram>?	a; an; the; x	x	NC	79
2628	2628	<x; NP> <N; Ola> ate 3 pieces of cake.	a; an; the; x	x	NP	79

Figure 21. Exercise data screenshot.

These exercises were coded with additional annotations for use in software that would scan the annotations according to the original specifications (see Appendix A for details about the annotation). To use the exercises with the Hot Potatoes interactive quiz creation software, the annotations were stripped out, the stimuli with an underline for the missing response was added to a Hot Potatoes .jqz file to create Hot Potatoes interactive quizzes. The .jqz file signalled to the Hot Potatoes software that a question interactive quiz will be created. The data for one question were added between the *<question-record><question>* and *<question>* annotations which marked for the Hot Potatoes software where each exercise question was.

The Excel spreadsheet storing the data for the pre-test/post-test exercises, learning exercises, and gameplay exercises contained additional information for the e-learning tool (Gillian 2015a). Each data record contained information about which exercise the record belonged to (see the column labelled *Exercise* in Figure 21. for more details). This ensured that each data record with exercise information would be associated with the correct exercise module during the exercise module creation process.

Another Excel spreadsheet was created to provide validation information for the nouns and adjectives used in the exercises (see Figure 22. for more details).

	A	B	C	D	E	F	G	H	I	J	K
1	NounStimulilD	Lemma	DerivedForms	NounType	UncountableSemanticType	COCAuncountable	COCAcountable	UncountableScore	StartingSoundType	StartingSound	UsageType
2	1	adventure	adventures	two-way	abstract noun	8681	4122	0.321955792	Vowel.short	schwa	action
3	2	speech	speeches	two-way	abstract noun	38234	5470	0.125160168	Consonant.voiceless-alveolar-fricative	s	action

Figure 22. Noun database screenshot.

The usage of nouns and adjectives in the e-learning tool was as follows: if a noun or an adjective was used in a pre-test/post exercise, it could not be used in a learning and gameplay exercise and vice versa. Each noun and adjective was coded in the *ExerciseID* column with this information. Additional information was coded for each noun and ad-

jective with the columns *Lemma*, *DerivedForms*, *NounType*, *UncountableSemantic-Type*, *COCAuncountable*, *COCAcountable*, *UncountableScore*, *StartingSoundType*, *StartingSound*, and *UsageType.* Table 10 explains how the information applies to each data record for a noun and adjective:

Table 10. Noun stimuli - additional information.

Column Heading	Meaning	Applies to
1. Lemma	base form of the word	nouns and adjective
2. DerivedForms	plural form	countable nouns
3. NounType	information on the type of noun (e.g. countable, uncountable, two-way, proper) or if the word is an adjective	nouns and adjective
4. UncountableSemanticType	information on the type of uncountable noun: abstract, mass	two-way and uncountable nouns
5. COCAuncountable	score from the COCA corpus about the word' ranking as an uncountable noun	two-way and uncountable nouns
6. COCAcountable	score from the COCA corpus about the word' ranking as a countable noun	two-way and uncountable nouns
7. UncountableScore	derived from dividing item 6 by the result of adding item 5 and 6. If the score is < if .01, then the noun is considered uncountable	two-way and uncountable nouns
8. StartingSoundType	information on whether the starting sound of the word is a consonant or vowel	nouns and adjective
9. StartingSound	information about the actual starting sound of the word	nouns and adjective
10. UsageType	additional information on abstract and mass uncountable nouns,	two-way and uncountable nouns

The information in Table 10 was applied when creating the learning and game-play exercises, particularly when creating the game response entities (see Table 8 for more details) for elements in the exercises.

The data for the positive and negative reinforcers were stored in an Excel spreadsheet with information from the SENTIWORDNET database (Baccianella et al. 2010) about its positive meaning, negative meaning, and objective meaning values (see Figure 23. for more details).

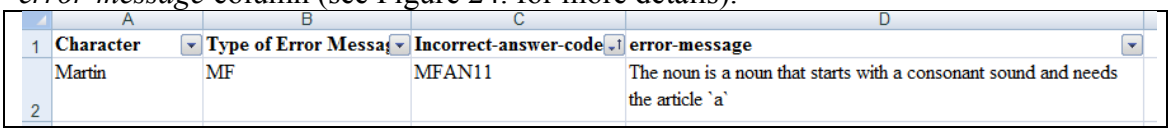
	B	C	D	E	F
1	SentiWordNet meaning	SentiWordNet positive meaning	SentiWordNet Objective Meanin	SentiWordNet Negative Meani	Total Value
2	excellent#1	1	0	0	1
3	great#4	0.875	0.125	0	0.9375
4	superb#1	0.875	0.125	0	0.9375
5	marvellous#1	0.75	0.25	0	0.875

Figure 23. Positive reinforcers screenshot.

A value was calculated by multiplying the positive meaning value by 1, the objective meaning value by .5, and the negative meaning value by -1 and then adding the results together to derive the value in the column *Total Value.* The researcher then chose four positive reinforcers (e.g. *excellent*, *great*, *superb*, and *marvellous*) with total values be-

tween 0.875 and 1 for the *type a* exercises and five positive reinforcers (e.g. *good*, *positive, terrific, super,* and *alright*) with total values between 0.8125 and 0.875 for the *type b* exercises. For the *type a* exercises, three negative reinforcers were chosen (e.g. *Almost right*, *That was close*, and *Good try*) with total values of .5. For the *type b* exercises, three negative reinforcers were chosen (e.g. *Sorry*, *That`s bad*, and *That's a mistake*) with total values of -0.4375. The different reinforcers were to provide varied reinforcement to the users based on their performance in the different types of exercises (see sections 2.6.1.5. and 2.6.1.6. for more details). However, as the Moodle LMS system did not permit activities to be accessed according to scores achieved in the different types of exercises, the effectiveness of different type of reinforcers was limited (see Appendix C for more details).

The data for the feedback messages were stored in the Excel spreadsheet in the *error-message* column (see Figure 24. for more details).



	A	B	C	D
1	**Character**	**Type of Error Messa**	**Incorrect-answer-code**	**error-message**
2	Martin	MF	MFAN11	The noun is a noun that starts with a consonant sound and needs the article `a`

Figure 24. Feedback messages screenshot.

The messages were coded with additional annotations for use in software that would scan the annotations according to the original specifications. As shown in Figure 24., the original annotation had a column for the character who would voice the error message, the type of error message (i.e. *MF* – meta-linguistic feedback, *EF* – explicit feedback), the error message code (i.e. *MFAN11 – MF* stood for meta-linguistic feedback), *AN* represented a noun starting with a consonant, and *11* stood for the message number sequence. In order to use with the Hot Potatoes interactive quiz creation software, the annotations were stripped out and the feedback messages (see Appendix B for details about the feedback messages) were added to a Hot Potatoes .jqz file to create Hot Potatoes interactive quizzes. The .jqz file signalled to the Hot Potatoes software that a question interactive quiz will be created. The data for one feedback message were added between the *</text><feedback>* and *</feedback>* annotations which marked for the Hot Potatoes software where each feedback message was.

2.6.2.3. **Interface and interaction layer**

This layer specifies the appearance of the game and how the user physically interacts with the game (Zarraonandia et al. 2015). The interface layer provides descriptions of elements such as containers (e.g. windows, frames, tabs) and simple interface elements such as radio buttons, checkboxes, and sliders that are required to represent one or more of the innermost layers of the sub-models (Zarraonandia et al. 2015). The interaction layer defines how the user will access the game through both physical interactions (e.g. keystrokes via a keyboard) and/or virtual interactions (e.g. drag and drop responses from list of choices) (Zarraonandia et al. 2015). The relational database has a section for each exercise module that describes the interface elements for each exercise in terms of virtual interactions (e.g. click the button and drag and drop from a list) (see sections 2.6.2.1. and 2.6.2.2. for more details). Both types of interactions can be combined to define control elements that programmatically delineate specific service elements such as scoreboards.

The interface layer in the e-learning tool was mediated by the Moodle LMS (Dougiamas 2016) and the SCORM 1.2 (Advanced Distributed Learning 2001) functionality. The game response entities (see Table 8 for more details) and game exercise entities (see Table 9 for more details) were mediated through the SCORM 1.2 module functionality (see section 2.6.2.1. for more details). The SCORM functionality was included in the SCORM 1.2 modules which were uploaded into the Moodle LMS (Dougiamas 2016) to create the interface that the user could interact with.

In the e-learning tool (Gillian 2015a), the interaction occurred through three types of devices in the pilot study and main study: laptop computers, tablets, and smartphones. With all three types of devices, the control commands performed by the users to interact with the scenarios were mainly physical interactions (e.g. keyboards and mice with laptops and touch screens with tablets and smart phones) with some virtual interaction (e.g. virtual keyboards with tablets and smart phones). To access the login scenes, the users were observed to use keyboards and mice with laptops and touch screens and virtual keyboards with tablets and smart phones. For the course scenes and the topic scenes, the users were noted to access the clickable menu buttons with mice when using laptops and with touch screens when using tablets and smart phones. When accessing the instructional scenes and surprise video scenes, the users were observed to use mice

when using laptops and with touch screens when using tablets and smart phones to access the SCORM 1.2 module functionality (see section 2.6.2.1. for more details). For accessing the exercise scenes, the users were observed to employ mice when using laptops and with touch screens when using tablets and smart phones to access the game response entities (see Table 8 for more details) and game exercise entities (see Table 9 for more details) through the SCORM 1.2 module functionality (see section 2.6.2.1. for more details).

2.7. Traditional teaching approach

2.7.1. Outline

This section will present and discuss the other teaching approach to be investigated in this research: traditional pen and paper teaching. This section will describe and discuss the basic principles and evidence for this approach and then describe the specific approach employed in this research. The specific approach will be presented in two parts: the introductory handout which presented the overall explanation of English articles and the usage handouts and exercises which presented the specific patterns of English articles. Each part will be presented and discussed in terms of strengths and weaknesses and in terms of rationales from Quirk et al.'s usage classification (Quirk et al. 1985). Research into article teaching has observed that many English teaching websites and textbooks employ this model of usage classification as the scaffolding (Huong 2005; Król-Markefka 2010; Rychlewska 2015; Zabor and Rychlewska 2015).

2.7.2. Basic principles and research evidence

The traditional teaching approach is the oldest and most prevalent approach for teaching English articles (Arabski 1990; Bitchener and Knoch 2010a; Bitchener 2012; Butler 2002; Huong 2005; Kałuża 1963; Król-Markefka 2007, 2010, 2012, Master 1988, 1990, 1996, 1997, 2002; Quirk et al. 1985; Świątek 2013; Zabor and Rychlewska 2015). This

approach involves the teacher explicitly modelling English articles and their usages verbally and with visual aids. Students then may discuss the task and/or aspects of the task with the teacher and colleagues and then write down their responses to exercises presented with pen and paper (Bitchener and Knoch 2010a; Bitchener 2012; Huong 2005; Król-Markefka 2007, 2010, Master 1990, 1997). This traditional teaching approach has the largest body of research of the intervention approaches, certainly far larger than the GBL approach to be investigated in this thesis (Arabski 1990; Bitchener and Knoch 2010a; Bitchener 2012; Butler 2002; Huong 2005; Kałuża 1963; Król-Markefka 2007, 2010, 2012, Master 1988, 1990, 1996, 1997, 2002; Quirk et al. 1985; Świątek 2013; Zabor and Rychlewska 2015). An examination of this research shows that often the studies demonstrated promising short term effects but no long-lasting effects (Huong 2005; Król-Markefka 2007, 2010, Master 1988, 1990, 1997; Rychlewska 2015; Zabor and Rychlewska 2015). However, one study by (Bitchener and Knoch 2010a, 2010a, 2010b) of 63 advanced L2 learners at a university in the USA demonstrated that the subjects who received written meta-linguistic and/or form-focused feedback for two English article system uses (the use of 'a' for first mention nouns and 'the' for subsequent mention of nouns) performed significantly better on a delayed post-test administered 10 weeks after the pre-test than those who received indirect feedback or who were in the control group.

2.7.3. Traditional teaching approach – introductory handout

The first element of the traditional teaching approach to English articles was an introductory handout based on Quirk et al.'s usage classification (Quirk et al. 1985). The introductory handout in this research was based on the document created by David Appleyard found on his website (http://www.davidappleyard.com/english/articles.htm) (see Appendix D for more details). This website was chosen as it had a moderately high access rating based on its Alexa reach ranking of 500060 (Amazon.com 2017).

The introductory handout divided the usage patterns by the types of English articles: definite article (i.e. *the*), indefinite article (i.e. *a* or *an*), and no article (see Appendix D for more details). This structure of starting with the definite article was problematic in terms of logical order as the concept of second mention comes first and the idea

of first mention comes second (see Appendix D for more details). This does not meet the criterion of explicit instruction as this order is not direct and clear (see section 2.3.3.1. for more details). The section on definite articles started with the concept of second mention, drawing this concept from pages 267-268 of Quirk et al.'s text. The handout provided an example about an elephant and a mouse required the use of first mention nouns, as shown in example (86).

(86) An elephant and a mouse fell in love. **The mouse** loved **the** elephant**'s** long **trunk,** and **the elephant** loved **the** mouse's tiny **nose**.

(Appleyard 2010: 1)

As can be seen by example (86), the example to explain the definite article *the* and the concept of second mention involved the indefinite articles *an* and *a* which did not meet the criteria of being direct, clear, and explicit (see section 2.3.3.1. for more details).

The section on the definite article presented part of the usage pattern concerned with geography, drawing on Quirk et al.'s usage patterns 5.29 (Quirk et al. 1985: 266–267) and 5.72 (Quirk et al. 1985: 296–297). However, due to the handout employing the division by type of article, the explanation of other geographical usage patterns (e.g. use of no article with cities, countries, continents, most roads, streets, parks, squares or bridges) must be contained in the other article type sections of this handout. Thus, again, this division by article type handout did not present the usage patterns directly, clearly, and explicitly (see section 2.3.3.1. for more details).

The section that dealt with the indefinite article commenced with an explanation about how to use the indefinite article *a* and the article *an*, based on Quirk et al.'s usage pattern 5.11 (Quirk et al. 1985: 253–254). Example (87) provided the explanation from the handout:

(87) (a) Use ***'a'*** with nouns starting with a ***consonant*** *(letters that are not vowels),* ***'an'*** with nouns starting with a ***vowel*** (*a,e,i,o,u*)

(b) **NOTE**: **An** before an *h* mute - **an** hour, **an** honour.

A before *u* and *eu* when they sound like '*you*': **a** European, **a** university, **a** unit - yes, yacht

(Appleyard 2010: 2)

As can be seen from example (87), the explanation did not differentiate between letters and sounds clearly and directly. Also, the note in example (87) (b) presented the infor-

mation in a segment of 25 words, which does not satisfy the criterion of chunking (see section 2.3.3.3. for more details).

The section that explained the use of no article also contained explanations that were larger segments. Example (88) outlined the explanation of proper names:

(88) most places consisting of just the name of a person, or the name of a person/place followed by a noun. e.g. We eat at McDonald's, We bank at Lloyds Bank, We pray at St. Paul's Cathedral, We leave from Kennedy Airport, We catch the train at Waterloo Station, I study at Cambridge University

(Appleyard 2010: 3)

While example (88) provided six detailed examples to explain what proper names are, this explanation was much larger than what many students can process easily (see section 2.3.3.3. for more details).

To conclude, the introductory handout, while detailed, explained article usage patterns through focussing on the types of articles. Thus, the concepts of first and second mention were not presented logically. The explanations were lengthy and at times, were not direct, clear, and explicit.

2.7.4. Traditional teaching approach – usage handouts and exercises

The second element of the traditional teaching approach to English articles were handouts and exercises based on Quirk et al.'s usage classification (Quirk et al. 1985). These handouts and exercises were based on the handouts found on the website (http:// http://www.englishpage.com/articles/index.htm) (see Appendix E for more details). This website was chosen as it covered the usage patterns in detail, contained exercises to practise the usage patterns (see Appendix E for more details), and had a moderate access rating based on its Alexa reach ranking of 11234 (Amazon.com 2017).

Like the introductory handout (see section 2.7.3. for more details), the usage handouts and exercises divided the usage patterns by the types of English articles: indefinite article (i.e. *a* or *an*), definite article (i.e. *the*), and no article (see Appendix E for more details). However, unlike the introductory handout, it commenced with the indefinite articles (see Appendix E for more details). Like the introductory handout, the usage exercises attempted to explain how the usage of *a* and *an* depended on the first sound of

the noun, based on Quirk et al.'s usage pattern 5.11 (Quirk et al. 1985: 253–254). Like the introductory handout, the usage exercises did not distinguish between letters and sounds clearly and directly. Example (89) provides the wording in the usage handouts for explaining the use of *a* and *an*:

(89) **Use 5 -** Also use *A* before letters and numbers which sound like they begin with a consonant, such as "U", "J", "1" or "9". Remember, it is the sound not the spelling which is important.

(http://www.englishpage.com/articles/a-vs-an.htm Page 1)

This explanation commenced with the concept of *letter* but then concluded with discussing how sounds were important (see example (89) for more details).

While the usage handouts commenced with the indefinite article, the definition of what indefinite articles were was not presented at the start of the lessons (see Appendix E for more details). The definition of indefinite articles was placed in usage 9 to form a contrastive definition with the definition of definite articles in usage 10 (see Appendix E for more details). Thus, while one could discern a rationale for this sequencing, it did not satisfy the criteria of explicit feedback (see section 2.3.7.7. for details) that was provided immediately (see section 2.3.7.9. for more details). One of the criteria for immediate, explicit feedback was that this type of feedback should provide meta-linguistic information about the target grammatical structure as soon as possible. Delay in the provision of the meta-linguistic feedback until the ninth and tenth usage may mean the ESL learner would have more difficulties in integrating this crucial information into their understanding of English articles.

In the contrastive definition of the definite article in usage 10, the usage handout provided a detailed meta-linguistic explanation that contained a great deal of high level, complex language. Example (90) presents the explanation of the definite article drawing on Quirk et al.'s usage pattern 5 (Quirk et al. 1985: 272):

(90) **Use 10 –** *THE* is called a definite article. "Definite" means "specific". Use *THE* when talking about something which is already known to the listener or which has been previously mentioned, introduced, or discussed.

(http://www.englishpage.com/articles/a-an-vs-the.htm Page 1)

As could be seen in example (90), the explanation employed high level vocabulary such as *specific*, *previously mentioned*, *introduced*, and *discussed*. This use of high level vo-

cabulary did not meet the criteria of being direct, clear, and explicit (see section 2.3.3.1. for more details). Also, by giving a long, detailed explanation, example (90) failed to satisfy the criterion of chunking the information provided to the learner (see section 2.3.3.3. for details), especially in the light of the complex vocabulary presented in this explanation.

The usage handouts and exercises contained a section on advanced article usage (see Appendix E for more details). The following usages were covered: *a/an* used like *per*; ranking or ordering words; superlatives; use of no article when generalising about uncountable nouns and plural nouns; use of *the* with a single countable noun to make generalisations; use of articles with musical instruments, plants, animals, inventions, currencies, and body parts; special expressions e.g. *a few*, *a little*; and the use of no articles with illnesses, diseases, and directions. While detailed, this section did not provide the usage patterns directly, clearly, and explicitly (see section 2.3.3.1. for more details).

In summary, the usage handouts and exercises, like the introductory handout, contained detailed explanations that presented article usage patterns through the structure of types of articles. Like the introductory handout, the explanations given were lengthy and at times, were not direct, clear, and explicit. Also, the usage handouts contained high level vocabulary as explanation.

2.8. Research questions

This thesis reports on a pilot study and a main study that investigated the effectiveness of two pedagogical options in developing appropriate article usage of Polish ESL high school students using the *Gil's Article Teacher* software (Gillian 2015a). On the basis of the literature reviewed, the specific aims and hypotheses were as follows:

2.8.1. Pilot Study

Aim 1: to establish whether Polish ESL students of eleven to fourteen years of age find the *Gil's Article Teacher e-learning tool* (Gillian 2015a) appropriate enough in its teaching of English article usage for the main study to proceed.

Hypothesis 1: Gil's Article Teacher e-learning tool (Gillian 2015a) is appropriate in its teaching of English article usage for Polish ESL students of eleven to fourteen years of age.

Aim 2: to establish if the Gil's Article Teacher e-learning tool (Gillian 2015a) can fulfil the technological requirements needed for its teaching of English article usage in order for the main study to proceed.

Hypothesis 2: Gil's Article Teacher e-learning tool (Gillian 2015a) can fulfil the technological requirements needed for its teaching of English article usage for Polish ESL students of eleven to fourteen years of age.

Aim 3: to establish whether Polish ESL students of eleven to fourteen years of age find the vocabulary in the *Gil's Article Teacher e-learning tool* (Gillian 2015a) appropriate enough in its teaching of English article usage for the main study to proceed.

Hypothesis 3: Gil's Article Teacher e-learning tool (Gillian 2015a) is appropriate in its vocabulary for teaching of English article usage for Polish ESL students of eleven to fourteen years of age.

2.8.2. Main Study

Aim 1: to determine which of two pedagogical approaches yields the greatest improvement in the appropriate usage of English articles by thirteen- to fourteen-year-old participants. The two pedagogical approaches are:

a. *Gil's Article Teacher e-learning tool*
b. *traditional pen and paper grammar exercises*

Hypothesis 1: Students' appropriate usage of English articles improves from baseline to post-test after teaching with *Gil's Article Teacher e-learning tool* more than after teaching with *traditional pen and paper grammar exercises*.

Aim 2: To determine which of two pedagogical approaches yields the most improvement in the appropriate usage of the article *a* by thirteen- to fourteen-year-old participants. The same pedagogical approaches are employed for the article *a* as stated in Aim 1.

Hypothesis 2: Students' appropriate usage of the article *a* improves from baseline to post-test after teaching with *Gil's Article Teacher e-learning tool* more than after teaching with *traditional pen and paper grammar exercises*.

Aim 3: To determine which of two pedagogical approaches yields the most improvement in the appropriate usage of the article *an* by thirteen- to fourteen-year-old participants. The same pedagogical approaches are employed for the article *an* as stated in Aim 1.

Hypothesis 3: Students' appropriate usage of the article *an* improves from baseline to post-test after teaching with *Gil's Article Teacher e-learning tool* more than after teaching with *traditional pen and paper grammar exercises*.

Aim 4: To determine which of two pedagogical approaches yields the most improvement in the appropriate usage of the article *the* by thirteen- to fourteen-year-old participants. The same pedagogical approaches are employed for the article *the* as stated in Aim 1.

Hypothesis 4: Students' appropriate usage of the article *the* improves from baseline to post-test after teaching with *Gil's Article Teacher e-learning tool* more than after teaching with *traditional pen and paper grammar exercises*.

Aim 5: To determine which of two pedagogical approaches yields the most improvement in the appropriate usage of no article by thirteen- to fourteen-year-old participants. The same pedagogical approaches are employed for no article as stated in Aim 1.

Hypothesis 5: Students' appropriate usage of no article improves from baseline to post-test after teaching with *Gil's Article Teacher e-learning tool* more than after teaching with *traditional pen and paper grammar exercises*.

2.9. Ethics approval

The pilot study and main study received ethics approval from Adam Mickiewicz University: Faculty of Social Sciences: Institute of Psychology: Ethics Committee for research projects. Both studies addressed ethical concerns in the approved ethics proposals, particularly in regard to reducing coercion of parents/caregivers of prospective participants, and by having teachers from the target schools approach the prospective participants and their parents/caregivers rather than the primary investigator.

Chapter 3: Method Section

3.1. Pilot study methods

A pilot study was conducted to ensure that the main study could be carried out satisfactorily. The pilot study focussed on verifying three important elements of the e-learning tool (Gillian 2015a). Firstly, the pilot study verified if the educational concepts contained in the e-learning tool (Gillian 2015a) concerning appropriate article usage in English created ZPDs appropriate for Polish speakers of English. This element is important to verify, as English articles are difficult grammatical concepts to teach (see section 1.2.1. for more details), and it was important to evaluate if the e-learning tool was providing appropriate input and feedback to the students (see Appendix C for more details). The second element was to test the technological requirements of the e-learning tool on a web-based server so as to observe and mediate any technological problems (see Appendix C for more details). The third element was to assess if the vocabulary in the in the e-learning tool (Gillian 2015a) was appropriate for teaching English article usage. This element is important to verify, as the focus of the research was English article usage and it was important to evaluate if vocabulary employed by the e-learning tool was aiding or hindering the students in their learning of English article usage (see Appendix C for more details)

Five students and their parents/caregivers from an English private school in Gorzów Wielkopolski were asked to participate in testing the e-learning tool (Gillian 2015a) for five 30 minute sessions during a school week. The students and their parents/caregivers were informed about the purpose and conduct of the study at an information session held before the start of the pilot study. Each 30 minute session had 20

minutes of play with the e-learning software and 10 minutes of answering questions in an online questionnaire created on the instant.ly website (www.instant.ly) (see Appendix C for more details).

3.2. Pilot study results and recommendations

The results of this pilot study showed that the e-learning tool (Gillian 2015a) was appropriate enough in its teaching of English article usage for the main study to proceed. The pilot study indicated that the majority of the educational concepts in the e-learning tool were able to create ZPDs appropriate for the subjects (see Appendix C for more details). The pilot study established that there was not a strong enough relationship between the OWLS-II results and the pre-test result to warrant continuing with employing the OWLS-II assessment as a validation of the pre-test results (see Appendix C for more details).

The pilot study suggested that the e-learning tool (Gillian 2015a) could fulfil the technological requirements needed for its teaching of English article usage in order for the main study to proceed (see Appendix C for more details). The pilot study indicated that the main study would require the pauses between sound files for the instructional videos to be shortened. The pilot study indicated that some of the aims of the original research (i.e. investigating input modification and individualised feedback) probably would not be fulfilled due to serious flaws in the Moodle LMS (see Appendix C for more details).

The pilot study indicated that the vocabulary in the e-learning tool (Gillian 2015a) was at an appropriate level for teaching English article usage (see Appendix C for more details).

Therefore, the results of the pilot study recommended that the main study could proceed, with the following modifications: use of activity completion to access SCORM modules and reduction of pausing between sound files (see Appendix C for more details).

3.3. Main study method

3.3.1. Recruitment

Participants in the main study were recruited from two high schools in Gorzów Wielkopolski, Poland. The first school was a private elementary school and junior high school with a total enrolment of 361 students in the academic year 2016/17. The school was reported to have 64 students who were aged 13 or 14 years old. All students at this school were reported to have Polish as their first language. No students at this school were reported to have serious difficulties with vision or hearing and no students were reported to present with official disability diagnoses. The school fees per child for this private school were reported by the assistant principal to be 500 zł per month (Bogusława Wiśniewska, p. c.) which indicated that the families of the students required average to above average incomes to enable their children to attend this school. The second school was a government elementary school and high school with a total enrolment of 1334 students and an enrolment of 341 high school students in the academic year 2016/17. Fifty eight students at this school were reported to have serious difficulties with vision or hearing and 17 students were reported to present with official disability diagnoses. The overwhelming majority of students in both schools spoke Polish as their first language and were learning English as a second language. Many of the students at the second school came from low socio-economic backgrounds, with approximately 50% of the students' families receiving the social benefit allowance from the Polish government. Seventeen participants were recruited for this project from the first school and twenty participants were recruited from the second school.

3.3.2. Teacher briefing and participant selection

Two English teachers from the first school and one English teacher from the second school who taught students from grades seven and eight were asked to aid the recruitment of possible participants. Firstly, teachers were asked to approach parents/caregivers of prospective participants to avoid the possibility of coercion by the

investigator. Also, those teachers were asked to propose prospective participants in the main study as they were more familiar with students and their written language skills than the primary investigator. Teachers of prospective participants received a briefing about the aims of the main study, information sheets, and consent forms from the primary investigator at a teachers' meeting. The teachers were asked to employ criteria in the Common European Framework of Reference for Languages: Learning, Teaching, Assessment (CEFR) (Council of Europe 2011) to assess the students' English written language skills and try to ensure that the students had achieved a minimum level of A2 (elementary) before being referred for prospective selection in the main study.

After the briefing, the teachers identified possible students for the main study, using their professional judgment and the criteria in the briefing process. Two meetings were held at the respective high schools where the prospective students and parents/caregivers were invited. At the meeting at each school respectively, they were informed about the purpose and conduct of the study at an information session and were given information sheets and consent forms to take home to discuss and complete. The caregivers/parents of the participants then filled in and returned the consent forms to the primary investigator by way of the teachers.

3.3.3. Screening process

Following the completion of the initial selection and consent processes, a screening process was initiated so that that important subgroups within the sample were included in order to minimise their effects on the results (Polgar and Thomas 2011). The inclusion criteria in Table 11 were used to select the participants.

Table 11. Screening process: Inclusion criteria.

Inclusion Criteria
• gender balance – (20 females, 20 males) • age: students 13 to 14 years of age – (20 13-year-olds, 20 14-year-olds) • read and write fluently in Polish • achieve an A2 level (elementary) in English reading and writing according to CEFR curriculum assessment tool (Council of Europe 2011) if possible

3.3.4. Participants

Seventeen consent forms were received from caregivers/parents at school 1. However, on the third of January 2017, four subjects (SLOT04, SLOT02, SLOT03, and SLOT06) from the teaching group at school 1 and one subject (SLOC04) from the control group at school 1 resigned from the research at the start of the intervention phase. All remaining subjects' families completed and returned the family questionnaires. The demographic information for remaining participants in school 1 control group is presented in Table 12.

Table 12. Demographic details of main study participants - school 1 control group.

Participant [1]	Gender (F - Female, M - Male)	Age (years; months)	Vision difficulties	Hearing difficulties	Years learning English	Number of English lessons per week
SLOC03	F	14;01	Yes	No	-	7
SLOC05	M	14;07	No	No	7	5
SLOC06	M	14;02	No	No	9	5
SLOC07	F	14;07	No	No	13	1-2
SLOC08	M	14;02	No	No	9	5
SLOC09	F	14;04	No	No	9	5
SLOC10	M	14;02	No	No	10	5

The demographic information for remaining participants in school 1 teaching group is presented in Table 13:

Table 13. Demographic details of main study participants - school 1 teaching group.

Participant [2]	Gender (F - Female, M - Male)	Age (years; months)	Vision difficulties	Hearing difficulties	Years learning English	Number of English lessons per week
SLOT05	F	14;10	Yes	No	6	5
SLOT07	M	14;11	No	No	9	5
SLOT08	M	14;11	No	No	10	5
SLOT09	M	14;04	No	No	9	6

One hundred percent of the subjects were reported to speak Polish as their first language. The participants in the teaching group were reported to have been studying English on average for nine and a half years, having commenced their study of English in

[1] The initials representing each participant are pseudo-anonymous to ensure the anonymity of the participants

[2] The initials representing each participant are pseudo-anonymous to ensure the anonymity of the participants

primary school (see Table 13 for more details). The participants in the control group were reported to have been studying English on average for eight and a half years, having commenced their study of English in primary school (see Table 12 for more details). One subject (SLOT05) was below this average with this subject reported to have been studying English for six years. One subject's family (SLOC03) declined to answer the question about how many years their child had been learning English. Most subjects were reported to have received between five and six English lessons per week. Two subjects (SLOT05, SLOC03) were reported to have vision difficulties that were corrected by wearing glasses.

All subjects' parents in both the control group and teaching group reported that the father and mother had completed post-secondary education.

Twenty consent forms were received from caregivers/parents at school 2. All subjects' families completed and returned the family questionnaires. One hundred percent of the subjects were reported to speak Polish as their first language. The demographic information for the participants in school 2 control group is presented in Table 14:

Table 14. Demographic details of main study participants - school 2 control group.

Participant [3]	Gender (F - Female, M - Male)	Age (years; months)	Vision difficulties	Hearing difficulties	Years learning English	Number of English lessons per week
ZSC01	M	14;08	Yes	No	8	3
ZSC02	F	14;06	Yes	No	8	2
ZSC03	F	14;00	Yes	No	8	2
ZSC04	M	14;10	Yes	No	8	2
ZSC05	M	14;06	No	No	8	3
ZSC06	F	14;05	Yes	No	9	1-2
ZSC07	F	14;03	No	No	8	3
ZSC08	F	14;06	No	No	9	2
ZSC09	M	14;10	Yes	No	8	2-3
ZSC10	F	14;10	No	No	8	2

The participants in the control group were reported to have been studying English for between eight and nine years, having commenced their study of English in primary school. Most subjects were reported to have received on average two English lessons per week. Five subjects (ZSC01, ZSC02, ZSC03, ZSC04, and ZSC06) were reported to have vision difficulties that were corrected by wearing glasses. One subject (ZSC09)

[3] The initials representing each participant are pseudo-anonymous to ensure the anonymity of the participants

was reported to have a disability certificate for vision difficulties that were corrected by wearing glasses. One subject (ZSC01) was reported to have a disability certificate for dyslexia, dysorthographia, an allergy disorder, and a kidney disorder. One subject (ZSC04) was reported to have a disability certificate for autism.

Three subjects' parents in the control group reported that the father and mother had completed post-secondary education. Two subjects' parents reported that the father had completed post-secondary education and the mother had completed the final high school examination level. One participant's parents reported that the mother had completed post-secondary education and the father had completed high school education. One subject's parents reported that the father and the mother had completed the final high school examination level. One participant's parents reported that the mother and father had completed high school education. Two subjects' parents reported that the father had completed high school education and the mother had completed the final high school examination level.

The demographic information for the participants in school 2 teaching group is presented in Table 15:

Table 15. Demographic details of main study participants - school 2 teaching group.

Participant [4]	Gender (F - Female, M - Male)	Age (years; months)	Vision difficulties	Hearing difficulties	Years learning English	Number of English lessons per week
ZST01	F	14;03	No	No	7	1
ZST02	M	14;10	Yes	No	-	4
ZST03	M	14;03	No	No	8	2
ZST04	M	14;10	No	Yes	8	3
ZST05	F	14;00	No	No	9	4
ZST06	F	14;11	No	No	11	1
ZST07	F	14;06	No	No	10	2
ZST08	F	14;05	Yes	No	-	2
ZST09	M	14;03	Yes	No	8	4
ZST10	M	14;08	No	No	7	2

The participants in the teaching group were reported to have been studying English for on average eight and a half years, having commenced their study of English in primary school. Two subjects' families (ZST02 and ZST08) declined to answer the question about how many years their child had been learning English. Most subjects were reported to have received on average two and a half English lessons per week. Three sub-

[4] The initials representing each participant are pseudo-anonymous to ensure the anonymity of the participants

jects (ZST02, ZST08, ZST09) were reported to have vision difficulties that were corrected by wearing glasses. One subject (ZST04) was reported to have a disability certificate for hearing difficulties but did not wear hearing aids to correct the difficulties. One subject (ZST09) was reported to have a disability certificate for a psychological/emotional disorder that required medication.

Three subjects' parents in the teaching group reported that the father and mother had completed post-secondary education. Two participants' parents reported that the father had completed post-secondary education and the mother had completed the final high school examination level. One subjects' parents reported that the father had completed post-secondary education and the mother had completed high school education. Two participants' parents reported that the mother had completed post-secondary education and the father had completed high school education. One subject's parents reported that the father and the mother had completed the final high school examination level. One participant's parents reported that the mother and father had completed high school education.

3.3.5. Research Design

The design used in this study was an experimental design (Polgar and Thomas 2011) with two intervention groups in the two schools and two control groups in the two schools that examined the two teaching methods. The experimental design compared the pre- and post-test results for the assessment component of the e-learning tool (Gillian 2015a) after the teaching phases delivering the teaching methods were completed.

The first teaching method examined was *Gil's Article Teacher* (Gillian 2015a). The first teaching method for aiding students to learn articles was described in the Technical description of the e-learning software (see section 2.5. for more detail). Briefly, *Gil's Article Teacher* (Gillian 2015a) is an example of an e-learning tool which aims to teach the appropriate use of English articles based on Master's binary schema (see sections 1.5.3. , 1.5.9. , 1.6.3. , and 1.6.9. for more detail) and employing comprehensible input in the form of scaffolded, explicit instruction (see section 2.3.3.1. for more detail) chunking of instructions (see section 2.3.3.3. for more detail) and direct,

explicit, and immediate feedback (see sections 2.3.6. and 2.3.7. for more detail). The e-learning tool (Gillian 2015a) included specific learning contexts for article usage starting from the word level with countable and uncountable nouns, then proceeding to the phrase level, 1 sentence level, and finishing at the 2-4 sentence level (see sections 2.4. , 2.5. , and Appendix D for more details).

The second teaching method was an example of traditional pen and paper intervention. This method involved the teacher or primary investigator explicitly modelling key concepts associated with articles and the appropriate use of articles in different sentence and text structures verbally and with visual aids. The second method employed two resources: an introductory handout which presented the overall explanation of English articles and usage handouts and exercises which presented the specific patterns of English articles (see section 2.7. for more details). Both the introductory handout and the usage handouts and exercises were based on Quirk et al.'s usage classification (Quirk et al. 1985). The introductory handout was based on the handout created by David Appleyard found on his website (http://www.davidappleyard.com/english/articles.htm) (see section 2.7.3. and Appendix DAppendix for more details). The usage handouts and exercises were based on the handouts found on the website (http:// http://www.englishpage.com/articles/index.htm) (see section 2.7.4. and Appendix E for more details).

With this second method, the students would then discuss task requirements with the teacher, peers and the primary investigator and following that discussion, produce written responses with pen and paper (Król-Markefka 2010; Master 1988, 1997, 2003a; Piechurska-Kuciel 2005; Huong 2005; Zabor 1993; Zabor and Zwierzyńska 2001; Zabor 2012; Zabor and Rychlewska 2015). Research into teaching articles using traditional pen and paper techniques is much more extensive than using e-learning but has reported varying degrees of effectiveness ranging positive and statistically significant benefits (Master 1997, 2003a; Huong 2005) to having positive benefits which were not statistically significant (Król-Markefka 2010).

3.3.6. Procedure

The research incorporated a number of stages: (a) a pre-test stage to assess the participants' skills with the appropriate use of English articles, (b) a teaching stage incorporating a comparative design and finally (c) a post-test stage to re-assess the participants' skills with the appropriate use of English articles. The results of the pre-test and post-test stages were compared statistically using standardised or formal measures to see if both, either, or neither of the teaching approaches had a statistically significant effect on the subjects' appropriate use of English articles.

3.3.6.1. **Pre- and post-test stages**

The goal of the pre- and post-testing was to measure the effectiveness of the teaching stage, through analysing data statistically in order to strengthen the interpretation of the data from the experimental design. To that end, a separate assessment component was created for the e-learning tool (Gillian 2015a) based on Master's (1996) binary schema (see section 1.7. and Table 6 for more details). For each of the 18 individual submodules in the e-learning tool's assessment module, 10 stimuli were created to assess the students' skills in each area, making for a total of 180 stimuli. The noun and adjective stimuli were created by the researcher in consultation with the head teacher of the school in the pilot study and the two teachers of the government school in the main study. For the pre- and post-test stages, the e-learning tool assessment component was employed to give a direct and specific evaluation of the students' skills in the appropriate use of articles. The same module with the same stimuli presented in randomised order was completed by the participants in the control and teaching group at the pre- and post-test stages to increase the reliability of the results. To reduce the bias between the groups in terms of familiarity with technological requirements of the e-learning assessment tool, both groups received the same familiarisation session to operate the module in the use of the basic features of the e-learning tool (Gillian 2015a) (mouse use, point and click, OK and Cancel buttons, saving sessions). Students were presented with a variety of texts with gaps in the sentences to be filled in with articles required in a range of contexts such as use of *a* or *an* with nouns beginning with consonant or

vowel, first and second mention, classifying nouns, and generic nouns. The module calculated a percentage-based score for each individual submodule. The results of the e-learning tool assessment component in the pre- and post-test stages were compared to see if there were any differences or similarities between the two assessment measures.

3.3.6.2. **Teaching stage**

For the teaching stage, the two teaching groups (one in each school) received the teaching in appropriate use of English articles through the Gil e-learning tool (Gillian 2015a). In the subsequent sections of the thesis, these groups will be referred to as the Gil group. The two control groups (one in each school) received the teaching through traditional pen and paper teaching methods (see section 3.3.5. for more details). In the following sections of the thesis, these groups will be referred to as the control group. The participants were allocated to one of the Gil groups or control groups according to quota sampling (Mitchell and Jolley 2010). With this method, the researcher selected representative individuals out of the possible sample populations at each school based on the inclusion criteria outlined in Table 11.

The teaching stage was to be intensive and of short duration (i.e. three 30 minute intervention sessions per week for six weeks), as written language research including computer based learning and traditional pen and paper intervention indicates that the greatest effect sizes in intervention come from intensive intervention (Gillian 2008; MacArthur 2000; Swanson et al. 1999) and that longer duration intervention for students with learning disabilities (greater than 31 sessions) does not produce large effect sizes (Swanson et al. 1999). However, due to a number of factors, the teaching stage was extended. This stage started in December 2016 and was completed in March 2017. The first major factor was that the government school only provided English lessons twice a week. Other factors that led to the extension of the teaching stage included the Christmas break, the mid-year break, holidays such as Epiphany in January 2017, and school excursions. The teaching sessions occurred at the two schools on different days of the week under the supervision of the English teachers and the assistance of the researcher. The first session in this phase was a familiarization session concerning the e-learning tool and the traditional pen and paper teaching for the teachers. This session

explained the goals of the research, the use of the e-learning tool, and the monitoring of the students' use of the e-learning tool during the teaching sessions. The second session in this stage was a familiarisation session for the students. This session discussed the article learning model contained in the e-learning tool. The session also trained the participants in the use of the basic features of the e-learning tool (Gillian 2015a) (mouse use, point and click, OK and Cancel buttons, saving sessions). The subsequent teaching sessions focussed on the use of the e-learning tool (Gillian 2015a) to choose appropriate articles for nouns in simple, compound, and complex sentence contexts.

To reduce the bias between the Gil and control groups in terms of the concepts covered in the teaching stage, both groups received instruction in all concepts assessed in the assessment module. The major difference in the teaching of article concepts was in the pedagogical organisational method: the Gil group received instruction in these concepts according to Master's binary schema (see section 1.7. and Table 6 for more details) and the control group received instruction in terms of a list of rules (see section 2.7. for more details).

3.3.6.3. **Setting**

The participants in the Gil groups completed the teaching sessions with the e-learning tool (Gillian 2015a) on computers with the Windows 8 operating system, smartphones, and tablets in a quiet room with background noise minimised. The participants received the auditory stimuli through individual sets of headphones in order to minimise auditory distraction of other participants. The room in which the study was conducted was carpeted and had no or minimal hum from air conditioners and lights. During the presentation of the stimuli, the door to the room was shut and a sign requesting quiet and privacy was hung outside. The participants in the control groups completed the teaching sessions in regular classrooms where they would normally receive English language instruction.

3.3.6.4. **Data Analysis**

This research employed an experimental design which included pre- and post-test stages with the dependent variables in this study being the scores achieved through the e-learning tool assessment component (Gillian 2015a) for appropriate English article usage during the pre-test and post-test stages. The independent variable was the teaching approach with two options: *Gil's Article Teacher* e-learning tool (Gillian 2015a) and traditional pen and paper teaching using the introductory handout (see section 2.7.3. and Appendix D for more details) and usage handouts and exercises (see section 2.7.4. and Appendix E for more details).

Descriptive and inferential statistics were employed to see if there were statistically significant differences between the pre- and post-test scores. These differences were examined in three ways: overall scores, the concept groups (i.e. noun, classifying, and identifying), and individual sub-modules. The scores were first calculated by each individual SCORM submodule as created by the Hot Potatoes interactive quiz creation program, as seen in Figure 25.

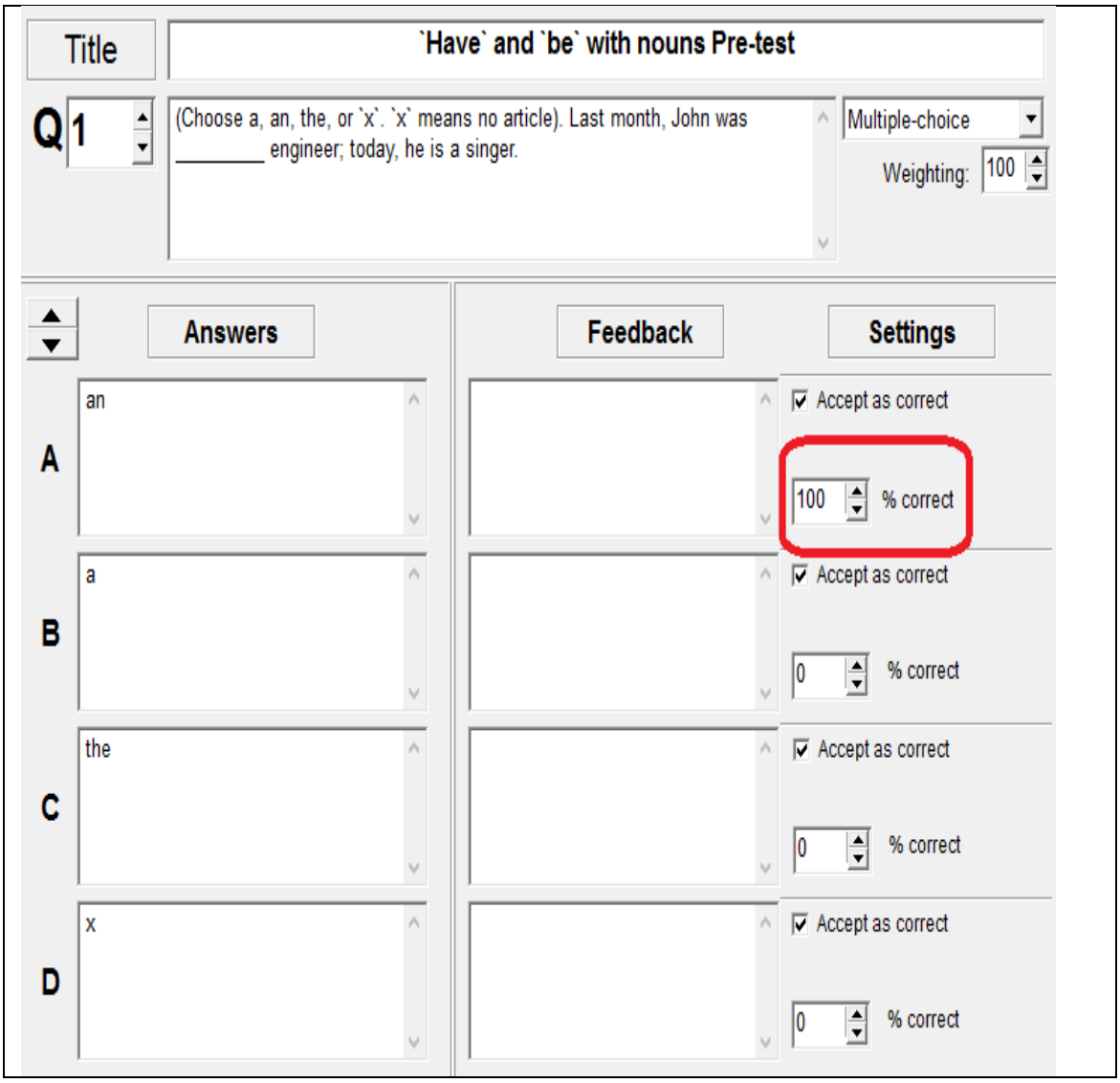


Figure 25. Hot Potatoes quiz scoring screenshot.

Each submodule item had at least one correct answer and sometimes more than one correct answer; this was set by recording the percentage correct in the percentage correct box outlined in red in Figure 25. The SCORM sub-module automatically checked each item response against the answer settings. When a sub-module was completed, the SCORM sub-module passed the information about correct and incorrect answers to the Moodle LMS. The Moodle LMS recorded which response was chosen and which response was correct or incorrect (see Figure 26 for more details).

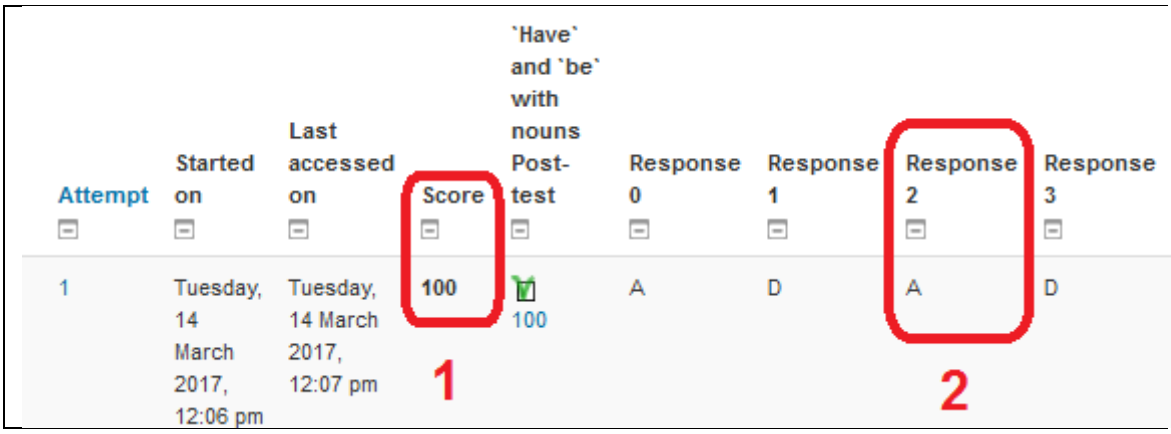


Figure 26. Moodle LMS scoring screenshot.

Figure 26 shows a subject's attempt for the *have* and *be* with nouns post-test. The score the subject received for this submodule was 100% as calculated by the number of correct and incorrect responses for this sub-module (see Figure 26 red rectangle marked with *1* for more details). This score was calculated by the Moodle LMS recording the response parameters passed to it by the SCORM submodule. In Figure 26, the letter '*A*' indicates that the subject chose the first response (see Figure 26 red rectangle marked with *2* for more details). Based on the information about the correct and incorrect responses in the SCORM sub-module (see Figure 25 for more details) and the actual responses for each sub-module item and passed as parameters to the Moodle LMS, the Moodle LMS calculated a total percentage score for the submodule based on these two parameters. The information for all submodules for each participant was downloaded as an Excel .csv file. The overall mean scores at each stage were calculated in Excel by adding each sub-module score together and dividing that score by the number of sub-modules. For the noun concept results, the individual mean scores from the countable/uncountable nouns, two-way nouns, and *a* or *an* with nouns sub-modules for each participant were aggregated together and mean scores were calculated from this aggregation (see section 1.7.3. and Table 5 for more details on the noun concept group). For the classifying noun concept results, the individual mean scores from the first-time-mention nouns, *have* and *be* with nouns, and sports nouns sub-modules for each participant were aggregated together and mean scores were calculated from this aggregation (see section 1.7.3. and Table 5 for more details on the classifying noun concept group). For the identifying noun concept results, the individual mean scores from the definite article with nouns, second-time-mention nouns, *do* with nouns, *play* with nouns, de-

scribing words before nouns, describing words after nouns, special second time nouns 1, special second time nouns 2, political nouns, geographical nouns, cultural nouns, and proper names sub-modules for each participant were aggregated together and mean scores were calculated from this aggregation (see section 1.7.3. and Table 5 for more details on the identifying noun concept group).

The pre- and post-test scores were examined by group (Gil and control group) to investigate the differences in the scores at the pre- and post-test stages. The paired samples *t*-test was chosen to provide the statistical analysis at the group level to measure the scores within subjects. Also, box plots were presented to give a visual representation of the distributional characteristics of the groups of scores as well as the levels of the scores. Additionally, Cohen's *d* (Cohen 1988) was reported as a measure of standardized effect size for the differences between the groups. The conventions for small effects (d = 0.20), medium effects (d = 0.50), and large effects (d = 0.80) based on Cohen's (1988) research were employed in analysing the results of the effect size calculations.

The scores were also examined at the pre- stage to investigate any similarities or differences in the scores of the Gil and control groups as a check on the desirable equivalence between Gil and control treatment groups. Additionally, the amount of change between the pre-test and post-test stages was examined for each group to directly evaluate if the e-learning tool resulted in significantly more improvement than the traditional teaching method. To provide this statistical analysis of the results by stage, the Welch *t*-test for independent samples was chosen to evaluate the differences in scores. The Welch *t*-test was chosen to cater for the assumptions of independent groups, unequal variances, and unequal participant numbers. A conventional confidence level of 0.05 was used throughout. All statistics were calculated using R statistical software (R core team 2017) with the lsr package (Navarro 2015) specifically installed to calculate these tests. The effect size was calculated with the lsr package in two ways: the method was set to *pooled* when a paired samples *t*-test was calculated and the method was set to *unequal* when an independent samples *t*-test was calculated.

Chapter 4: Main Study Results

4.1. Introduction

This research investigated whether the *Gil's Article Teacher* e-learning tool (Gillian 2015a) improved participants' skills in appropriate use of English articles more than a traditional pen and paper teaching method. This chapter details the major trends in pre- and post-test stages for the control and Gil groups in order to evaluate the effects of the different teaching options. The major trends will be described through comparing the results by the groups (Gil group versus control group) and the stages (pre-test versus post-test).

To provide specific detailed data to measure the effectiveness of the *Gil's Article Teacher* e-learning tool (Gillian 2015a), the results of the pre- and post-testing with the e-learning tool assessment component (Gillian 2015a) were collated for all participants. These results were collated from the two conditions of teaching: *Gil's Article Teacher* e-learning tool (Gillian 2015a) and traditional pen and paper teaching. The following sections detail the results of the pre- and post-test for the teaching and control groups. The subsequent sections further describe the results in terms of stage and group through the use of descriptive and inferential statistics.

4.2. Overall results by stage

The descriptive results for the mean test scores and standard deviations for the Gil group across both schools and the control group across both schools are presented in Table 16.

Table 16. Pre- and post-test stage results.

Group		Pre-test stage		Post-test stage	
	N	M	SD	M	SD
Gil	14	66.14	11.14	75.71	5.43
Control	16	66.50	10.15	69.18	12.28

As can be seen in Table 16, while the two groups were very similar at the pre-test stage, the Gil group across the two schools increased their mean scores at the post-test stage when compared to the control group across the schools. The control group also increased their mean score at the post test stage, but to a much lesser extent than the Gil group. Also, it can be noted that both groups exhibited wide variation at the pre-test stage, as evidenced by the standard deviation scores (Gil *SD* = 11.14 and Control *SD* = 10.15). In contrast, the Gil group considerably narrowed the variation in its responses at the post-test stage (Gil *SD* = 5.43); whereas the control group displayed increased variation (Control *SD* = 12.28).

The results of a Welch's independent samples *t*-test for the Gil group (Gil) and control group (Control) were calculated. No statistically significant difference was found between the pre-test stage means of the Gil group and the control group. In the pre-test stage, the Gil group's mean score was 66.14 and control group mean was 66.50. The *t*-value was not significant at the critical 0.05 alpha level ($t(26.5) = 0.091$, $N = 30$, $p = 0.928$). The effect size for the pre-test stage ($d = 0.03$, $df = 26.5$) was found to be well below the convention for a small effect ($d = 0.20$).

The overall pre-test results achieved by the participants in both groups are also displayed in the boxplot in Figure 27 to provide visual representation of the distributional characteristics of a group of scores as well as the level of the scores. The vertical dark lines in the middle of the boxplot show the median scores of the sample, the hinges (edges of each box) indicate the 25th and 75th percentiles, and the whiskers (vertical lines) show the smallest and largest observed scores that extend no further than 1.5 times away from the box. The small circles mark out potential outlier scores.

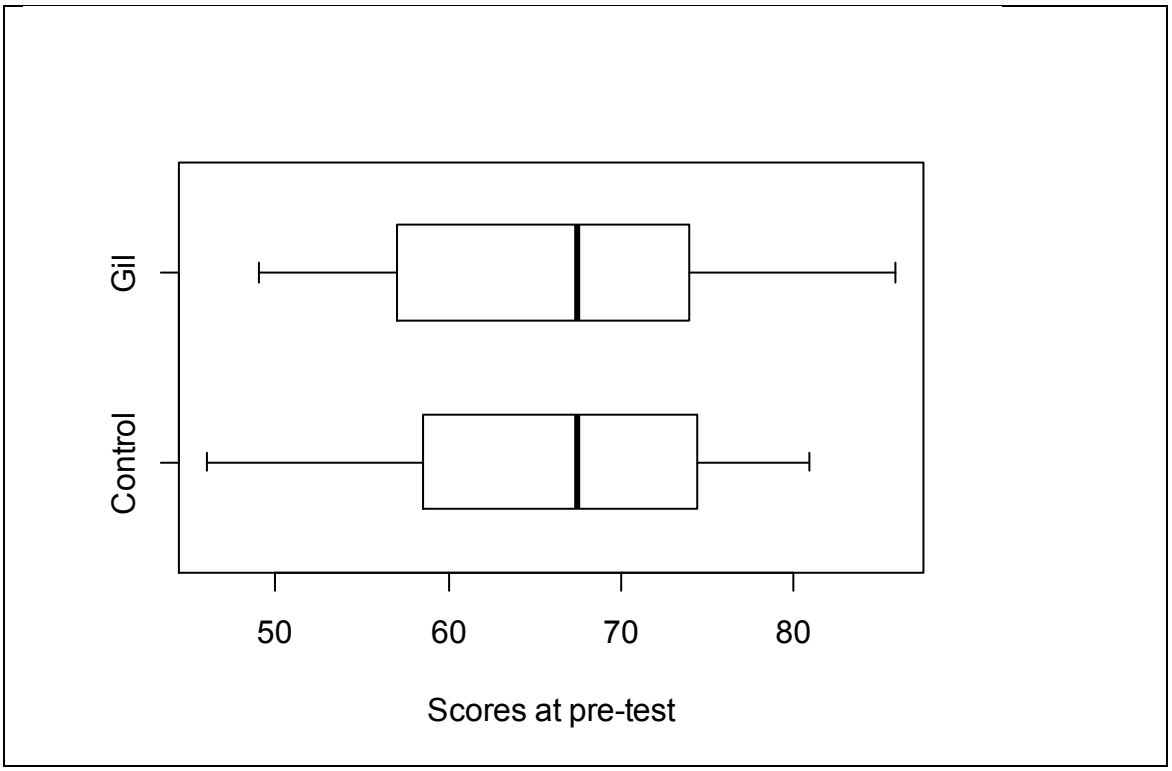


Figure 27. Boxplots of overall scores by group at pre-test stage.

As seen in Figure 27, the median scores for both groups at the pre-test stage were the same (Gil = 66.5, Control = 66.5). The spread of the distribution for both groups indicated a wide but consistent variability in the overall scores. Figure 27 showed that the overall scores for both groups were similar, indicating that both groups had similar levels of skills with the appropriate use of English articles at the pre-test stage.

There was a significant difference in the amount of change for the scores of the Gil group and the control group between the pre- and post-test stages.

Table 17. Change in group scores from pre- to post-test.

Mean Gil	N Gil	Mean Control	N Control	*t-value*	*df*	*p-value*
9.57	14	2.68	16	2.66	25.8	0.013

Table 17 shows a statistically significant difference was found in the change of overall scores between the pre-test and post-test stage means of the Gil group and the control group. Between the stages, the Gil group's mean change score was 9.57 and control group mean change was 2.68. The *t*-value presented in Table 17 was significant at the critical 0.05 alpha level ($t(25.8) = 2.66$, $p = 0.013$). The effect size for the change in group scores ($d = 0.98$, $df = 25.8$) was found to be well above the convention for a large effect ($d = 0.80$).

The boxplots in Figure 28 confirmed the significance of this difference between the change of overall mean scores between the pre- and post-test stages.

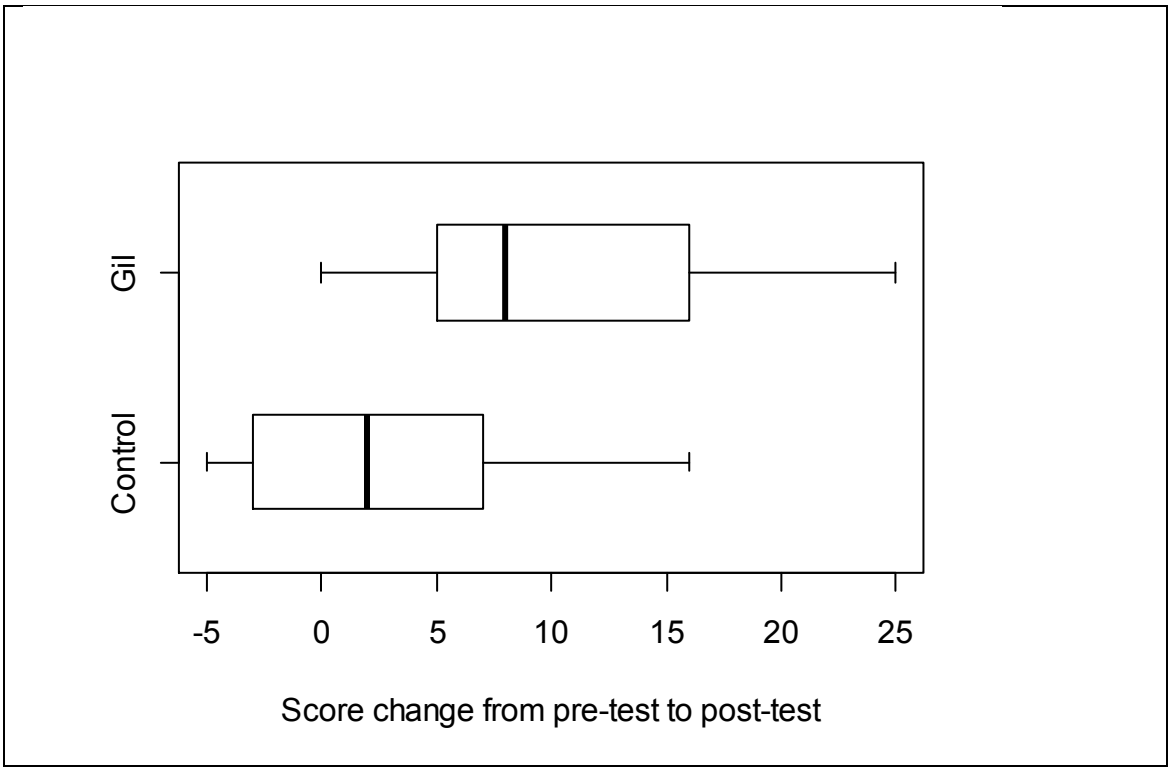


Figure 28. Boxplots of overall change in scores by group between stages.

As seen in Figure 28, the median score change for the Gil group was much higher than in the control group (Gil $_{change}$ = 8, Control $_{change}$ = 2). The lower quartile scores for the Gil group were much higher than the control group (Gil $_{change\ low}$ = 5.0, Control $_{change\ low}$ = -3.0). Also, the upper quartile scores for the Gil group were perceptibly higher than for the control group (Gil $_{change\ up}$ = 16.0, Control $_{change\ up}$ = 7.0). As shown in Figure 28, the Gil group distribution displayed positive skew.

4.3. Overall results by group

This section presents the results by focussing on the groups in the research (i.e. Gil group and control group). The results for the Gil group and control group are compared and contrasted.

The e-learning tool assessment test results for the Gil group at both schools found significant differences in the scores achieved by the participants. Table 18 shows the results of this analysis for the Gil group.

Table 18. Paired samples test - Gil group.

Pre-test Mean Gil	Post- test Mean Gil	N Gil	*t-value*	*df*	*p-value*
66.14	75.71	14	4.75	13	<0.001

A paired samples *t*-test was conducted on the pre-test stage and post-test stage means of the Gil group so that the subjects serve as their own controls when calculating the statistics. The results of this *t*-test found that the 14% increase in mean scores between the stages was a statistically significant difference. In the pre-test stage, the Gil group's mean score was 66.14 and the group mean in the post-test stage was 75.71. The t-value presented in Table 18 was significant at the critical 0.05 alpha level ($t(13) = 4.75$, $p = <0.001$). As part of the inferential statistical calculation process, the estimated effect size was also calculated. The effect size for this analysis ($d = 1.27$, $df = 13$) was found to be very large.

The visual representation of these results yielded additional support for the inferential statistics described above (see Figure 29 for more details).

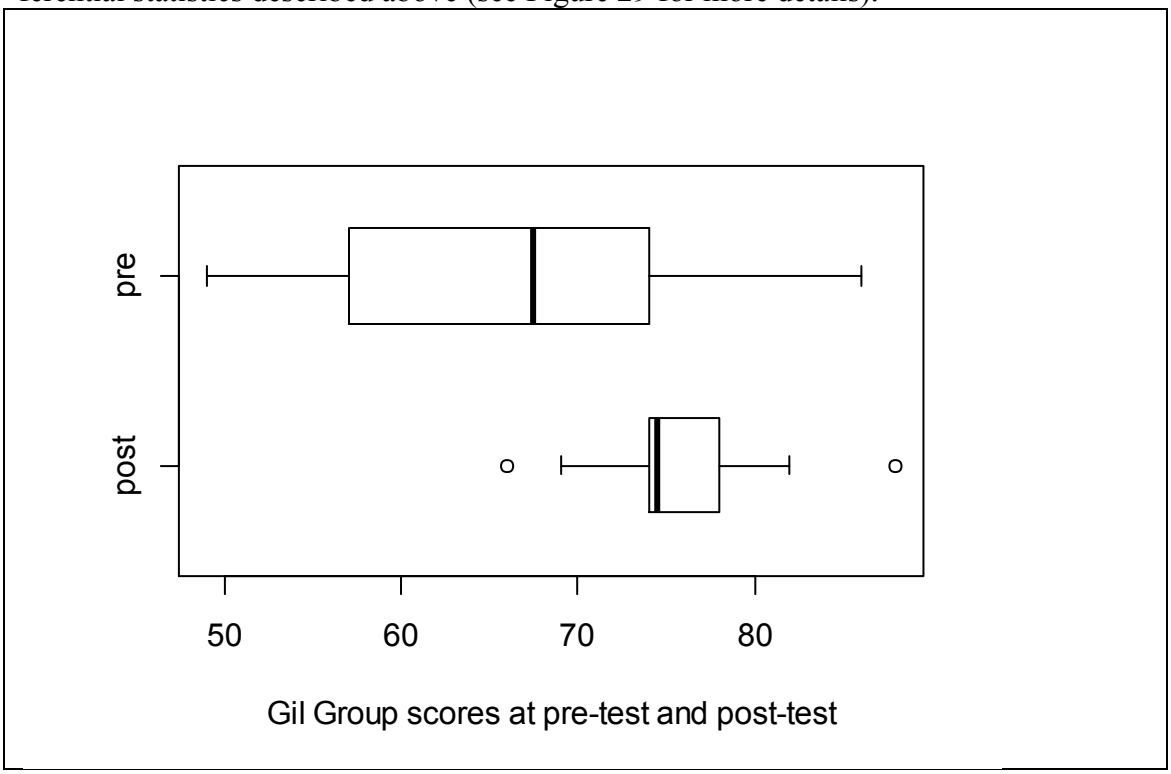


Figure 29. Gil group, overall scores, pre and post.

The Gil group's median scores at the post-test stage had increased compared to the pre-test stage ($Gil_{post} = 74.5$, $Gil_{pre} = 66.5$). The distribution spread for the Gil group at the pre-test stage revealed a wide variability in the overall scores, with the lower quartile score being ($Gil_{pre\ low} = 57.0$) and the upper quartile score being ($Gil_{pre\ up} = 74.0$). In contrast, the post-test stage results presented perceptibly less variation in lower, inter, and upper quartiles (see Figure 29 for more details). As shown in Figure 29, the pre-test stage revealed that the lower, inter, and upper quartiles displayed some negative skew for the Gil group. On the other hand, the post-test stage indicated the Gil group's scores exhibited much more positive skew. Figure 29 displayed that the Gil group improved their skills from the pre-test to the post-test stages. Also, two potential outlier scores were displayed at the post-test stage.

The same type of analysis was performed on the pre- and post-test scores for the control group. The paired samples *t*-test conducted on the pre-test stage and post-test stage means of the control group found that the four percent increase was not a statistically significant difference between the different stage means. In the pre-test stage, the control group's mean score was 66.50 and the group mean in the post-test stage was 69.85. The *t*-value was not significant at the critical 0.05 alpha level ($t(15) = 1.67$, $N = 16$, $p = 0.12$). The effect size for the control group ($d = 0.42$, $df = 15$) was found to fall between the convention for a small effect ($d = 0.20$) and medium effect ($d = 0.50$).

The visual representation of these results in Figure 30 illustrated further detail for the inferential statistics calculated for the control group.

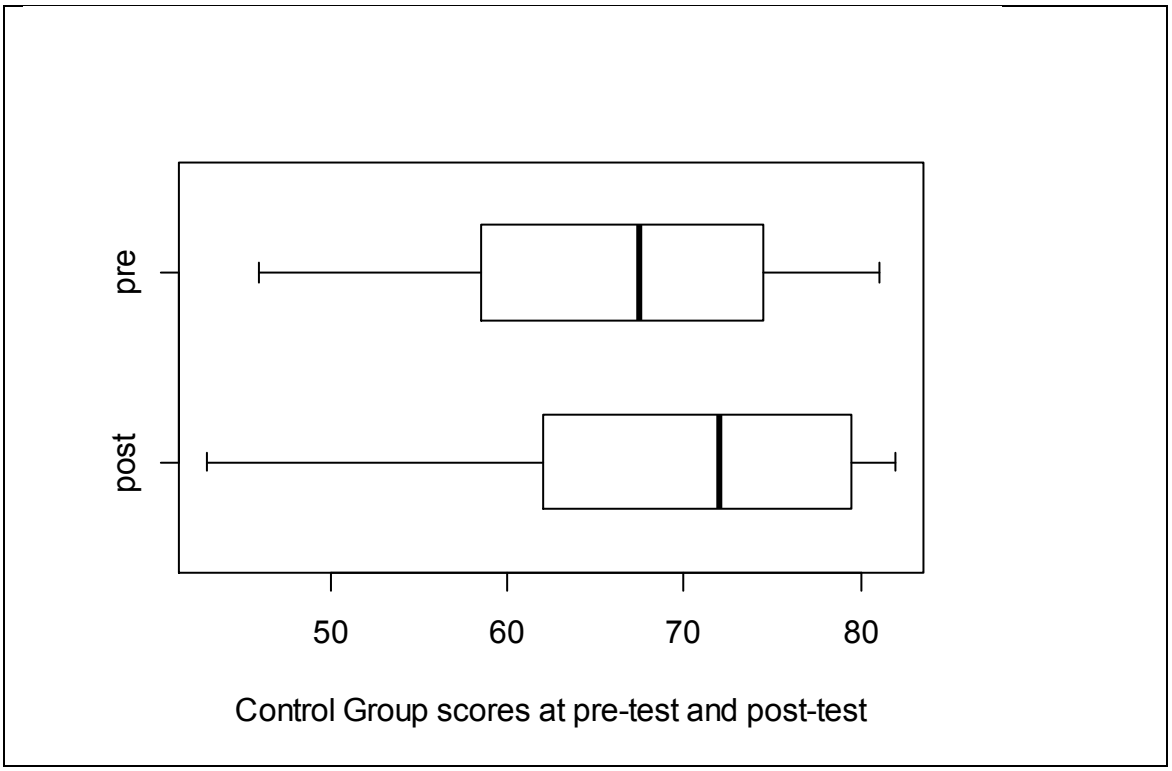


Figure 30. Control group, overall scores, pre and post.

The median scores of the control group at the post-test stage had progressed compared to the pre-test stage (Control $_{post}$ = 72.0, Control $_{pre}$ = 67.5) but not as much as the Gil group. The control group's distribution spread at the pre-test stage displayed a wide variability in the overall scores and continued to exhibit wide variation in the overall scores at the post-test stage (see Figure 30 for more details). As shown in Figure 30, the pre-test stage illustrated that the control group's scores displayed some negative skew. The post-test stage indicated the control group's scores exhibited even more negative skew. Figure 30 also exhibited that the control group improved their skills somewhat from the pre-test to the post-test stages.

4.4. Overall results by school

Further *t*-tests were conducted to assess if the differences between the groups were dependent on the schools attended by the participants. A paired samples *t*-test conducted on the combined groups at the SLO school did find a statistically significant difference between the different stage means of the combined school group. The *t*-value was sig-

nificant at the critical 0.05 alpha level ($t(9) = 3.53$, $N = 10$, $p = 0.006$). Also, the effect size for the SLO group ($d = 1.17$, $df = 9$) was quite large.

The results' visual representation supplied some supportive evidence for the inferential statistics described above (see Figure 31 for more details).

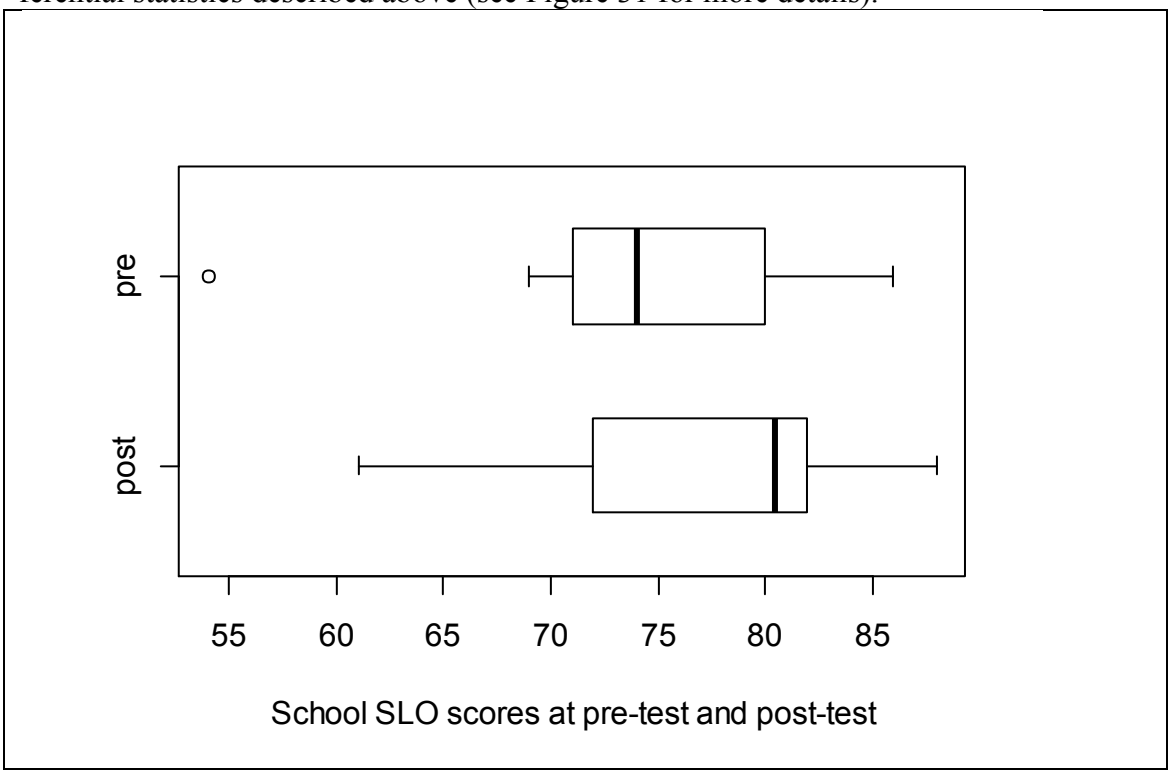


Figure 31. School SLO, overall scores, pre and post.

The median scores of the SLO school grouping at the post-test stage had developed compared to the pre-test stage ($SLO_{post} = 80.5$, $SLO_{pre} = 74.0$). The SLO school grouping's distribution spread at the pre-test stage displayed some variability in the overall scores and continued to exhibit similar variation in the overall scores at the post-test stage (see Figure 31 for more details). Also, one potential outlier score was displayed at the pre-test stage. As shown in Figure 31, the pre-test scores from the SLO school displayed some positive skew. By contrast, the post-test stage indicated the SLO school grouping's scores exhibited negative skew. Figure 31 exhibited that the SLO school grouping improved somewhat their skills from the pre-test to the post-test stages.

When the results for the government school coded ZS20 were analysed, a statistically significant difference between the different stage means of the combined school group at the ZS20 school was found, which was a similar result when compared to the results for the school coded SLO. The pre-test mean at the ZS20 school was 62.5 and the post-test mean was 69.6. The *t*-value was significant at the critical 0.05 alpha level

($t(19) = 3.52$, , $N = 20$, $p = 0.002$). The effect size for the ZS20 group ($d = 0.79$, $df = 19$) was found to greatly exceed the convention for a medium effect ($d = 0.50$).

The visual representation of these results in Figure 32 illustrated further detail for the inferential statistics calculated for the ZLO school grouping.

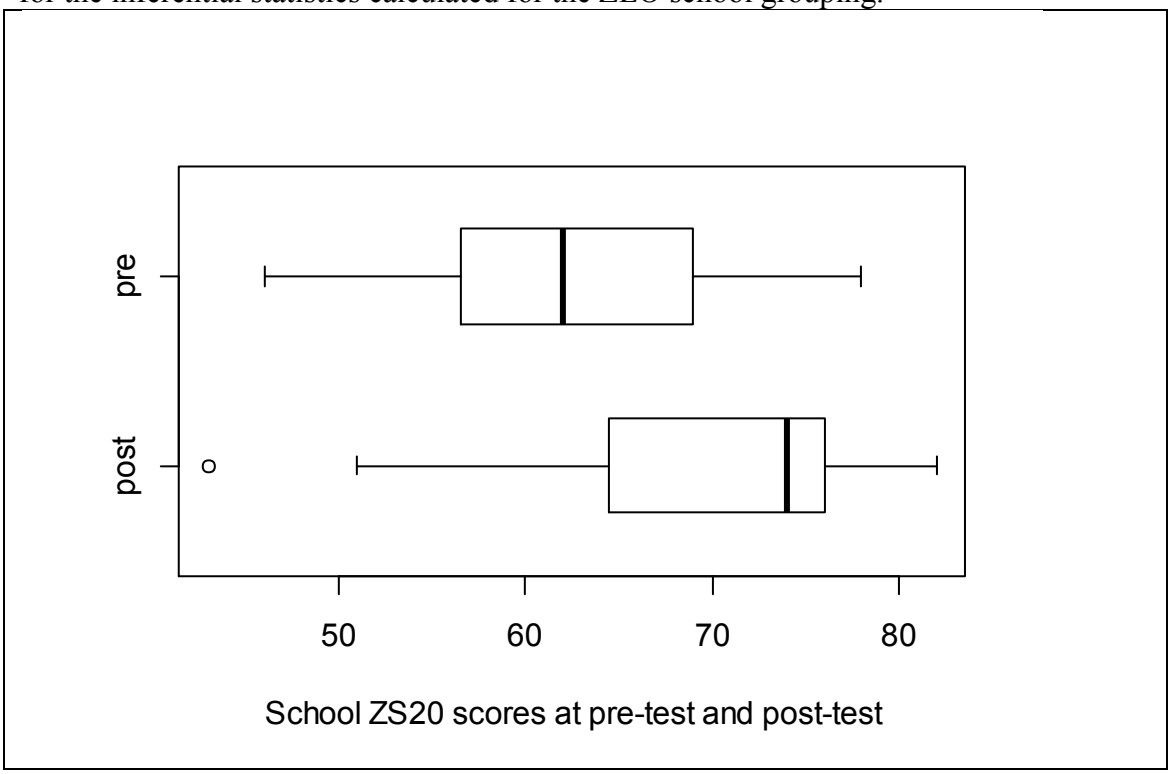


Figure 32. School ZS20, overall scores, pre and post.

The median scores of the ZS20 school grouping at the post-test stage had progressed compared to the pre-test stage ($ZS20_{post} = 74.0$, $ZS20_{pre} = 62.0$), but more than the SLO school grouping. As shown in Figure 32, the pre-test stage illustrated that the ZS20 school grouping's scores displayed some positive skew, like the SLO school grouping. By contrast, the post-test stage indicated the ZS20 school grouping's scores exhibited negative skew. Figure 32 exhibited that the ZS20 school grouping improved a great deal their skills from the pre-test to the post-test stages, like the SLO school grouping.

4.5. **Noun and article concept grouping results**

Further analysis was conducted to determine if the usage of Master's binary schema plus noun concepts (see section 1.7.3. for more details) was more effective than the traditional teaching technique of teaching noun and article concepts as a list of rules (see

section 2.7. for more details). To that end, firstly, the data from the pre- and post-test results for each sub-module by Gil group and control group were first grouped under the following categories: noun concepts, classifying concepts, and identifying concepts (see sections 1.7.1. and 1.7.2. for explanations of these concept groupings and section 3.3.6.4. for details about how the scores and statistics were calculated for these concept groupings). Then, the pre- and post-test means for each test sub-module were aggregated together to produce a total mean score for each concept grouping by stage and by group to calculate descriptive and inferential statistics.

4.5.1. Noun concept results by stage

The noun concept means of both groups at the pre-test stage showed no significant difference (see Table 19 for more details). The Gil group displayed more variability in their responses than the control group as evidenced by the standard deviation (Gil *SD* = 12.19, Control *SD* = 7.49).

Table 19. Noun concepts - groups at pre-test.

Group	N	M	SD
Gil	14	67.21	12.19
Control	16	68.06	7.49

A Welch's independent samples *t*-test for the Gil group (Gil) and control group (Control) at the pre-test stage was calculated for noun concepts. There was no significant difference between the Gil group and control group at the pre-test stage ($t(21.0) = -.226$, $N = 30$, $p = .824$). The effect size was small ($d = 0.08$, $df = 21.0$).

As seen in Figure 33, the median scores for both groups at the pre-test stage were similar (Gil $_{pre}$ = 68.5, Control $_{pre}$ = 70). The spread of the distribution for both groups indicated a wide but consistent variability in the overall scores. The lower quartile scores were quite similar (Gil $_{pre\ low}$ = 60.0, Control $_{pre\ low}$ = 63.0), as were the upper quartile scores (Gil $_{pre\ up}$ = 73, Control $_{pre\ up}$ = 73). Figure 33 showed that both groups exhibited negative skew at the pre-test stage. Figure 33 also showed that there was one potential outlier score for the Gil group.

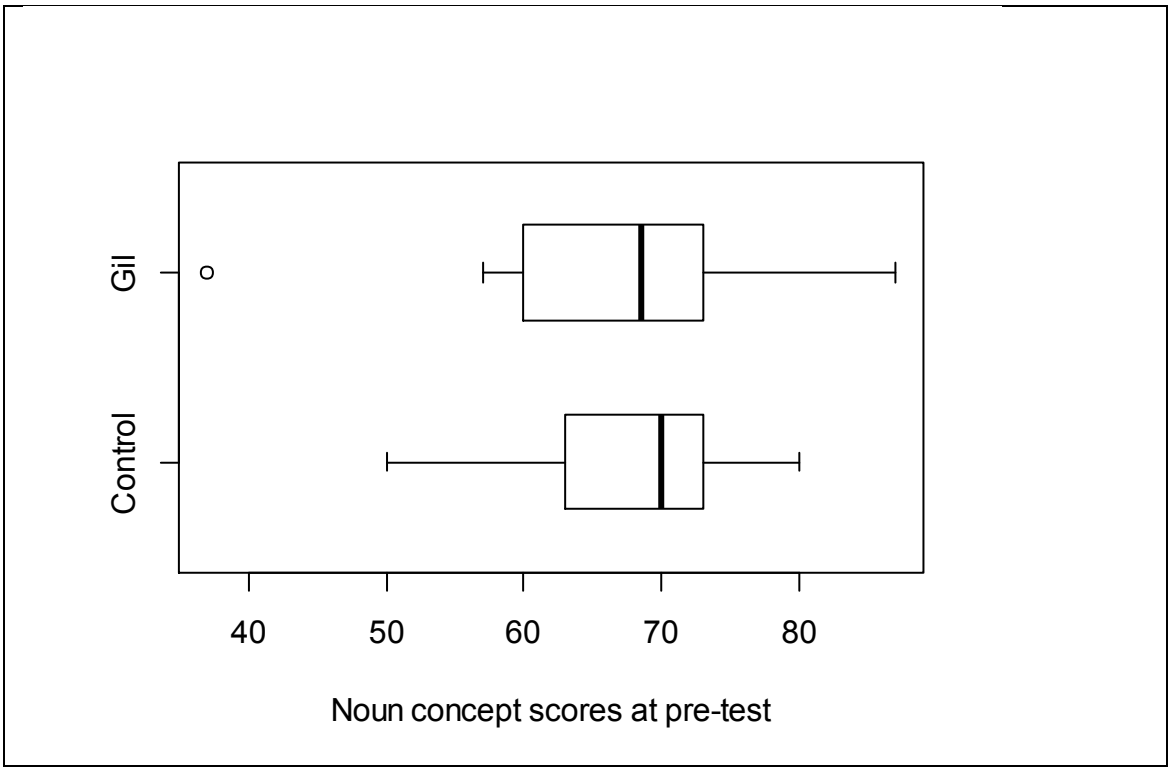


Figure 33. Boxplots of noun concept scores by group at pre-test stage.

There was a significant difference in the amount of change for the scores of the Gil group and the control group between the pre- and post-test stages. Both groups exhibited negative change in their scores for noun concepts between the stages; however, the control group displayed a much bigger lowering in the mean (Control $_{change}$ = -10.63, Gil $_{change}$ = -0.5). The *t*-value result calculated with a Welch's independent samples *t*-test was significant at the critical 0.05 alpha level ($t(27.3) = -2.44$, $N = 30$, $p = 0.021$), with a large effect size ($d = 0.89$, $df = 27.3$).

The boxplot displayed in Figure 34 confirmed the descriptive and inferential statistics presented in this section.

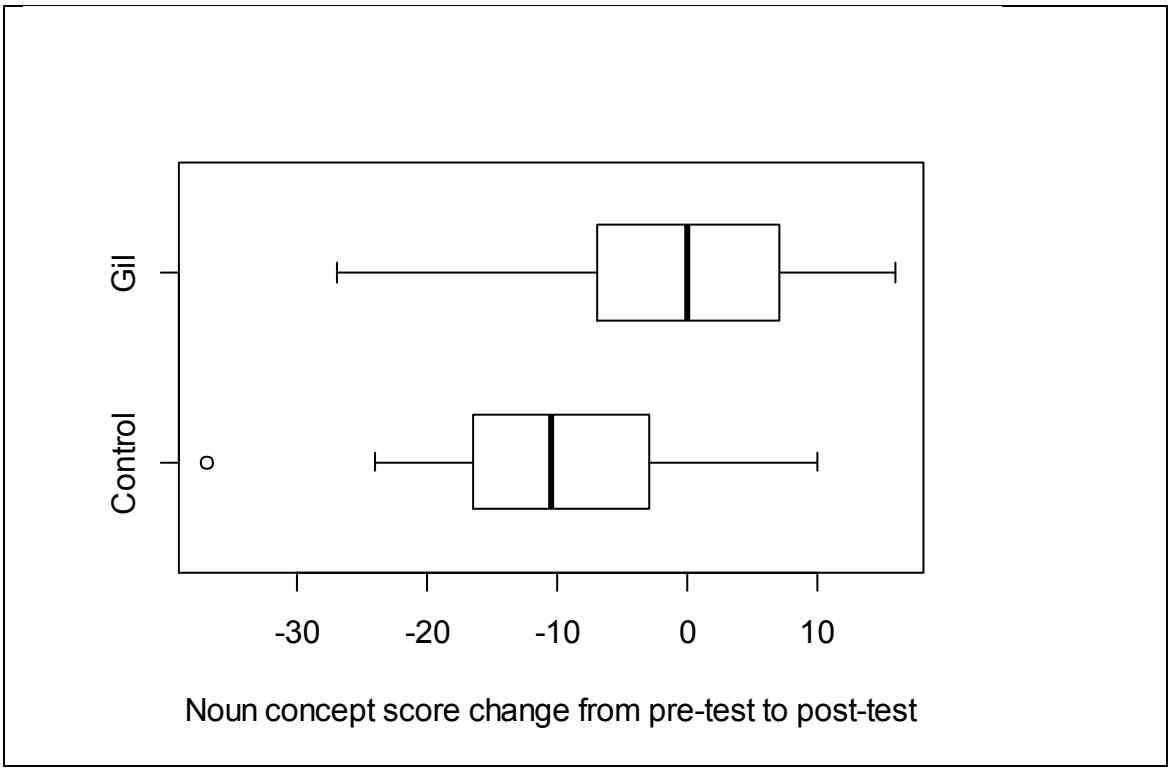


Figure 34. Boxplots of overall change in scores by group between stages.

The Gil group's median noun concept change scores between the post-test stage and the pre-test stage remained the same (Gil $_{change}$ = 0). One potential outlier score was presented for the control group (see Figure 34 for more details).

4.5.2. Noun concept results by group

When the data in Table 20 is examined, the Gil group demonstrated some regression in their post-test means when compared to their pre-test means.

Table 20. Noun concepts - Gil group.

Pre-test Mean	Post- test Mean	N	*t-value*	*df*	*p-value*
67.21	66.71	14	0.16	13	0.87

The *t*-value calculated with a paired samples *t*-test was not significant at the critical 0.05 alpha level ($t(13) = 0.16$, $N = 30$, $p = 0.87$) (see Table 20 for more details). The effect size for the teaching group ($d = 0.04$, $df = 13$) was quite small.

The visual representation of these results yielded additional support for the inferential statistics described above (see Figure 35 for more details).

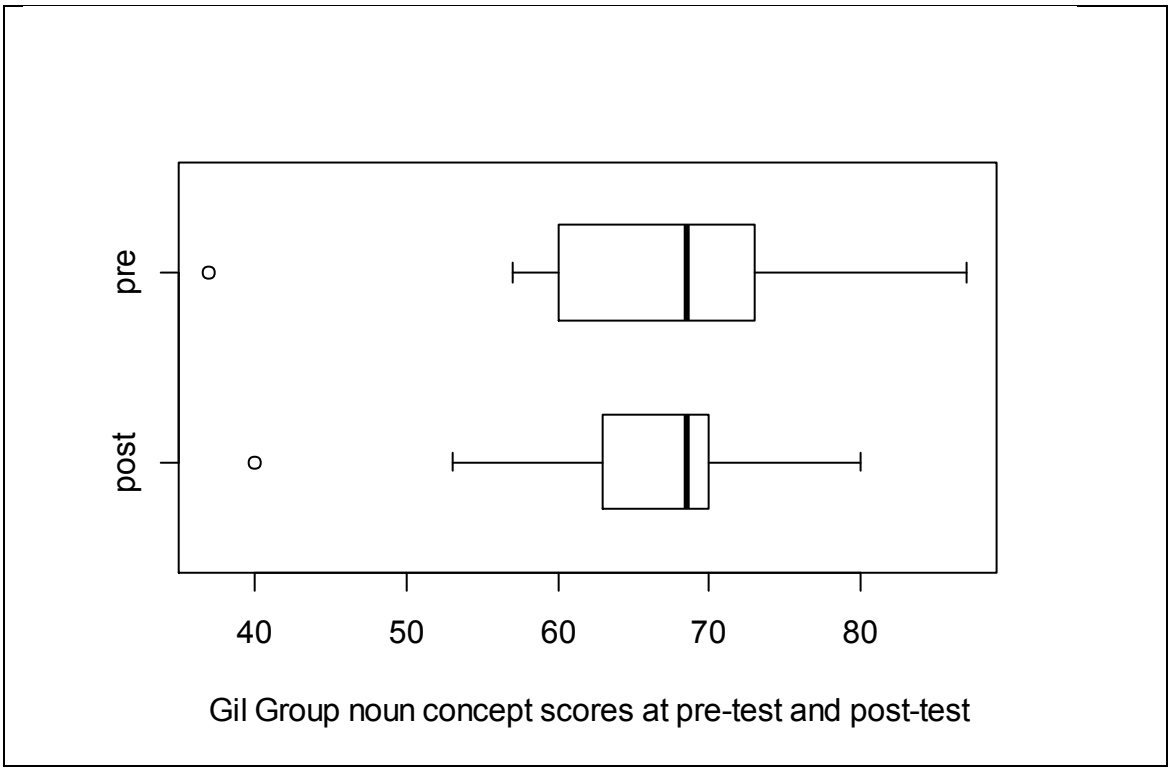


Figure 35. Gil group, noun concept scores, pre and post.

The Gil group's median noun concept scores at the post-test stage remained the same when compared to the pre-test stage (Gil $_{post}$ = 68.5, Gil $_{pre}$ = 68.5). The distribution spread for the Gil group at the pre-test stage revealed a wide variability in the overall scores. In contrast, the post-test stage results presented perceptibly less variation (see Figure 35 for more details). At both the pre-test and post-test stage, there was one outlier score; the two extreme scores were achieved by different subjects (ZST04 achieved a score of 37 on the noun concept pre-tests and ZST10 achieved a score of 40 on the noun concept post-tests) (see Figure 35 for more details). Figure 35 displayed that the Gil group maintained their skills from the pre-test to the post-test stages.

Like the Gil group, the means of the control group regressed when the pre-test means and post-test means were compared; however, unlike the Gil group, the regression was significantly larger (see Table 21 for more details).

Table 21. Noun concepts - Control group.

Pre-test Mean	Post- test Mean	N	*t-value*	*df*	*p-value*
68.06	57.44	16	3.805	15	0.002

The *t*-value from the paired samples t-test was significant at the critical 0.05 alpha level (see Table 21 for more details). The effect size for the control group (d = 0.95, df = 15) was large.

The visual representation of these results in Figure 36 illustrated further detail for the inferential statistics calculated for the control group.

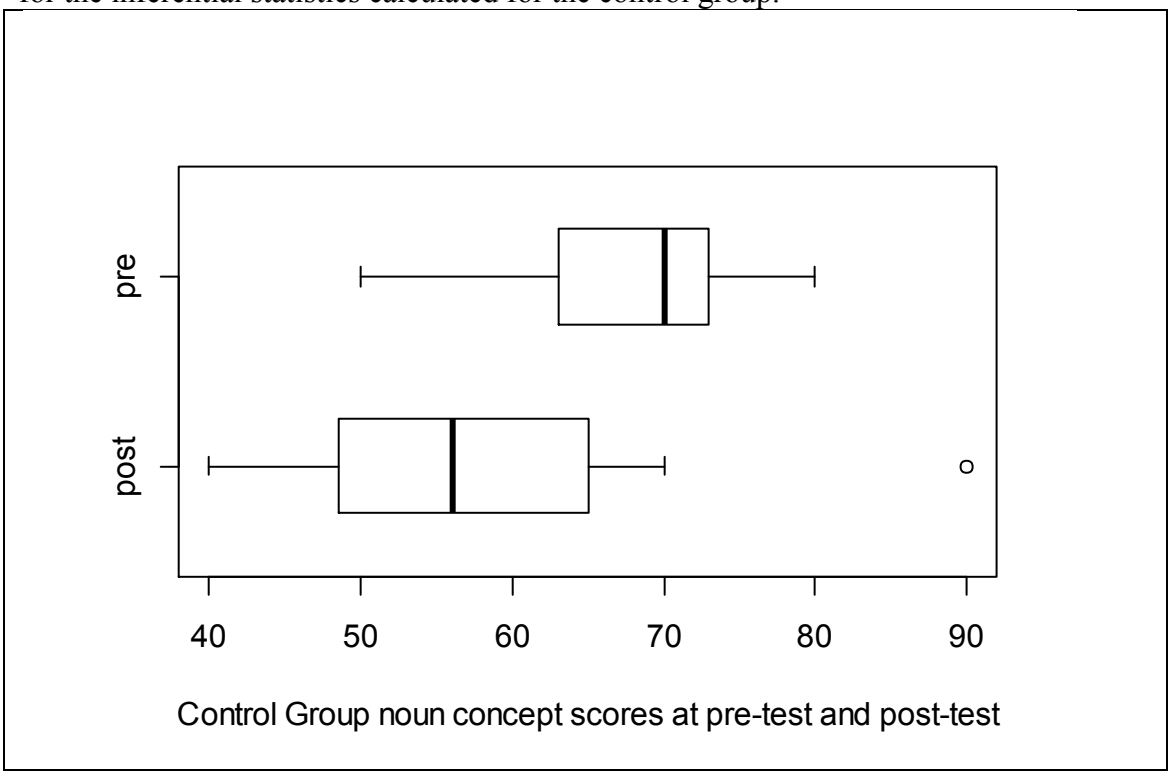


Figure 36. Control group, noun concept scores, pre and post.

The median scores of the control group at the post-test stage had regressed noticeably compared to the pre-test stage (Control $_{post}$ = 56.0, Control $_{pre}$ = 70.0) and when compared to the Gil group (Control $_{post}$ = 56.0, Gil $_{post}$ = 68.5). As shown in Figure 36, the pre-test control group's scores displayed some negative skew. At the post-test stage, there was one potential outlier score (see Figure 36 for more details). Figure 36 displayed that the control group regressed substantially in their noun concept skills from the pre-test to the post-test stages.

4.5.3. Classifying concept results by stage

The classifying concept means of both groups at the pre-test stage presented with an observable difference (see Table 22 for more details); however, this difference was not statistically significant at the critical alpha level of 0.05 ($t(27.9) = -1.805$, $N = 30$, $p = 0.08$) when calculated with a Welch's independent samples *t*-test.

Table 22. Classifying concepts - groups at pre-test.

Group	N	M	SD
Gil	14	64.00	23.28
Control	16	48.13	24.87

Both groups were noted to have large standard deviations at the pre-test stage (see Table 22 for more details). The effect size for the pre-test stage ($d = 0.66$) was found to exceed the convention for a medium effect ($d = 0.50$).

As seen in Figure 37, the median scores for both groups at the pre-test stage were very different (Gil = 70, Control = 48.5). The spread of the distribution for both groups indicated a wide variability in the overall scores (see Figure 37 for more details). Figure 37 showed that the Gil group exhibited some negative skew and the control group displayed some positive skew at the pre-test stage.

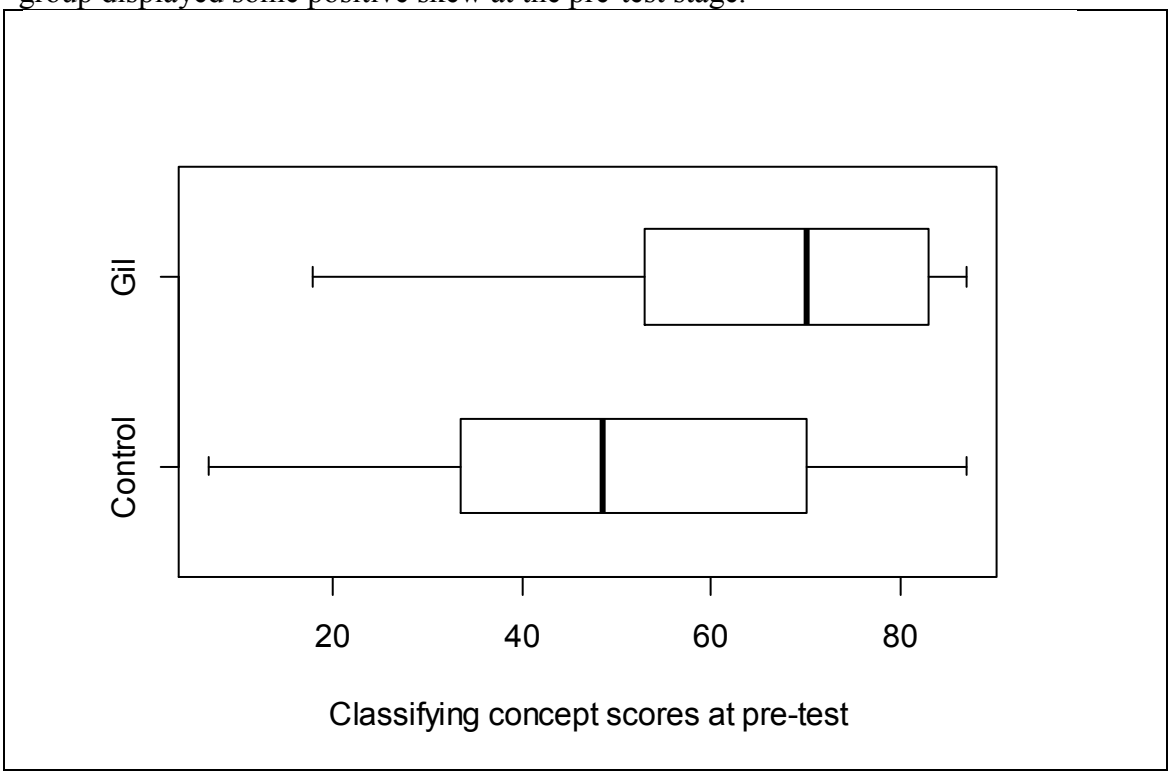


Figure 37. Boxplots of classifying concept scores by group at pre-test stage.

As shown in Table 23, no significant difference was detected in the amount of change for the scores of the Gil group and the control group between the pre- and post-test stages. Both groups displayed positive change in their scores for classifying concepts between the stages; however, the control group displayed a bigger change in mean ($\text{Control}_{\text{change}} = 16.06$, $\text{Gil}_{\text{change}} = 11.86$) (see Table 23 for more details).

Table 23. Change in group scores from pre- to post-test.

Mean Gil	N Gil	Mean Control	N Control	*t-value*	*df*	*p-value*
11.86	14	16.06	16	-0.572	26.1	0.572

As shown in Table 23, the *t*-value result calculated with a Welch's independent samples *t*-test was not significant at the critical 0.05 alpha level. The effect size for the group change ($d = 0.21$, $df = 26.1$) was small.

The boxplot displayed in Figure 38 provided additional confirmation of the descriptive and inferential statistics presented in this section.

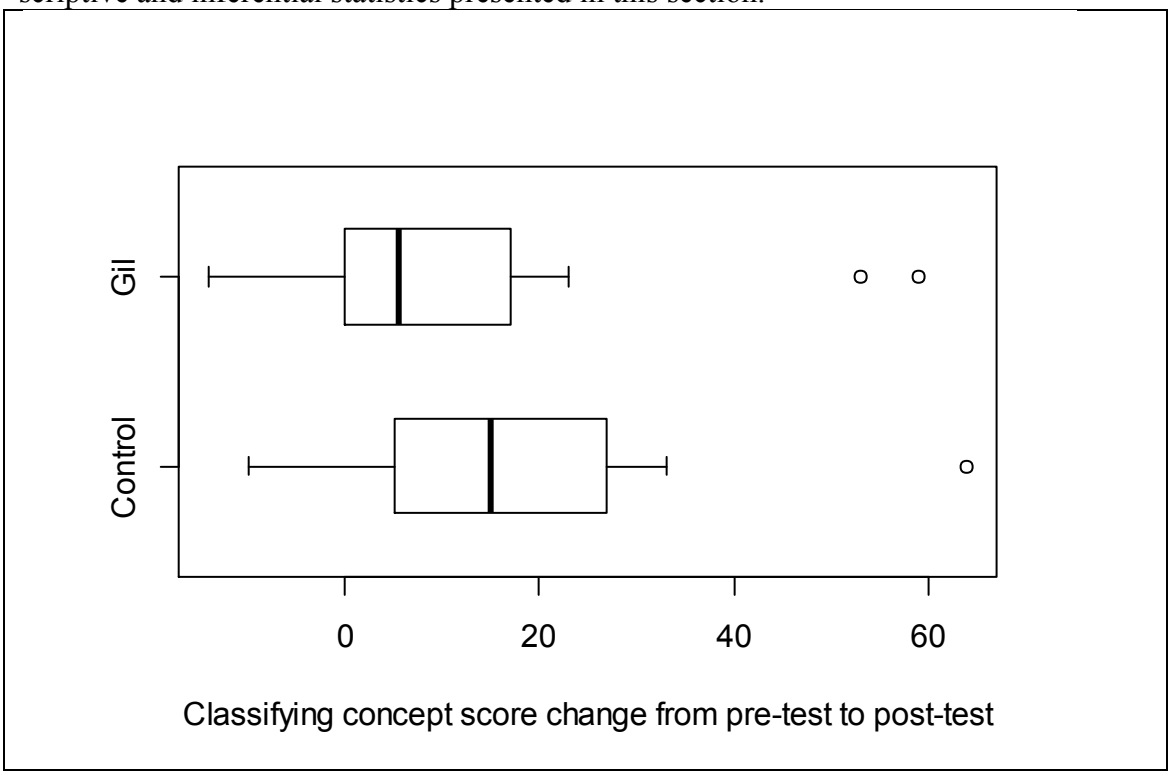


Figure 38. Boxplots of overall change in scores by group between stages.

The Gil group's median classifying concept change scores between the post-test stage and the pre-test stage improved (Gil $_{change}$ = 5.5). The distribution spread for the Gil group revealed some variability in the classifying concept change scores. Like the Gil group, the control group's median overall change scores between the post-test stage and the pre-test stage improved noticeably but much more than the Gil group (Control $_{change}$ = 15). Like the Gil group, the distribution spread for the control group's noun concept change scores revealed some variability in the scores (see Figure 38 for more details). One potential outlier score was presented for the control group and two potential outlier scores were noted for the Gil group (see Figure 38 for more details).

4.5.4. Classifying concept results by group

The Gil group demonstrated some improvement in their post-test means when compared to their pre-test means (see Table 24 for more details).

Table 24. Classifying concepts - Gil group.

Pre-test Mean	Post- test Mean	N	*t-value*	*df*	*p-value*
64	75.86	14	2.08	13	0.06

The paired samples *t*-test for the Gil group in this concept area produced a *t*-value which was not significant at the critical 0.05 alpha level; however, this *p*-value was just outside the critical alpha level (see Table 24 for more details). The effect size for the Gil group ($d = 0.56$, $df = 13$) was a medium effect ($d = 0.50$).

The visual representation of these results yielded additional support for the inferential statistics described above (see Figure 39 for more details).

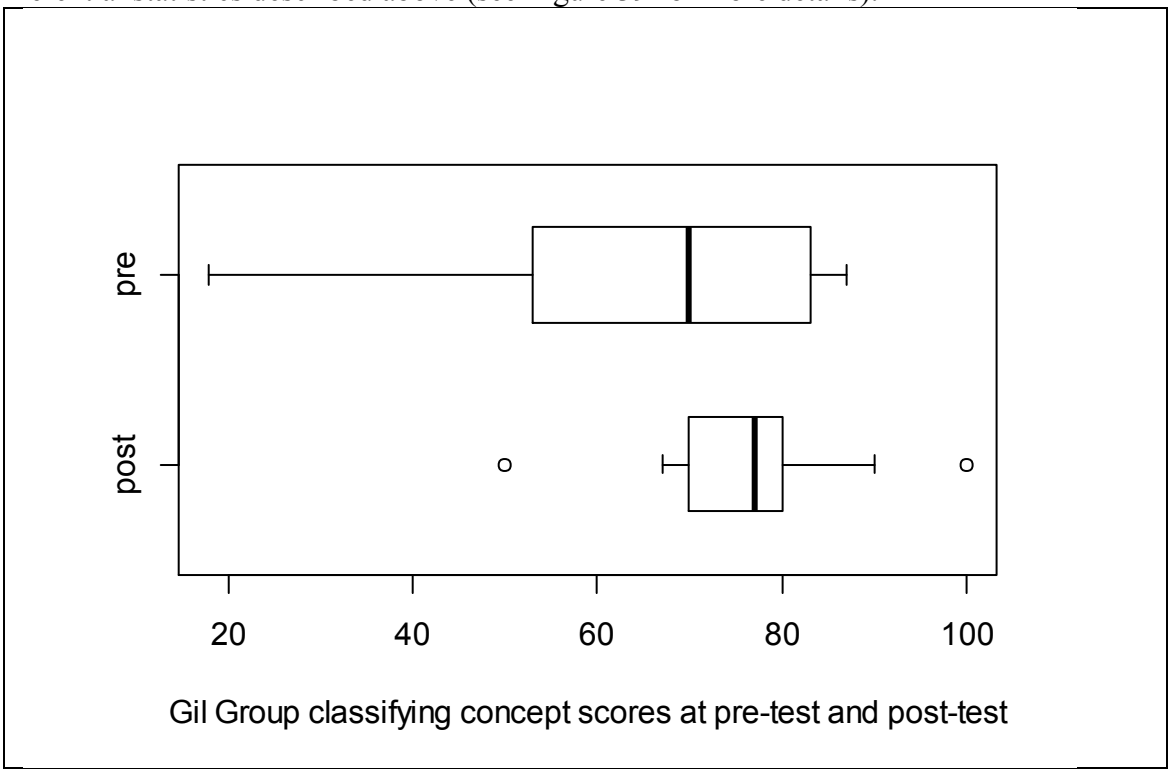


Figure 39. Gil group, classifying concept scores, pre and post.

The Gil group's median classifying concept scores at the post-test stage improved when compared to the pre-test stage ($Gil_{post} = 77.0$, $Gil_{pre} = 70.0$). The distribution spread for the Gil group at the pre-test stage revealed a wide variability in the overall scores, with the lower quartile score being ($Gil_{pre\ low} = 53.0$) and the upper quartile score being ($Gil_{pre\ up} = 83.0$). In contrast, the post-test stage results presented perceptibly less variation

in lower, inter, and upper quartiles (see Figure 39 for more details). As shown in Figure 39, the pre-test stage revealed negative skew for the Gil group. The post-test stage indicated the Gil group's scores exhibited less skew. The post-test stage also exhibited two potential outlier scores. Figure 39 displayed that the Gil group developed their skills from the pre-test to the post-test stages and the subjects in this group reduced the variability in their scores when the post-test stage results were compared to the pre-test stage results.

As with the Gil group, the means of the control group across the schools improved considerably when the pre-test means and post-test means were compared through the calculation of a paired samples *t*-test. The control group's pre-test mean was 48.12 and the post-test mean was 64.18. The *t*-value was significant at the critical 0.05 alpha level($t(15) = 3.45$, $N = 16$, $p = 0.004$). The effect size for the control group ($d = 0.86$, $df = 15$) was found to be a large effect.

The visual representation of these results in Figure 40 further illustrated detail for the inferential statistics calculated for the control group.

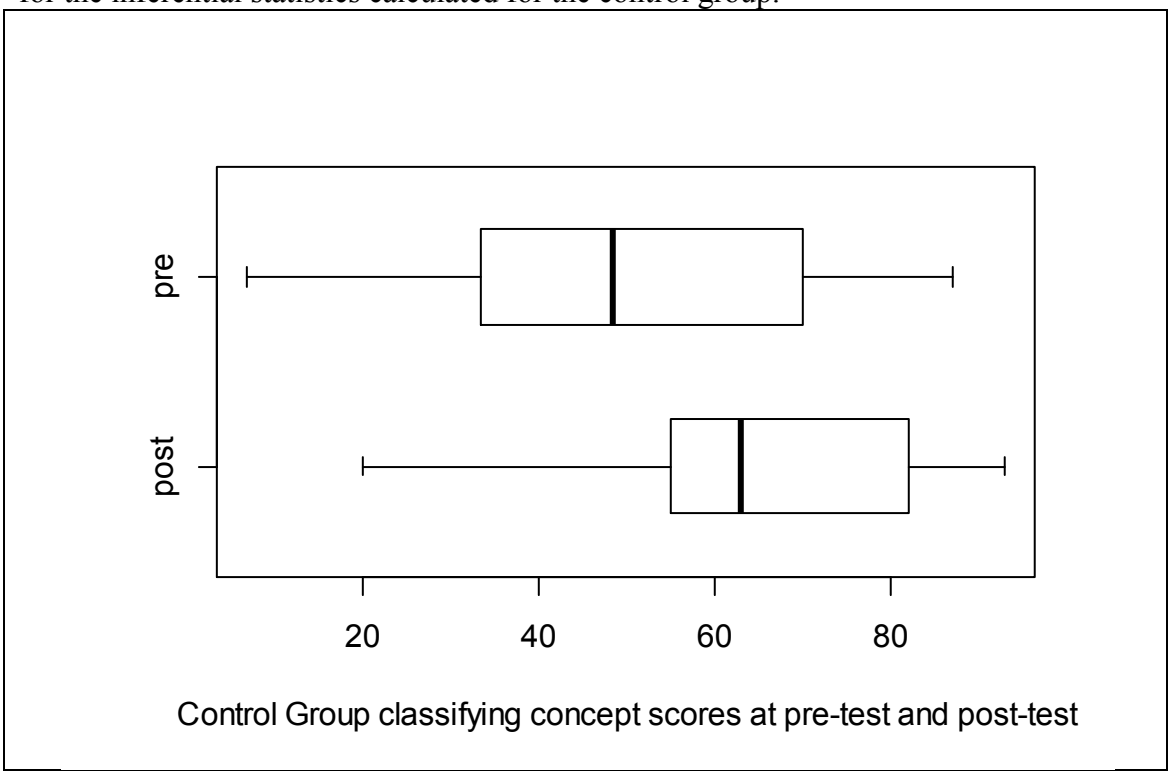


Figure 40. Control group, classifying concept scores, pre and post.

The median scores of the control group at the post-test stage had developed considerably compared to the pre-test stage (Control $_{post}$ = 63.0, Control $_{pre}$ = 48.5) and when compared to the Gil group (Gil $_{post}$ =77.0, Gil $_{pre}$ = 70.0). Both boxplots for the control

group's distribution spread at the pre-test stage and post-test stage displayed positive skews (see Figure 40 for more details). Figure 40 displayed that the control group improved substantially in their skills from the pre-test to the post-test stages.

4.5.5. Identifying concept results by stage

The identifying concept means of both groups at the pre-test stage showed no significant difference (see Table 25 for more details). The Gil group displayed more variability in their responses than the control group as evidenced by the standard deviation (Gil *SD* = 12.56, Control *SD* = 9.30).

Table 25. Identifying concepts - groups at pre-test.

Group	N	M	SD
Gil	14	66.79	12.56
Control	16	70.75	9.30

The identifying concept means of both groups at the pre-test stage showed no statistically significant difference when assessed with Welch's independent samples *t*-test ($t(23.7) = 0.97$, $N = 30$, $p = .0341$). The effect size for the pre-test stage ($d = 0.36$, $df = 23.7$) was found to be larger than the convention for a small effect ($d = 0.20$).

As seen in Figure 41, the median scores for both groups at the pre-test stage were different (Gil = 70, Control = 72.5). The spread of the distribution for the Gil group indicated a wider variability in the overall scores when compared to the control group (see Figure 41 for more details). Figure 41 showed that the Gil group and the control group exhibited some negative skew at the pre-test stage; however, the Gil group exhibited more negative skew.

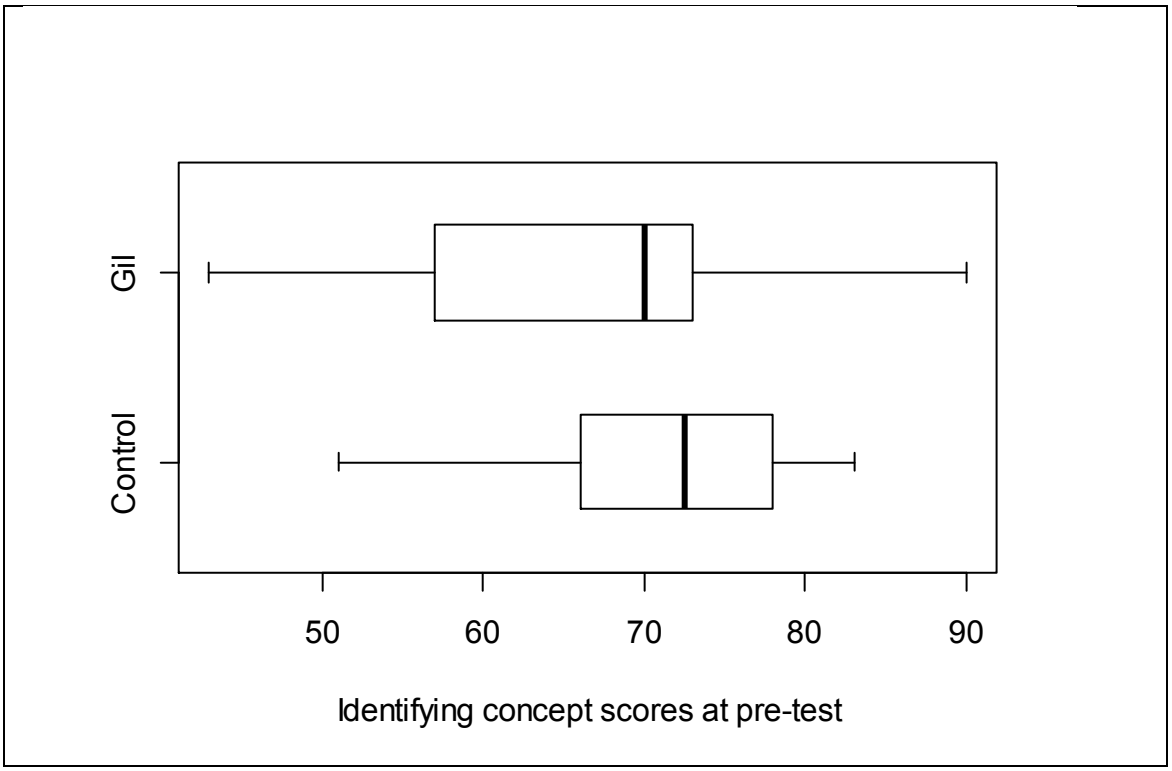


Figure 41. Boxplots of identifying concept scores by group at pre-test stage.

A significant difference was detected in the amount of change for the scores of the Gil group and the control group between the pre- and post-test stages (see Table 26 for more details). The Gil group displayed a very positive change in the scores for identifying concepts between the stages while the control group displayed a very small change in mean ($Gil_{change} = 11.5$, $Control_{change} = 0.312$) (see Table 26 for more details).

Table 26. Change in group scores from pre- to post-test.

Mean Gil	N Gil	Mean Control	N Control	*t-value*	*df*	*p-value*
11.50	14	0.312	16	2.706	26.5	0.012

As shown in Table 26, the *t*-value result calculated with a Welch's independent samples *t*-test was very significant at the critical 0.05 alpha level (see Table 26 for more details). The effect size for the group change was large ($d = 0.99$, $df = 26.5$).

As shown in Figure 42, the boxplot provided additional confirmation of the descriptive and inferential statistics detailed in this section.

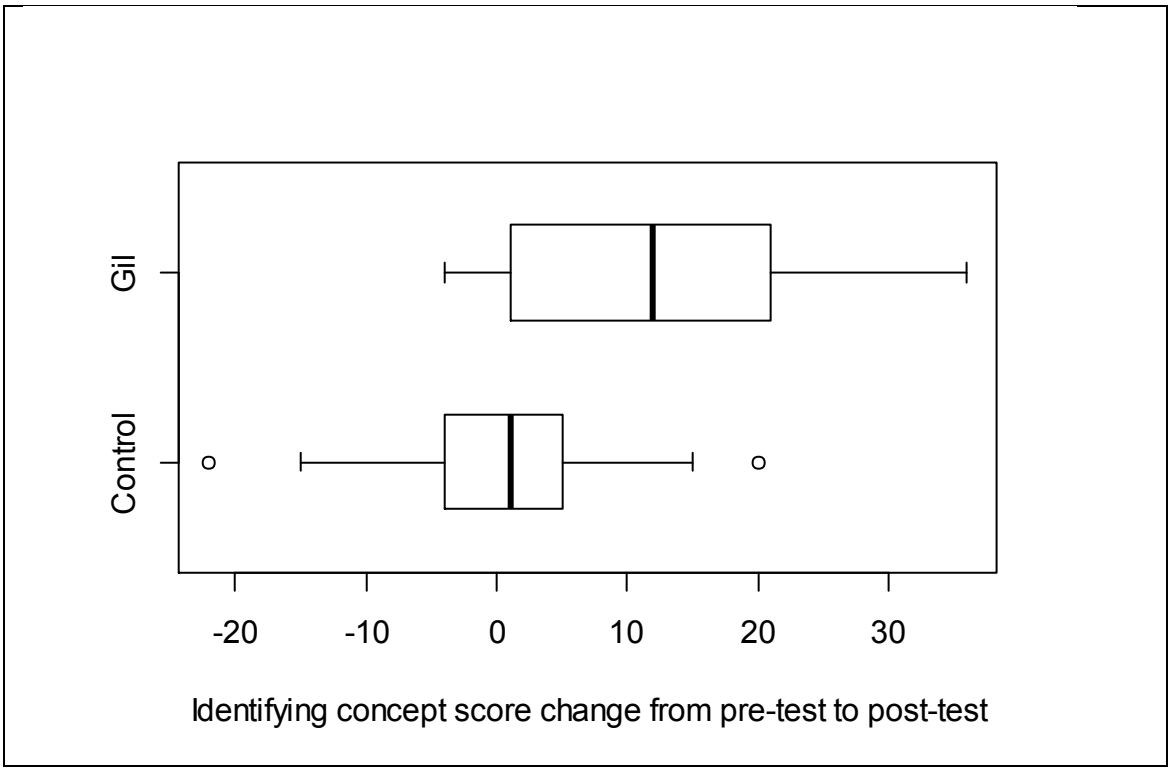


Figure 42. Boxplots of overall change in scores by group between stages.

As presented in Figure 42, the Gil group's median classifying concept change scores between the post-test stage and the pre-test stage improved considerably (Gil $_{change}$ = 12); whereas, the control group's median scores improved by a small amount considerably (Control $_{change}$ = 1). Both groups exhibited some negative skew (see Figure 42 for more details). Two potential outlier scores were noted for the control group (see Figure 42 for more details).

4.5.6. Identifying concept results by group

When the identifying concept data in Table 27 is examined, the means of the Gil group across the schools improved significantly when the pre-test means and post-test means were compared by means of a paired samples *t*-test.

Table 27. Identifying concepts - Gil group.

Pre-test Mean	Post- test Mean	N	*t-value*	*df*	*p-value*
66.79	78.29	14	3.65	13	0.003

The *t*-value was significant at the critical 0.05 alpha level, with $t(13) = 3.65$, $p = 0.003$ (see Table 27 for more details). The effect size for the Gil group ($d = 1.19$, $df = 13$) was found to considerably exceed the convention for a large effect ($d = 0.80$).

The visual representation of these results in Figure 43 illustrated further detail for the inferential statistics calculated for the Gil group.

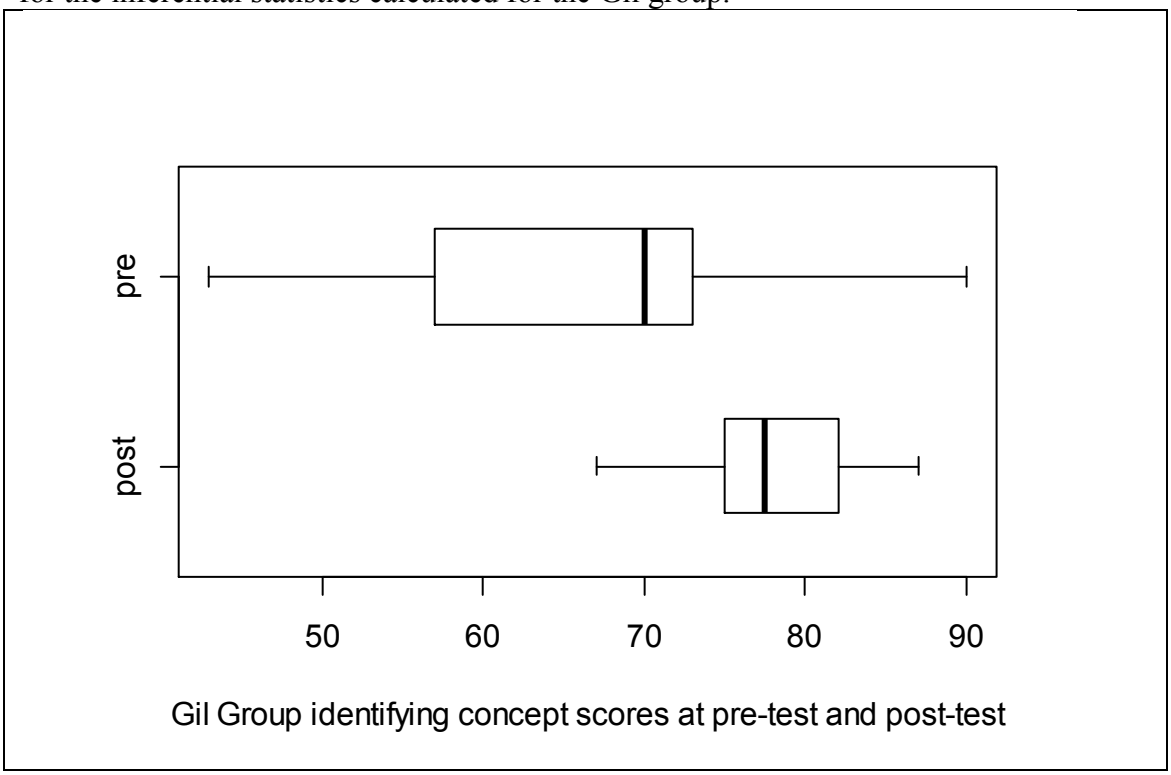


Figure 43. Gil group, identifying concept scores, pre and post.

The Gil group's median identifying concept scores at the post-test stage perceptibly improved when compared to the pre-test stage ($Gil_{post} = 77.5$, $Gil_{pre} = 70.0$). The distribution spread for the Gil group at the pre-test stage revealed a wide variability in the overall scores, with the lower quartile score being ($Gil_{change\ low} = 57.0$) and the upper quartile score being ($Gil_{change\ up} = 73.0$). In contrast, the post-test stage results presented perceptibly less variation (see Figure 43 for more details). Figure 43 displayed that the Gil group improved their skills from the pre-test to the post-test stages.

In contrast to the Gil group, the means of the control group across the schools improved a small amount when the pre-test means and post-test means were compared with a paired samples *t*-test (see Table 28 for more details).

Table 28. Identifying concepts - control group.

Pre-test Mean	Post- test Mean	N	*t-value*	*df*	*p-value*
70.75	71.06	16	0.117	15	0.909

The *t*-value was not significant at the critical 0.05 alpha level (see Table 28 for more details). The effect size for the control group ($d = 0.03$, $df = 15$) was very small.

The visual representation of these results in Figure 44 illustrated further detail for the inferential statistics calculated for the control group.

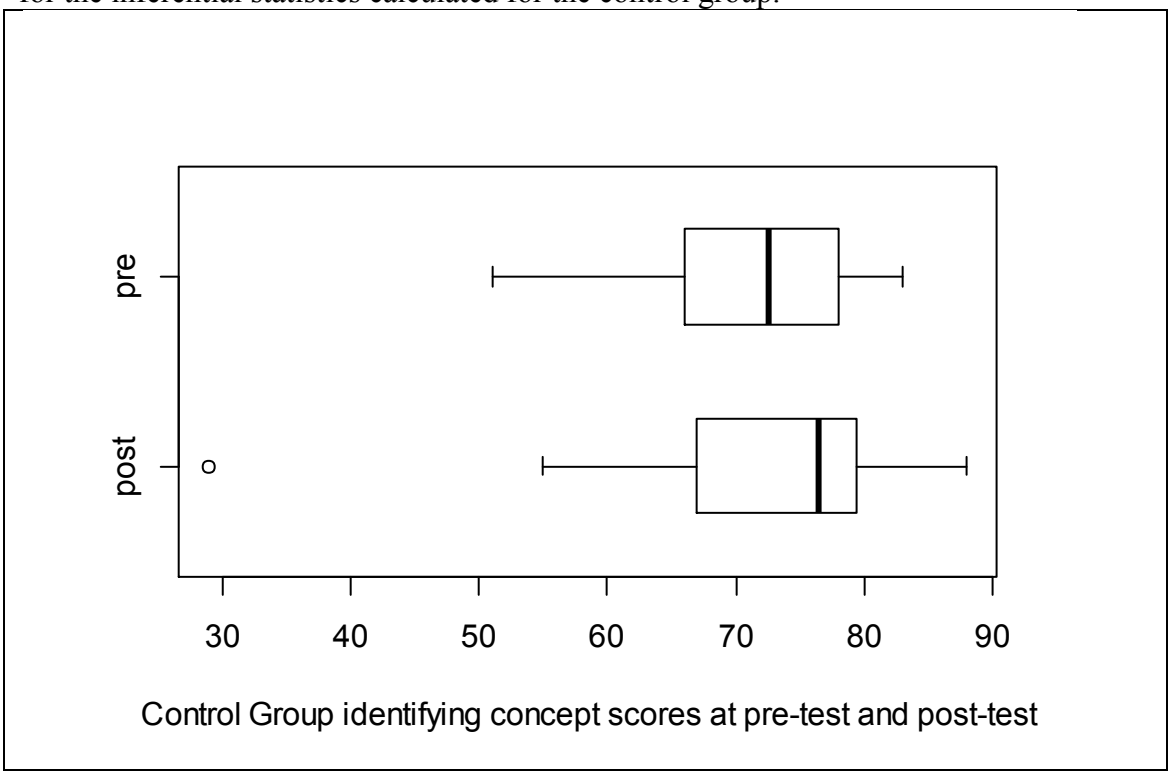


Figure 44. Control group, identifying concept scores, pre and post.

The median scores of the control group at the post-test stage had somewhat improved compared to the pre-test stage (Control $_{post} = 76.5$, Control $_{pre} = 72.5$).

4.6. **Individual test sub-module results by stage and group**

The Gil group and control group results for the pre- and post-test stages were also examined at the test submodule level to assess the participants' performance with particular noun and article concepts. Independent samples *t*-tests were calculated for the changes in means between the pre- and post-test stages for the Gil group and control group. Also, the standard deviations with the mean scores and effect sizes were computed (see Table 29 for more details).

Table 29. Both groups - pre-post mean change and effect size.

Individual Module	Gil pre-post mean change	Gil pre-post change SD	Control pre-post mean change	Control pre-post change SD	effect size
countable/uncountable nouns +	-2.14	14.77	-29.88	23.22	1.43
two way nouns	1.43	16.58	-4.25	19.82	.31
a or *an* with nouns	-0.71	24.33	2.25	7.90	.16
first-time-mention nouns	11.21	15.71	4.38	29.43	.29
have or *be* with nouns	-1.07	26.62	15.63	15.47	.77
sports nouns	25.71	32.28	28.13	31.67	.08
definite article with nouns +	29.5	46.00	-11.25	30.96	1.04
second-time-mention nouns	27.14	32.68	9.75	36.16	.51
do with nouns	7.14	26.14	4.06	29.167	.11
play with nouns	13.07	33.28	-2.5	28.868	.50
describing words before nouns	10.71	24.64	-2.38	23.19	.55
describing words after nouns	13.57	25	-2.5	18.80	.06
special second-time-mention nouns 1	7.86	15.78	-8.13	30.38	.66
special second-time-mention nouns 2	0.714	4.75	-6.25	23.63	.41
political nouns	2.143	20.45	-1.81	23.54	.18
geographical nouns	6.43	23.41	7.13	22.37	.03
cultural nouns	7.86	18.88	-4.38	17.12	.68
proper names	12.14	26.07	20.63	37.14	.26

+ - change significant at 0.05 alpha level when pre- and post-test means were compared

Table 29 outlines that only two submodules (e.g. countable/uncountable nouns, definite article with nouns) presented with significant change between the pre- and post-test means and effect sizes above 1. With the countable/uncountable nouns submodule, it was notable that both groups regressed in their post-test mean change but the control group regressed significantly more (Gil $_{change}$ = -2.14, Control $_{change}$ = -29.18). When examining the definite article with nouns submodule, it was worth noting that the Gil group improved significantly in their post-test mean change while the control group regressed significantly (Gil $_{change}$ = 29.5, Control $_{change}$ = -11.25).

When examining the pre-post test change for each group, the Gil group was noted to present with positive pre-post-test mean changes for fifteen out of the eighteen individual submodules, the exceptions being the countable/uncountable nouns, *a* or *an* with nouns, and *have* or *be* with nouns submodules (see Table 29 for more details). The *have* or *be* with nouns submodule was the only submodule where the control group out-performed the Gil group in the pre-post-test change analysis. By contrast, the control group was observed to present with positive pre-post-test mean changes for only five out of the eighteen individual submodules (see Table 29 for more details).

In terms of effect size, two individual submodules' (e.g. countable/uncountable nouns, definite article with nouns) pre-post-test changes were observed to be above the convention for a large effect (d = 0.80) (see Table 29 for more details). Five individual submodules (e.g. *have* or *be* with nouns, second-time-mention nouns, *play* with nouns, describing words before nouns, special second-time-mention nouns 1, cultural nouns) presented with pre-post-test changes that were above or equal to the convention for a medium-sized effect (d = 0.50) (see Table 29 for more details).

Finally, it should be noted that both groups displayed large variations in their pre-post mean changes as evidenced by the large standard deviation scores for each individual submodule (see Table 29 for more details). This was mostly likely an artefact of each submodule only containing ten items; thus, changes in total submodule scores resulted in larger overall variations between score differences.

Chapter 5: Discussion

5.1. Outline

The literature reviewed in Chapter 1 of this thesis discussed the rationales for teaching the use of English articles, particularly to Polish learners of English and the complex linguistic features of English articles and nouns, in terms of definiteness and indefiniteness. The literature review also identified a teaching strategy, Master's binary schema, that explains many of the English article usage patterns. The literature review discussed how this schema caters for definite article usage patterns based on the theoretical notions of identifiability and locatability. These notions encompass other key theoretical concepts propounded by researchers in the area of English articles. Those key concepts were scope of predication, prominence, and shared awareness; specificity and referentiality; inclusiveness; familiarity; and uniqueness and reference. The literature review also discussed that Master's binary schema explicates indefinite article usage patterns based on the theoretical models of non-familiarity, exclusiveness, non-specificity, non-identifiability, and genericity. Chapter 2 presented and discussed GBL and specific pedagogical elements for educational game design, including: interaction theory, focus on form, comprehensible input, the output hypothesis, and feedback. The literature review also identified that specific pedagogical elements from the comprehensible input model, such as explicit instruction, instructional scaffolding, chunking, and fading, were some of the keys in effective teaching of English articles in non-e-learning formats. The literature review also discussed that key pedagogical elements from the output hypothesis model such as direct, focussed, explicit, and immediate feedback, were other important elements in effective teaching of English articles in non-e-learning formats. Chapter

2 also presented and discussed a GBL model for designing e-learning tools, the GREM model (Zarraonandia et al. 2015) and how Master's binary schema and the key pedagogical design elements were incorporated in the e-learning tool (Gillian 2015a) through this model. Finally, Chapter 2 provided a technical description of the e-learning tool (Gillian 2015a). Both chapters acknowledged that while there was research evidence about traditional pen and paper teaching options for learning English articles, there was little research evidence about using e-learning tools in this area. However, it was clear that these areas warranted further research in order to provide quantitative evidence about the effectiveness of e-learning software in teaching English article usage patterns. It was these areas that this research sought to investigate.

The following sections discuss the effectiveness of the e-learning tool (Gillian 2015a) in developing the participants' appropriate use of articles. Firstly, the overall effectiveness of the e-learning tools in developing appropriate article usage is discussed. The effectiveness of the teaching in this area is examined by discussing the e-learning tool assessment pre- and post-test results. Secondly, the effectiveness of the e-learning tools in developing particular concept groups such as noun concepts, classifying noun concepts, and identifying noun concepts is discussed. The effectiveness of the teaching in this area is examined by discussing the e-learning tool assessment pre- and post-test results for these concept groups. Thirdly, the effectiveness of the e-learning tool in using the indefinite article *a/an* appropriately and the utility of Master's schema of classifiability in teaching the use of *a/an* is considered. The effectiveness of the teaching in this area is examined by looking at e-learning tool assessment pre- and post-test results from the sub-modules dealing with indefinite articles. Fourthly, the effectiveness of the e-learning tool in using the definite article *the* appropriately and the utility of Master's schema of identifiability in teaching the use of *the* is considered. The effectiveness of the teaching in this area is examined by looking at the e-learning tool assessment pre- and post-test results from the sub-modules dealing with definite articles. Fifthly, the effectiveness of the e-learning tool in using *no article* appropriately and the utility of Master's schema of classifiability and identifiability in teaching the use of *no article* is considered. The effectiveness of the teaching in this area is examined by looking at the e-learning tool assessment pre- and post-test results from the sub-modules dealing with the use of no articles. Finally, other findings that arose from the research, limitations of

the sample, the teaching implications of the research, and directions for future research are considered.

As detailed in Chapter 3: and Chapter 4: , 30 students between the ages of 13 and 14 in two Polish schools participated in this study. All participants met the screening criteria for gender, age, and being able to read and write in their native language, Polish. As noted in Section 3.3.4. not all the participants met the criteria of achieving an A2 level (elementary) in English reading and writing according to the CEFR curriculum assessment tool (Council of Europe 2011). However, as noted in Section 3.3.4. all participants were reported to have studied English for a minimum of six years with most being reported to have studied English for between seven and nine years. As reported in Section 3.3.5, an experimental design (Polgar and Thomas 2011) with two intervention groups in the two schools and two control groups in the two schools was adopted to examine the effectiveness of the two teaching methods.

5.2. Overall pre- and post-test results

The overall results allowed Hypothesis 1 to be accepted and that the researcher could state that students' appropriate usage of English articles improved from baseline to post-test after teaching with *Gil's Article Teacher e-learning tool* more than after teaching with *traditional pen and paper grammar exercises.* As seen in section 4.2. , the paired samples *t*-test showed there was a statistically significant difference in the group score change from pre to post-test stages. Also, the very large effect size further confirmed Hypothesis 1. Thus, the overall results strongly suggest that the e-learning tool was more effective than traditional teaching methods for teaching the difficult and complex semantic/syntactic structures that are English articles when the e-learning includes specific and well-researched pedagogical elements such as focus on form, comprehensible input, the output hypothesis, and feedback from a socio-cultural perspective. This research expanded upon the results of previous studies conducted by Master (1988, 1990, 1996, 1997, 2002, 2003a) and Huong (2005) through providing extensive detail on how Master's binary schema aids the development of skills in English article usage patterns. This research also enlarged the body of evidence that the traditional teaching of English article usage patterns as a list of rules is not effective as the students find the list of rules

difficult to remember and use due to their number and complexity (Król-Markefka 2010; Huong 2005). This research added quantitative evidence to the small but growing research body for GBL research (Egenfeldt-Nielsen 2007; Timmers 2013; Van der Kleij et al. 2015; Zarraonandia et al. 2015) and provided new and innovative quantitative evidence for the application of e-learning in the area of teaching English article usage patterns.

The current research and its overall findings expatiated upon the results of previous studies into the effectiveness of specific pedagogical elements for design of e-learning tools (see sections 2.3. and 2.3.3. for more details). The current research supported the use of comprehensible input in software design for pedagogical purposes in second language acquisition (Gregg 2001; Pawlak 2006; Zarraonandia et al. 2015). In particular, these findings were in line with a study conducted by Fogel and Ehri (2000) showed that explicit teaching of concepts was found to be effective under two conditions: 1) when explicit instructions for Standard English (SE) written structures were employed and 2) follow-up practice using those forms was used. The current research also expanded on and supported previous research into scaffolding (Coufal 2002; Gillian 2008; Huong 2005; Król-Markefka 2010; Obikwelu et al. 2012) and chunking (Coufal 2002; Gillian 2008; Munyofu et al. 2007).

This research provided some evidence to support the output hypothesis (Donesch-Jezo 2011; Harley 1993; Izumi et al. 1999; Swain 1985, 1993, 1995, 2000). In particular, the current research presented evidence that immediate feedback was effective in aiding students to learn new structures in e-learning contexts (Bangert-Drowns et al. 1991; Kulik and Kulik 1988; Shute 2008; Van der Kleij et al. 2015).

Also, the current research presented evidence that feedback from a socio-cultural perspective (i.e. ZPDs) aids students to learn grammatical structures in English in traditional teaching contexts and e-learning contexts (Coufal 2002; Dennen 2004; Gillian 2008; Puntambekar and Hubscher 2005; van Merrienboer et al. 2003; Obikwelu et al. 2012; Zarraonandia et al. 2012, 2015)

5.3. Indefinite article usage

The results from the noun concept group results and the classifying concept group results allowed Hypotheses 2 and 3 to be partially accepted and that the researcher could state that students' appropriate usage of the articles *a* and *an* by thirteen- to fourteen-year-old participants improves from baseline to post-test after teaching with *Gil's Article Teacher e-learning tool* more than after teaching with *traditional pen and paper grammar exercises* in some contexts.

5.3.1. Indefinite articles – noun concept group evidence

As noted in section 4.5.1. and 4.5.2. , the paired samples *t*-test and the independent samples *t*-test from the noun concept group showed there was a statistically significant difference in the group score change from pre to post-test stages in this area. However, the results showed that both groups regressed in this area at the post-test stage. The statistically significant difference arose from the fact that the Gil group regressed only slightly and the control group regressed significantly. Also, the noun concept group results presented with a very large effect size.

When examining the results from the individual sub-modules, it can be noted that both groups had difficulties with countable/uncountable nouns. However, the control group had particular difficulties with countable and uncountable nouns (see Table 29 for more details). The Gil group also regressed in their knowledge of the countable/uncountable feature of nouns. The rules based approach given to the control group led to a big decline in the control group's pre-post mean change scores for countable/uncountable nouns with the largest effect size of all sub-modules (d = 1.43) (see Table 29 for more details). This implied that presenting the patterns for uncountable/countable nouns was confusing for the participants and did not aid their knowledge of the features of English nouns. This result highlighted the need to teach the concepts of countable and uncountable nouns explicitly and carefully. This result suggested that the e-learning tool (Gillian 2015a) should provide more examples of different types of uncountable nouns (e.g. abstract concepts such as education and science; action nouns

such as walking; and mass nouns such as food and liquid) and more explicit instructions about these nouns.

When examining the results from the two-way nouns sub-module, the Gil group was noted to improve in their knowledge of two-way nouns which require the use of the articles *a* and *an* when they are the singular countable form of the two-way noun; on the other hand, the control group regressed in their knowledge of two-way nouns (see Table 29 for more details). This result highlighted that the e-learning tool (Gillian 2015a) presented the usage patterns of two-way nouns in a manner that the participants were able to grasp. It provides partial confirmation that Master's binary schema presents the features of two-way nouns more effectively than the traditional teaching approach.

5.3.2. Indefinite articles – classifying noun concept group evidence

When scrutinising the results from the individual sub-modules at the classifying noun concept group level, the Gil group made a large amount of progress in their identification of first time nouns and the use of *a* or *an* singular first-time-mention nouns; on the other hand, the control group made a small amount of progress in this skill (see Table 29 for more details). This skill is very important as the two major patterns employed in English article usage are first-time-mention and second-time-mention (Ekiert 2007; Huong 2005; Król-Markefka 2010, 2012, Master 1988, 1990, 1996, 1997, 2002, Zabor 1993, 2011b).

The only area in the research results where the control group performed significantly better then the Gil group was the *have* and *be* with nouns sub-module. With the Gil group, 8 out of 14 participants regressed from pre-test to post-test; on the other hand, with the control group, only 2 out of 16 participants regressed (see Table 29 for more details). To elucidate, the verbs *have* and *be* often embody the concept of genericity through providing definitions with the verb *be* and providing descriptions with the verb *have* (see sections 1.6.8. and 1.7.4.8. for more details). The concept of genericity is particularly difficult to learn in terms of article usage patterns in that this concept can be conveyed through all four article choices in English; therefore, the instructions and exercises in the e-learning tool (Gillian 2015a) may not have been detailed enough for the

participants. Thus, the instructions and exercises may require revision to include more explanation and more examples.

5.3.3. Indefinite articles – summary of the evidence

For Hypotheses 2 and 3, the evidence suggested that both could be partially accepted. The evidence from the research indicated that both groups found the countable/uncountable nouns feature to be difficult to master. However, the control group had significantly more problems with this feature. The Gil group performed significantly better than the control group in terms of indefinite article usage with the singular countable form of the two-way noun. Also, the Gil group presented with significantly better results than the control group for indefinite article usage with first-time-mention nouns. However, the Gil group was noted to have significantly more difficulties with the verbs *have* and *be* with nouns than the control group.

These findings about indefinite article usage patterns provided additional evidence that partially confirms the results of previous studies conducted by Master and Huong through providing detail on how Master's binary schema aids the development of skills in English indefinite article usage patterns (Huong 2005; Master 1988, 1990, 1996, 1997, 2002, 2003a). These indefinite article usage pattern findings also expand the evidence for the role of corrective feedback with indefinite article usage (Bitchener and Knoch 2009, 2010a, 2010b; Bitchener 2012).

5.4. Definite article usage

The identifying group concept results allowed Hypothesis 4 to be accepted and that the researcher could state that students' appropriate usage of definite articles improved from baseline to post-test after teaching with *Gil's Article Teacher e-learning tool* more than after teaching with *traditional pen and paper grammar exercises.* As noted in sections 4.5.5. and 4.5.6. , the paired samples *t*-test and the independent samples *t*-test from the identifying concept group showed there were statistically significant differences in the

group score change from pre- to post-test stages in this area. Also, the identifying noun concept group results presented with a very large effect size.

This concept group involved teaching the definite article in many contexts (definite article with nouns, second-time-mention nouns, *do* with nouns, *play* with nouns, describing words before nouns, describing words after nouns, special second-time-mention nouns 1, special second-time-mention nouns 2, political nouns, geographical nouns, and cultural nouns). The results supported the design division of these contexts into specific instruction and exercise modules and indicated that the specific pedagogical elements included in the design aided the subjects to develop their skills in definite article usage patterns.

These definite article usage patterns results gave further evidence that confirms the results of previous studies conducted by Master and Huong through providing data on how Master's binary schema aids the development of skills in English definite article usage patterns (Huong 2005; Master 1988, 1990, 1996, 1997, 2002, 2003a). These findings about definite article usage patterns also enlarge the evidence for the role of corrective feedback with definite article usage (Bitchener and Knoch 2009, 2010a, 2010b; Bitchener 2012).

These findings also extended the evidence that traditional teaching methods of English article usage patterns as a list of rules were not effective. The results indicated that the subjects found the list of rules difficult to remember and use due to their number and complexity**.** An example of this was the definite article with nouns sub-module where the Gil group improved significantly in their pre-post mean change and the control group regressed significantly (see Table 29 for more details). This finding was confirmed by the large effect size. The finding from this sub-module strongly indicated that teaching the usage patterns for the definite article as a list of rules does not aid the development of the appropriate use of the definite article.

5.5. No article usage

Results from elements of the noun concept group results, classifying group concept results and the identifying group concept results allowed Hypothesis 5 to be accepted and that the researcher could state that students' appropriate usage of no article improved

from baseline to post-test after teaching with *Gil's Article Teacher e-learning tool* more than after teaching with *traditional pen and paper grammar exercises.*

5.5.1. No article – noun concept group evidence

The results from the two-way nouns submodule showed that the Gil group improved in their knowledge of two-way nouns which require the use of no article when they are the plural countable form or the uncountable form of the two-way noun; on the other hand, the control group regressed in their knowledge of two-way nouns at the post-test stage (see Table 29 for more details). This result highlighted that the e-learning tool presented the usage patterns of two-way nouns in a manner that the participants were able to grasp. It provided partial confirmation that Master's binary schema presents the features of two-way nouns more effectively than the traditional teaching approach.

5.5.2. No article – classifying noun concept group evidence

The results from the individual sub-modules in the classifying article concept group showed that the Gil group made a large amount of progress in their identification of first time nouns and the use of no article with plural or uncountable first-time-mention nouns while the control group made a small amount of progress in this skill (see Table 29 for more details). This skill is very important as the two major patterns employed in English article usage are first-time-mention and second-time-mention (Master 1988, 1990, 1996, 1997, 2002, 2003a).

However, looking at the individual sub-module results, there was some evidence that did not support the acceptance of Hypothesis 5. For sports nouns sub-module, the Gil group and the control group both improved significantly (see Table 29 for more details). This result may have occurred as the usage pattern for sports nouns was presented very simply for each group i.e. if the noun is a sports noun, no article is needed.

5.5.3. No article – identifying noun concept group evidence

As noted in sections 4.5.5. and 4.5.6. , the paired samples *t*-test and the independent samples *t*-test from the identifying concept group showed there were statistically significant differences in the group score change from pre to post-test stages in this area. Also, the identifying noun concept group results presented with a very large effect size. This concept group involved teaching the use of no article in a number of different contexts (*do* with nouns, political nouns, geographical nouns, and cultural nouns). The results supported the design division of these contexts into specific instruction and exercise modules and indicated that the specific pedagogical elements included in the design aided the subjects to develop their skills in definite article usage patterns.

Looking at the individual sub-module results, there was some evidence that did not support the acceptance of Hypothesis 5. For proper names nouns sub-module, the Gil group and the control group both improved significantly (see Table 29 for more details). This result may have occurred as the usage pattern for proper names nouns was presented very simply for each group i.e. if the noun is the name of a person or company, no article is needed.

5.6. Other Findings – Utility of the GREM model

The current research provided new evidence to support the effectiveness of the GREM model (Zarraonandia et al. 2015) in designing e-learning tools for teaching English grammatical structures such as the article system.. This research found that the games rules sub-model allowed precise and quick specification of different elements of the e-learning tool through the mechanics layer, goals layer, socialisation layer, feedback layer, debriefing layer, and storytelling layer (see sections 2.3. 2.4. 2.5. 2.6. for more details). Of particular importance were the following: the storytelling layer, the mechanics layer, and the goals layer. The storytelling layer was important for allowing specification of the story line and interface and how to incorporate the main article teaching schema (Master's binary schema) and specific pedagogical elements in the design in the form of comprehensible input components (e.g. explicit instruction, scaffolding, chunking, and fading) and output hypothesis elements (e.g. feedback – ZPD, focused, direct,

indirect, explicit, implicit, and immediate). The mechanics layer was important for specifying the game response entities (e.g. countable/uncountable nouns, countable singular nouns starting with a consonant sound, countable singular nouns starting with a vowel sound, countable plural nouns, two-way nouns, and uncountable nouns and the article choices appropriate for each type of noun) (see Table 8 and section 2.6.1.1. for more details). The game exercise entities allowed for specific design of the responses that the subjects would be providing for each item (see Table 9 for more details). The goals layer was important was an extremely useful concept for specifying the overall objectives of the e-learning tool. However, the researcher modified its use within the model to make it the primary element ahead of the mechanics layer in order to create the objectives first.

This research showed that game scenarios sub-model enabled fast and detailed design of the game rules elements such as scenes, characters, and contexts through the representation layer. The services layer helped to easily define how the data items for the e-learning tool exercises and instructions would be created (see Figure 20, Figure 21, Figure 22, Figure 23, and Figure 24 for more details). Also, this layer determined how the specific software components would be used to create the e-learning tool (e.g. the Moodle LMS and SCORM 1.2 sub-modules) and the interaction between the components would occur).

5.7. Other Findings – Feedback and Moodle LMS failures

Due to the failures of the Moodle LMS system in terms of saving and displaying the logical links between sub-modules (see Appendix C for more details), the evidence from this research could not confirm directly if focussed feedback was more effective than unfocussed, direct feedback was more effective than indirect, or explicit feedback was more effective than implicit.

5.8. Limitations of the sample

In this research, the numbers in the Gil group (n = 14) and the control group (n = 16) were small. Thus, full generalisations to a wider population cannot be made with confidence (Polgar & Thomas, 2000). The sample was narrowly defined in term of participants; 13 and 14 year old students who were able to read and write fluently in Polish and achieve an A2 level (elementary) in English reading and writing according to CEFR curriculum assessment tool (Council of Europe 2011) if possible. When examining the background data for the students at the government school, not all of them achieved these criteria; in particular, the proficiency criterion was not met. However, all subjects had been learning English for at least 7-8 years (see Table 12, Table 13, Table 14, and Table 15 for more details). Only one subject had been learning English for less than seven years.

5.9. Teaching implications

The results from the current research have a number of teaching implications. Firstly, the e-learning tool was shown to be more pedagogically sound than the traditional teaching approach in that it reduces cognitive load on the students by shifting the focus from learning a long list of rules that are contradictory at times to firstly learning generalisable usage patterns (e.g. first-time-mention and second time mention) before proceeding to less frequent usages (e.g. *do* with nouns – *do a job*, *do the dishes*, *do travelling*).

The research provides quantitative evidence that GBL can be more effective than traditional teaching approaches when specific pedagogical elements such as explicit instruction, scaffolding, and chunking are included.

The research provides initial evidence as to the utility of the GREM model in designing e-learning tools and incorporating easily specific pedagogical elements such as explicit instruction, scaffolding, and chunking into game design.

Unfortunately, due to the technological issues mentioned in Appendix C**,** the pedagogical ideas related to the output hypothesis in terms of differentiated feedback could not be tested.

5.10. Future directions

There are a number of fruitful future directions to be pursued with this research. Firstly, the study could be replicated with a larger sample of students to assess the robustness of the results from this study. This larger study could also include a delayed post-test six months after the immediate post-test to examine the durability of the students' acquisition and retention of English article usage patterns. If the technological issues with the Moodle LMS were resolved, the effects of the different types of feedback could also be assessed. If terms of game design, more gameplay elements such as top 10 lists of scores, earning of points, and rewards could be included to enrich the gameplay experience. Finally, more cohesive and longer texts could be added at the concept group levels to teach and assess article usage patterns to increase the ecological validity of the teaching approach.

5.11. Conclusions

This research provided evidence to support the hypotheses that *Gil Article Teacher* e-learning tool improved the English article usage pattern skills of 13-14 year old students more than a traditional teaching approach. Comparison of the pre- and post-test data revealed significant positive differences in the *t*-tests conducted at the test stage level and the group level. These differences were noted at overall, noun concept group, classifying noun concept group, and identifying noun concept group levels.

This research provides new quantitative evidence on the utility of employing Master's binary schema rather than traditional teaching approaches to articles. Furthermore, the research provides new evidence for the advantages of using e-learning to teach English article usage when specific pedagogical elements with a sound research base such as focus on form, comprehensible input, and the output hypothesis are included. This research provides new information as to the utility of the GREM model in designing e-learning tools; particularly in the area of including specific pedagogical elements such as scaffolding and chunking.

Future research was identified in this thesis in the areas of replicating the research on a larger scale to confirm the findings in this research. Also, further research

into the effectiveness of different types of feedback is strongly suggested. It is also recommended that improvements to the *Gil Article Teacher* be made, such as additional gameplay elements and more cohesive texts, to improve the effectiveness of the e-learning tool in teaching English article usage patterns. Furthermore, it is recommended that the *have* and *be* with nouns sub-module be upgraded in terms of instruction and examples provided.

Abstract

The primary aims of this research were to investigate the effectiveness of e-learning in teaching appropriate English article usage at the sentence, paragraph, and short text level to Polish learners of English. A review of the literature suggested that quantitative research with the usage of e-learning to teach English grammatical structures is in its infancy. In particular, little research has been carried out to compare the effectiveness of e-learning to traditional teaching methods (Huong 2005; Król-Markefka 2010). Also, this research examined the effectiveness of Master's binary schema (Master 1988, 1990, 1996, 1997, 2002, 2003a) in teaching English article usage patterns.

The first stage of the research was a pilot study conducted in 2016 at an English private school for a period of one week. Five students were asked to participate in testing the e-learning software for five 30 minute sessions to assess:

- whether the educational concepts in the e-learning tool were appropriate for Polish speakers of English between the ages of 11 and 14;
- the technological requirements of the e-learning tool on a web-based server in order to observe and mediate any technological problems.

The results of the pilot study suggested that the educational concepts contained in the e-learning tool were appropriate for Polish speakers of English between the ages of 11 and 14. The e-learning tool was found to meet the technological requirements needed for the main study except for the major flaw of the Moodle LMS to maintain the logic links needed to create more individualised feedback. This meant the research element about more individualised feedback could not be carried out.

The second stage was the main study which was conducted in 2016-2017 with 30 students at two high schools for 12 lessons over a period of ten weeks. Participants

were stratified into two study groups: a teaching group (Gil group) and a control group. Each group undertook (a) a pre-test stage evaluating article usage skills using formal measures, (b) a teaching phase, and finally (c) a post-test stage evaluating changes in article usage skills using the same formal measures as in the pre-test stage. The Gil group learned English article usage patterns using the e-learning tool (Gillian 2015a) and the control group learned English article usage patterns using traditional teaching methods.

The main study results indicated that the e-learning tool was more effective than the traditional teaching method employed in this research. For the overall results by stage and group, the Gil group achieved significantly better results than the control group. For the noun concept and identifying concept results by stage and group, the Gil group also achieved significantly better results than the control group. For the classifying concept results by stage and group, the Gil group also achieved better results than the control group, but the difference was not statistically significant. The main study results may provide valuable contributions to English pedagogy in terms of article usage teaching and the body of quantitative evidence for the effectiveness of e-learning in the teaching of English grammatical structures such as articles.

Streszczenie

Podstawowym celem pracy było zbadanie skuteczności e-learningu w nauczaniu poprawnego użycia przedimków w języku angielskim na poziomie zdań, akapitów i krótkich tekstów przez polskich uczniów uczących się języka angielskiego. Przegląd literatury sugeruje, że badania ilościowe z wykorzystaniem e-learningu w nauczaniu angielskich struktur gramatycznych nie są wystarczające. W szczególności brakuje badań porównujących skuteczność e-learningu z tradycyjnymi metodami nauczania (Huong 2005; Król-Markefka 2010). Dalszym celem niniejszej pracy była ocena skuteczności schematu binarnego Mastera (Master 1988, 1990, 1996, 1997, 2002, 2003a) w nauczaniu wzorców użycia przedimków w języku angielskim.

Badanie właściwe poprzedzono tygodniowym pilotażem w prywatnej szkole językowej. W badaniu pilotażowym udział brało pięciu uczniów, których poproszono o udział w testowaniu oprogramowania e-learningowego przez pięć 30- minutowych sesji w celu oceny:

- czy pojęcia w narzędziu e-learningowym były odpowiednie dla polskich uczniów uczących się języka angielskiego w wieku od 11 do 14 lat;
- aspektów technicznych narzędzia e-learningowego na serwerze internetowym, w celu zidentyfikowania ewentualnych problemów natury technicznej i usunięcia ich.

Wyniki badania pilotażowego sugerują, że pojęcia edukacyjne zawarte w narzędziu e-learningowym były odpowiednie dla polskich uczniów uczących się języka angielskiego w wieku od 11 do 14 lat. Dalej stwierdzono, że narzędzie e-learningowe spełnia wymogi techniczne niezbędne do głównego badania, za wyjątkiem wady platformy Moodle LMS uniemożliwiającej logiczne powiązania niezbędne do

stworzenia bardziej zindywidualizowanej informacji zwrotnej. Oznaczało to, że nie można przeprowadzić części badania dotyczącej zindywidualizowanej informacji zwrotnej.

Drugi etap to badanie główne, które przeprowadzono na 12 jednostkach lekcyjnych w okresie dziesięciu tygodni na przełomie lat 2016 i 2017 na próbie 30 uczniów dwóch gimnazjów . Próba składała się z dwóch grup: grupę eksperymentalną (grupa Gil) i grupę kontrolną. Dla obu grup procedura składała się z: a) etapu poprzedzającego egzamin oceniającego umiejętności korzystania z przedimków przy użyciu formalnych środków, b) fazy nauczania, a na koniec (c) etapu post-testu oceniającego zmiany w poprawności użycia przedimków przy użyciu tych samych formalnych środków, jak w etapie testów wstępnych. Grupa Gil korzystała z narzędzia e-learningowego (Gillian 2015a), natomiast grupa kontrolna otrzymała instruktaż dotyczący zasad użycia przedimków angielskich w formie tradycyjnej.

Wyniki badań wskazują, że narzędzie e-learningowe było bardziej skuteczne niż tradycyjna metoda nauczania. Biorąc pod uwagę wyniki zagregowane, grupa eksperymentalna (Gil) osiągnęła istotnie lepsze wyniki niż grupa kontrolna. Grupa eksperymentalna osiągnęła także istotnie lepsze wyniki w podziale na zadania testujące rozumienie pojęć policzalności rzeczowników oraz identyfikujące użycia przedimków. W przypadku zadań testujących klasyfikujące użycia przedimków również zaobserwowano przewagę w grupie eksperymentalnej, ale nie była ona istotna statystycznie.

Wyniki badania stanowią istotny wkład w dydaktykę nauczania języka angielskiego w zakresie użycia przedimków, dostarczając dowodów ilościowych na skuteczność e-learningu w nauczaniu angielskich struktur gramatycznych takich jak przedimki.

References

Advanced Distributed Learning. 2001. *Sharable Content Object Reference Model*. Alexandria VA: ADL Co-Lab Alexandria.

Alklind Taylor, Anna-Sofia. 2013. "Facilitation Matters: A framework for instructor-led serious gaming"

Allen, Patrick, Merrill Swain, Birgit Harley and Jim Cummins. 1990. "Aspects of classroom treatment: Toward a more comprehensive view of second language education," in: Birgit Harley, Patrick Allen, Jim Cummins and Merrill Swain (eds.), *The development of second language proficiency*. New York, NY: Cambridge University Press, 57–81.

Appleyard, David. 2010. "David Appleyard's Guide to Article Usage in English" (http://www.davidappleyard.com/english/articles.htm) (date of access: 19 Feb. 2010).

Arabski, Janusz. 1979. *Errors as indicators of the development of interlanguage*. Katowice: Uniwersytet Śląski.

Arabski, Janusz. 1990. "The acquisition of articles and hierarchy of difficulty," in: Janusz Arabski (ed.), *Foreign language acquisition papers*. Katowice, PL: Uniwersytet Śląski, 11-17.

Arneil, Stewart and Martin Holmes. 2017. *Hot Potatoes*. Victoria CAN: Half-Baked Software.

Ash, Richard, James Crook, Roger Dannenberg, Benjamin Drung, Vaughan Johnson, Leland Lucuis and Martyn Shaw. 2004. *Audacity*. Audacity Team.

Baccianella, Stefan, Andrea Esuli and Fabrizio Sebastiani. 2010. "SentiWordNet 3.0: An Enhanced Lexical Resource for Sentiment Analysis and Opinion Mining,"

Proceedings of the 7th Conference on Language Resources and Evaluation (LREC 2010): 2200–2204.

Bangert-Drowns, Robert L., Chen-Lin C. Kulik, James A. Kulik and Mary T. Morgan. 1991. "The instructional effect of feedback in test-like events," *Review of Educational Research* 61: 213–237.

Beale, Ivan. 2005. "Scaffolding and integrated assessment in computer assisted learning (CAL) for children with learning disabilities," *Australasian Journal of Educational Technology* 21, 2: 173–191.

van Beuningan, Catherine, Nivja H. de Jong and Folkert Kuiken. 2008. "The effect of direct and indirect corrective feedback on L2 learners' written accuracy," *ITL International Journal of Applied Linguistics* 156: 279–296.

van Beuningan, Catherine, Nivja H. de Jong and Folkert Kuiken. 2012. "Evidence on the effectiveness of comprehensive error correction in second language writing. Language Learning," *Language Learning* 62, 1: 1–41.

Bitchener, John. 2012. "Written corrective feedback for L2 development: Current knowledge and future research," *TESOL Quarterly* 46, 2: 855–860.

Bitchener, John and Ute Knoch. 2009. "The value of a focused approach to written corrective feedback," *ELT Journal* 63, 3: 204–211.

Bitchener, John and Ute Knoch. 2010a. "Raising the linguistic accuracy level of advanced L2 writers with written corrective feedback," *Journal of Second Language Writing* 19: 207–217.

Bitchener, John and Ute Knoch. 2010b. "The contribution of written corrective feedback to language development: A ten month investigation," *Applied Linguistics* 31, 2: 193–214.

Brinton, Laurel J. 2000. *The structure of Modern English: A linguistic introduction*. Amsterdam, NL: John Benjamins Publishing Company.

Brown, Roger. 1973. *A first language*. Cambridge, MA: Harvard University Press.

Bui, Yvonne, Jean Schumaker and Donald D. Deshler. 2006. "The effects of a strategic writing program for students with and without learning disabilities in inclusive fifth-grade classes," *Learning Disabilities Research & Practice* 21, 4: 244–260.

Burnett, Paul C. 2002. "Teacher praise and feedback and students' perceptions of the classroom environment," *Educational Psychology* 22, 1: 1–16.

Burnett, Paul C. and Valerie Mandel. 2010. “Praise and Feedback in the Primary Classroom: Teachers’ and Students’ Perspectives,” *Australian Journal of Educational & Developmental Psychology* 10: 145–154.

Burton-Roberts, Noel. 1976. “On the generic indefinite article,” *Language* 52, 2: 427–448.

Butler, Goto Yuko. 2002. “Second language learners’ theories on the use of English articles: An Analysis of the Metalinguistic Knowledge Used by Japanese Students in Acquiring the English Article System” http://repository.upenn.edu/cgi/viewcontent.cgi?article=1000&context=gse_pubs) (date of access: 12 Jul. 2012).

Carrow-Woolfolk, Elizabeth. 2011. *Oral and written language scales*. (2nd edition.) Torrance, CA: Western Psychological Services.

Chesterman, Andrew. 1991. *On definiteness: A study with special reference to English and Finnish*. Cambridge, UK: Cambridge University Press.

Christophersen, Paul. 1939. *The articles: A study of their theory and use in English.* Copenhagen: Einar Munksgaard.

Clariana, Roy B., Daren Wagener and Lucia C. Roher Murphy. 2000. “Applying a connectionist description of feedback timing,” *Educational Technology Research and Development* 48, 3: 5–21.

Cohen, Jacob. 1988. *Statistical power analysis for the behavioral sciences.* New York, NY: Routledge.

Corel. 2014. *CorelDraw Essentials 4*. Ottawa, CA: Corel Corporation.

Coufal, Kathy L. 2002. “Technology teaching or mediated learning, part 1: Are computers Skinnerian or Vygotskian?,” *Topics in Language Disorders* 22, 4: 1–28.

Council of Europe. 2011. Common European Framework of Reference for Languages: Learning, Teaching, Assessment. Cambridge, UK: Cambridge University Press.

Davies, Mark. 2008. *The Corpus of Contemporary American English: 450 million words, 1990-present.*

Dennen, Vanessa P. 2004. “Cognitive apprenticeship in educational practice: research on scaffolding, modeling, mentoring and coaching as instructional strategies,” in: David Jonassen (ed.), *Handbook of research on educational communications and technology*. Mahwah, NJ: Lawrence Erlbauw Associate, 813–828.

Deo, Harsimrat. 2016. “Impact of interactive teaching methodologies on teaching-learning process: A review,” *International Journal of Advanced Research in Education & Technology* 3, 3: 43–48.

Devolder, Anneline, Johann van Braak and Jo Tondeur. 2011. “Supporting self-regulated learning in computer-based learning environments: systematic review of effects of scaffolding in the domain of science education,” *Journal of Computer Assisted Learning* 47, 6: 557–563.

Donesch-Jezo, Ewa. 2011. “The role of output and feedback in second language acquisition: A classroom-based study of grammar acquisition by adult English language learners,” *ESUKA – JEFUL* 2, 2: 9–28.

Donnellan, Keith Sedgwick. 1978. “Speaker reference, descriptions, and anaphora,” in: Peter Cole (ed.), *Syntax and Semantics: Pragmatics*. New York, NY: Academic Press, 47–68.

Doughty, Catherine and Jesscia Williams. 1998. “Pedagogical choices in focus on form,” in: Catherine Doughty and Jesscia Williams (eds.), *Focus on form in classroom language acquisition*. Cambridge, UK: Cambridge University Press, 197–261.

Dougiamas, Martin. 2016. *Moodle: Modular object-oriented dynamic learning environment*. Perth AU: Moodle Pty Ltd. (https://moodle.org/).

Dyer, Ronald. 2013. “Games in higher education: Opportunities, expectations, and challenges of curriculum integration,” in: Sara de Freitas, Michela Ott, Maria Magdalena Popescu and Ioana Stanescu (eds.), *New Pedagogical Approaches in Game Enhanced Learning*. Hershey, PA: IGI Global, 38–59.

Dziemianko, Anna. 2008. “Subject-verb concord with collective nouns or the count-mass distinction: Which is more difficult for Polish learners of English?” *Poznan Studies in Contemporary Linguistics* 44, 4: 449–468.

Egenfeldt-Nielsen, Simon. 2007. “Third generation educational use of computer games,” *Journal of Educational Multimedia and Hypermedia* 16, 3: 263–281.

Ekiert, Monika. 2005. “Acquisition of the English Article System by Speakers of Polish,” *Columbia University Working Papers in TESOL & Applied Linguistics* 4, 1: 1–23.

Ekiert, Monika. 2007. “The Acquisition of Grammatical Marking of Indefiniteness with the Indefinite Article a in L2 English,” *Columbia University Working Papers in TESOL & Applied Linguistics* 7, 1: 1–43.

Ellis, Rod, Younghee Sheen, Mihoko Murakami and Hide Takashima. 2008. “The effects of focused and unfocused written corrective feedback in an English as a foreign language context. System, 36, 353–371.,” *System* 36: 353–371.

englishpage.com. 2017a. “A(An) vs. The” (http://www.englishpage.com/articles/a-an-vs-the.htm) (date of access: 15 Dec. 2015).

englishpage.com. 2017b. “Articles Tutorial” (http://www.englishpage.com/articles/a-an-vs-the.htm) (date of access: 15 Dec. 2015).

Fellbaum, Christine (ed.). 1998. *WordNet: An electronic lexical database*. Cambridge, MA: MIT Press.

Ferris, Dana. 2006. “Does error feedback help student writers? New evidence on the short- and long-term effects of written error correction,” in: Kevin Hyland and Fiona Hyland (eds.), *Feedback in second language writing: Contexts and issues*. Cambridge, UK: Cambridge University Press, 81–104.

Ferris, Dana. 2010. “Second language writing research and written corrective feedback in SLA,” *Studies in Second Language Acquisition* 32: 181–201.

Ferris, Dana, Hsiang Liu, Aparna Sinha and Manuel Senna. 2013. “Written corrective feedback for individual L2 writers,” *Journal of Second Language Writing* 22: 307–329.

Ferris, Dana and Barrie Roberts. 2001. “Error feedback in L2 writing classes: How explicit does it need to be?,” *Journal of Second Language Writing* 10: 161–184.

Fisher, Ronald A. 1921. “On the ‘Probable Error’ of a Coefficient of Correlation Deduced from a Small Sample,” *Metron* 1: 3–32.

Fodor, Janet Dean and Ivan A. Sag. 1982. “Referential and quantificational indefinites,” *Linguistics and Philosophy* 5, 3: 355–398.

Fogel, Howard and Linnea Ehri. 2000. “Teaching elementary students who speak black English vernacular to write in standard English: Effects of dialect transformation practice,” *Contemporary Educational Psychology* 25: 212–235.

Gillian, Edward. 2008. *Sentence Agent: Software to help students write sentences*. [Unpublished Master’s thesis, Charles Sturt University, Faculty of Science, School of Community Health, Albury-Wodonga, NSW, Australia].

Gillian, Edward. 2015a. *Gil's Article Teacher*. Gorzów Wielkopolski, Poland.

Gillian, Edward. 2015b. "Teaching articles to ESL learners with GBL and scaffolding," in: Anna Turula, Beata Mikołajewska and Danuta Stanulewicz (eds.), *Insights into technology enhanced language pedagogy*. Frankfurt am Main: Peter Lang, 91–104.

Gregg, Kevin R. 2001. "Learnability and second language acquisition theory," in: Peter Robinson (ed.), *Cognition and second language instruction*. Cambridge, UK: Cambridge University Press, 152–180.

Halliday, Michael Alexander Kirkwood. 1985. *Spoken and written language*. Geelong, VIC: Deakin University Press.

Halliday, Michael Alexander Kirkwood. 2014. *Halliday's introduction to functional grammar*. (4th edition.) London: Routledge.

Halliday, Michael Alexander Kirkwood and Ruqaiya Hasan. 1976. *Cohesion in English*. London: Longman.

Hammerly, Hector. 1987. "The immersion program: Litmus test of second language acquisition through language communication," *The Modern Language Journal* 71: 395–401.

Harker, Kathryn. 2002. "The Write Stuff - Assessment," in: La Trobe University, Melbourne, Australia.

Harley, Birgit. 1993. "Instructional strategies and SLA in early French immersion," *Studies in Second Language Acquisition* 15: 245–260.

Harley, Birgit and Merrill Swain. 1978. "An analysis of the verb system by young learners of French," *Interlanguage Studies Bulletin* 3: 35–79.

Hattie, John and Helen Timperley. 2007. "The Power of Feedback," *Review of Educational Research* 77, 1: 81–112.

Hawkins, John A. 1978. *Definiteness and indefiniteness: a study in reference and grammaticality prediction*. London: Croom Helm.

Hendrickson, James M. 1980. "The treatment of error in written work," *Modern Language Journal* 64: 216–221.

Huddleston, Rodney and Geoffrey K. Pullum. 2002. *The Cambridge Grammar of the English Language*. Cambridge, UK: Cambridge University Press.

Huebner, Thom. 1979. "Order-of-Acquisition vs. Dynamic Paradigm: A Comparison of Method in Interlanguage Research," *TESOL Quarterly* 13, 1: 21–28.

Huebner, Thom. 1983. *A longitudinal analysis of the acquisition of English*. Ann Arbor: Karoma.

Huong, Nguyen Thu. 2005. "Vietnamese learners mastering English articles" (http://dissertations.ub.rug.nl/FILES/faculties/gmw/2005/h.n.thu/thesis.pdf.) (date of access: 17 Jul. 2012).

Ionin, Tania. 2003. "Article Semantics in Second Language Acquisition"

Ionin, Tania, Heejeong Ko and Kenneth Wexler. 2004. "Article Semantics in L2 Acquisition: The Role of Specificity," *Language Acquisition* 12, 1: 3–69.

iSpring Solutions. 2017. *ISpring Free 7*. Alexandria VA: iSpring Solutions.

Izumi, Shinichi, Martha Bigelow, Miho Fujiwara and Sarah Fearnow. 1999. "Testing the output hypothesis: Effects of output on noticing and second language acquisition," *SSLA* 21: 421–452.

Jespersen, Otto. 1949. *A modern English grammar on historical principles. Part VII: Syntax.* London: Allen and Unwin.

Kałuża, Henryk. 1963. "Teaching the English articles to speakers of Slavic," *Language Learning* 13: 113–124.

Kebritchi, Mansureh and Atsusi Hirumi. 2008. "Examining the pedagogical foundations of modern educational computer games," *Computers & Education* 51: 1729–1743.

Krashen, Stephen D. 1981. *Second Language Acquisition and Second Language Learning*. Pergamon Press.

Krashen, Stephen D. 1985. *The input hypothesis*. London: Longman.

Kreyer, Rolf. 2003. "Genitive and of-construction in modern written English. Processability and human involvement," *International Journal of Corpus Linguistics* 8, 2: 169–207.

Król-Markefka, Agnieszka. 2007. "How do Polish learners use English articles? A diagnostic study," in: Mirosław Pawlak (ed.), *Studies in Pedagogy and Fine Arts Special issue: Exploring focus on form in language teaching*. Kalisz: Faculty of Pedagogy and Fine Arts in Kalisz, Adam Mickiewicz University in Poznan, 135–154.

Król-Markefka, Agnieszka. 2008. "Some theoretical considerations on the use of contrastive data in teaching English articles to Polish learners"

(http://www2.filg.uj.edu.pl/StudiaLinguistica/pdf/12507-Krol-Markefka.pdf) (date of access: 24 Jul. 2012).

Król-Markefka, Agnieszka. 2010. "Metalinguistic knowledge and the accurate use of English articles: The effects of applying Cognitive Grammar in second language teaching." [Unpublished Ph.D. thesis, Uniwersytet Jagielloński, Wydział Filologiczny, Kraków.].

Król-Markefka, Agnieszka. 2012. "Pedagogical rules for the use of English articles: An evaluation and suggestions for improvement," *Studia Linguistica Universitatis Iagellonicae Cracoviensis* 129: 1-19.

Kulik, James A. and Chen-Lin C. Kulik. 1988. "Timing of feedback and verbal learning," *Review of Educational Research* 58, 1: 79–97.

Lamotte, J, D Pearson-Joseph and K Zupko. 1982. "A cross-linguistic study of the relationship between negation stages and the acquisition of noun phrase morphology"

Langacker, Ronald. 1999. *Grammar and Conceptualization*. Berlin: Mouton de Gruyter.

Langacker, Ronald Wayne. 1991. *Concept, Image and Symbol: The cognitive basis of grammar*. Berlin: Mouton de Gruyter.

Langacker, Ronald Wayne. 2008. *Cognitive grammar: An basic introduction*. Oxford: OUP.

Lawler, John. 1972. "Generic to a fault," in: Peranteau, P.M. and Phares, G. D. (eds.), *Papers from the eighth regional meeting of the Chicago Linguistic Society,*. Chicago: Chicago Linguistic Society, 247–258.

Lester, Mark and Larry Beason. 2012. *The McGraw-Hill Handbook of English Grammar and Usage*. (2nd edition.) New York, NY: McGraw-Hill.

Liang, Chaoyun, Yuan-Zone Lee and Wen-Shou Chou. 2010. "The design considerations for game-based learning," *Educational Technology*: 25–28.

Liberman, Mark. 2015. "Language Log," *Language Log*. (http://languagelog.ldc.upenn.edu/nll/?p=16938) (date of access: 20 Jan. 2015).

Long, Michael. 1983. "Native speaker/non-native speaker conversation and the negotiation of comprehensible input," *Applied Linguistics* 4, 2: 126–141.

Long, Michael. 1991. "Focus on form: A design feature in language teaching methodology," in: K. de Bot, R Ginsberg, and C Kramsch, (eds.), *Foreign language research in cross-cultural perspective*. Amsterdam, NL: John Benjamins, 39–52.

Long, Michael. 1996. “The role of the linguistic environment in second language acquisition,” in: W. C. Ritchie and T. K. Bahtia (eds.), *Handbook of second language acquisition*. New York, NY: Academic Press, 413–468.

Long, Michael and Peter Robinson. 1998. “Focus on form: Theory, research and practice,” in: Catherine Doughty and Jessica Williams (eds.), *Focus on form in classroom language acquisition*. Cambridge, UK: Cambridge University Press, 15–41.

de la Luz Reyes, Maria. 1991. “A process approach to literacy using dialogue journals and literature logs with second language learners,” *Research in the Teaching of English* 25, 3: 291–313.

Lyons, Christopher. 1999. *Definiteness*. Cambridge, UK: Cambridge University Press.

MacArthur, Charles A. 2000. “New tools for writing: Assistive technology for students with writing difficulties,” *Topics in Language Disorders* 20, 4: 85–101.

Master, Peter. 1988. “Teaching English articles,” *Forum Anthology* IV: 208–221.

Master, Peter. 1990. “Teaching English articles as a binary system,” *TESOL Quarterly* 24, 3: 461–479.

Master, Peter. 1994. “The effect of systematic instruction on learning the English article system,” in: Terence Odlin (ed.), *Perspectives on pedagogical grammar*. Chicago: Cambridge University Press, 229–252.

Master, Peter. 1996. *Systems in English grammar: An introduction for language teachers*. Upper Saddle River NJ: Prentice Hall Regents.

Master, Peter. 1997. “The English article system: Acquisition, function, and pedagogy,” *System* 25, 2: 215–232.

Master, Peter. 2002. “Information structure and English article pedagogy,” *System* 30: 331–348.

Master, Peter. 2003a. “Acquisition of the Zero and Null Articles in English,” *Issues in Applied Linguistics* 14, 1: 3–20.

Master, Peter. 2003b. “Pedagogical frameworks for learning the English article system,” *Applied Linguistics Forum* 24, 1: 4–9.

van Merrienboer, Jeroen J. G., Paul Kirschner and Liesbeth Kester. 2003. “Taking the Load Off a Learner’s Mind: Instructional Design for Complex Learning,” *Educational Psychologist* 38, 1: 5–13.

Microsoft. 2007a. *Microsoft Office Excel 2007*. Seattle, WA: Microsoft.

Microsoft. 2007b. *Microsoft Office PowerPoint 2007*. Seattle, WA: Microsoft.

Microsoft. 2012. *Windows Movie Maker 2012*. Seattle, WA: Microsoft.

Miller, Julia. 2005. "Most of ESL students have trouble with the articles," *International Education Journal* 5, 5: 80–88.

Mizuno, Mitsuharu. 1992. "Cohesion and discourse deixis in English articles," in: Tokyo, Japan.

Munyofu, Mine, William J. Swain, Bradley D. Ausman, Huifen Lin, Khusro Kidwai and Francis Dwyer. 2007. "The effect of different chunking strategies in complementing animated instruction," *Learning, Media and Technology* 32, 4: 407–419.

Nassaji, Hossein and Merrill Swain. 2000. "A Vygotskian perspective on corrective feedback in L2: The effect of random versus negotiated help on learning English articles," *Language Awareness* 9, 1: 34–51.

Navarro, Daniel. 2015. "Package 'lsr'" (http://health.adelaide.edu.au/psychology/ccs/teaching/lsr/) (date of access: 28 Apr. 2017).

Obikwelu, Chinedu, Janet Read and Gavin Sim. 2012. "The Serious Game Approach to Problem-Based Learning for the Dependent Learner," *Proceedings of the 6th European Conference on Games Based Learning*: 356–363.

Pawlak, Mirosław. 2006. *The place of form-focused instruction in the foreign language classroom*. Kalisz–Poznan: Wydzial Pedagogiczno-Artystyczny w Kaliszu Uniwersytet im. Adama Mickiewicza w Poznaniu.

Pica, Teresa. 1987. "Second language acquisition, social interaction and the classroom," *Applied Linguistics* 8: 1–25.

Pica, Teresa. 2003. "Second Language Acquisition Research and Applied Linguistics," *Working Papers in Education Linguistics* 18, 2: 1–26.

Piechurska-Kuciel, Ewa. 2005. *The importance of being aware: Advantages of explicit grammar study*. Opole: Wydawnictwo Uniwersytetu Opolskiego.

van de Pol, Janneke, Monique Volman and Jos Beishuizen. 2010. "Scaffolding in Teacher–Student Interaction: A Decade of Research," *Educational Psychology Review* 22: 271–296.

Polgar, Stephen and Shane Thomas. 2011. *Introduction to Research in the Health Sciences*. (fifth.) London: Churchill Livingstone.

Prensky, Marc. 2005. “Computer games and learning: Digital game-based learning,” in: Joost Raessens and Jeffrey Goldstein (eds.), *Handbook of computer game studies*. Cambridge, MA: MIT Press, 97–122.

Puntambekar, Sadhana and Roland Hubscher. 2005. “Tools for Scaffolding Students in a Complex Learning Environment: What Have We Gained and What Have We Missed?,” *Educational Psychologist* 40, 1: 1–12.

Quirk, Randolph, Sidney Greenbaum, Geoffrey Leech and Jan Svartvik. 1985. *A Comprehensive Grammar of the English Language*. London: Longman.

Rassaei, Ehsan. 2013. “Corrective feedback, learners’ perceptions, and second language development,” *System* 41: 472–483.

Russell, Bertrand. 1905. “On Denoting,” *MInd* 14: 479–493.

Rychlewska, Agnieszka. 2015. “The counterbalance approach to L2 error correction in the classroom setting,” *Anglica Wratislaviensia* 53: 135–149.

Sachs, R and C Polio. 2007. “Learners’ uses of two types of written feedback on a L2 writing revision task,” *Studies in Second Language Acquisition* 29: 67–100.

Searle, John. 1969. *Speech acts*. Cambridge, UK: Cambridge University Press.

Sharwood-Smith, Michael. 1991. “Speaking to many minds: On the relevance of different types of language information for the L2 learner,” *Second Language Research* 7: 118–132.

Sharwood-Smith, Michael. 1993. “Input enhancement in instructed SLA: Theoretical bases,” *Studies in Second Language Acquisition 15. 165-179.* 15: 165–179.

Sheen, Younghee. 2007. “The Effect of Focused Written Corrective Feedback and Language Aptitude on ESL Learners’ Acquisition of Articles,” *TESOL Quarterly* 41, 2: 255–284.

Sheen, Younghee, D Wright and A Moldawa. 2009. “Differential effects of focused and unfocused written correction on the accurate use of grammatical forms by adult ESL learners,” *System* 37: 556–569.

Shintani, Natsuko and Rod Ellis. 2013. “The comparative effect of direct written corrective feedback and metalinguistic explanation on learners’ explicit and implicit knowledge of the English indefinite article,” *Journal of Second Language Writing* 22: 286–306.

Shute, Valerie J. 2008. “Focus on formative feedback,” *Review of Educational Research* 78, 1: 153–189.

Sinclair, John. 1991. *Corpus, concordance, collocation*. Oxford: Oxford University Press.

Sperling, Melanie. 1996. "Revisiting the writing-speaking connection: Challenges for research on writing and writing instruction," *Review of Educational Research* 66, 1: 53–87.

Strawson, Peter Fredrick. 1971. "On Referring," *Logico-Linguistic Papers*: 1–27.

Swain, Merrill. 1985. "Communicative competence: Some roles of comprehensible input and comprehensible output in its development," in: Susan M. Gass and C. Madden (eds.), *Input in second language acquisition*. Rowley, MA: Newbury House.

Swain, Merrill. 1993. "The output hypothesis: Just speaking and writing aren't enough," *The Canadian Modern Language Review* 50: 158–164.

Swain, Merrill. 1995. "Three functions of output in second language learning," in: G Cook and B Seidlhofer (eds.), *Principle and practice in applied linguistics*. Oxford: Oxford University Press, 125–144.

Swain, Merrill. 2000. "The output hypothesis and beyond: Mediating acquisition through collaborative dialogue," in: James P. Lantolf (ed.), *Sociocultural theory and second language learning*. Oxford: Oxford University Press.

Swanson, H. Lee, Marilyn Hoskyn and Carole Sachse-Lee. 1999. *Interventions for students with learning disabilities: A meta-analysis of treatment outcomes*. New York, NY: Guilford Press.

Świątek, Artur. 2013. "The acquisition of the English article system by Polish learners in different proficiency groups juxtaposed with a case study," in: Ewa Piechurska-Kuciel and Elżbieta Szymańska-Czaplak(eds.) *Second Language Learning and Teaching. Language Cognition and Affect*: 151–171.

Timmers, Caroline. 2013. "Computer-based formative assessment: Variables influencing feedback behaviour"

Timmers, Caroline and Bernard Veldkamp. 2011. "Attention paid to feedback provided by a computer-based assessment for learning on information literacy," *Computers & Education* 56: 923–930.

Trahey, Martha and Lydia White. 1993. "Positive evidence and preemption in the second language classroom," *Studies in Second Language Acquisition* 15: 181–204.

Troia, Gary and Steve Graham. 2002. "Effective writing instruction across the grades: What every educational consultant should know," *Journal of educational and psychological consultation* 14, 1: 75–89.

Truscott, John. 1996. "The Case Against Grammar Correction in L2 Writing Classes," *Language Learning* 46, 2: 327–369.

Truscott, John. 2007. "The effect of error correction on learners' ability to write accurately," *Journal of Second Language Writing* 16: 255–272.

Truscott, John and A.Y.-P. Hsu. 2008. "Error correction, revision, and learning. Journal of Second Language Writing," *Journal of Second Language Writing* 17: 292–305.

Tryzna, Marta. 2009. "Questioning the validity of the Article Choice Parameter and the Fluctuation Hypothesis: Evidence from L2 English article use by L1 Polish and L1 Mandarin Chinese Speakers," in: Hawkins García Mayo, María del Pilar Roger (ed.), *Second language acquisition of articles: Empirical findings and theoretical implications*. Amsterdam, NL: John Benjamins Publishing, 67–87. (http://203.128.31.71/articles/9027253102%20Second%20Language1.pdf#page=78).

Van der Kleij, Fabienne M., Remco C. W. Feskens and Theo J. H. M. Eggen. 2015. "Effects of Feedback in a Computer-Based Learning Environment on Students' Learning Outcomes," *Review of Educational Research* 20, 5: 1–37.

Van Eck, Richard. 2006. "Digital game-based learning: It's not just the digital natives who are restless," *EDUCAUSE* 41, 2: 1–16.

Vygotsky, Lev. 1978. *Mind in society: The development of higher psychological processes*. Cambridge, MA: Harvard University Press.

White, Joanna. 1998. "Getting the learners' attention: A typographical input enhancement study," in: Catherine Doughty and Jesscia Williams (eds.), *Focus on form in classroom second language acquisition*. Cambridge, UK: Cambridge University Press, 85–113.

Williams, Jesscia. 1995. "FonF: What kind of focus? Which form?," in: Long Beach, CA.

Wouters, Pieter, Erik van der Spek and Herre van Oostendorp. 2011. "Cognition-based learning principles in the design of effective serious games: How to engage learners in genuine learning," in: Thomas Connolly (ed.), *Leading Issues in*

Games-based learning research. Reading, UK: Academic Publishing International.

Yilmaz, Yucel. 2013. "The relative effectiveness of mixed, explicit and implicit feedback in the acquisition of English articles," *System* 41: 691–705.

Zabor, Lech. 1993. "Perception of definiteness/indefiniteness of nouns and acquisition of articles in English," *Anglica Wratislaviensia* 25: 47–52.

Zabor, Lech. 2011a. "Approaches to the study of the second language acquisition of English articles," *Anglica Wratislaviensia* 49: 209–224.

Zabor, Lech. 2011b. "Perception of uniqueness and the acquisition of the English article system," *Belgrade English Language and Literature Studies* III: 63–86.

Zabor, Lech. 2012. "Fluctuation or variability: patterns of article choice in L2 English," in: Ewa Piechurska-Kuciel and Liliana Piasecka (eds.), *Variability and stability in foreign and second language learning contexts*. Newcastle, UK: Cambridge Scholars Publishing, 149–171.

Zabor, Lech and Agnieszka Rychlewska. 2015. "The Effectiveness of Written Corrective Feedback in the Acquisition of the English Article System by Polish Learners in View of the Counterbalance Hypothesis," in: Liliana Piasecka, Małgorzata Adams-Tukiendorf and Przemysław Wilk (eds.), *New Media and Perennial Problems in Foreign Language Learning and Teaching Second Language Learning and Teaching*. Berlin: Springer.

Zabor, Lech and Joanna Zwierzyńska. 2001. "The Acquisition of articles by German and Polish Learners of English," *Anglica Wratislaviensia* 36: 172.

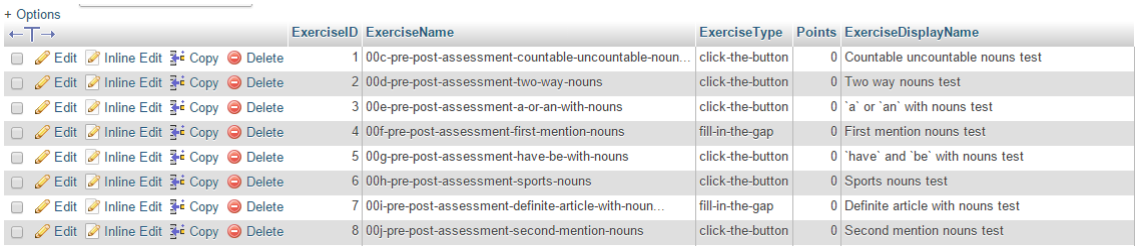
Zarraonandia, Telmio, Mario Rafael Ruíz, Paloma Díaz and Ignacio Aedo. 2012. "Combining Game Designs for Creating Adaptive and Personalized Educational Games," *Proceedings of the 6th European Conference on Games Based Learning,*: 559–568.

Zarraonandia, Telmio, Mario Rafael Ruíz, Paloma Díaz and Ignacio Aedo. 2015. "Designing educational games through a conceptual model based on rules and scenarios," *Multimedia Tools and Applications* 74, 13: 4535–4559.

Appendix A

Original Specifications for annotation of data

In the original specification, the stimuli for the learning and gameplay exercises were stored in a relational database. There was a table *Exercise* that the data about the order in which the exercise modules were presented to the user. This table had the following parameters: *ExerciseName,* which stored the name of the exercise, *ExerciseType,* which stored the information about the type of interaction the user needed to provide responses with, *Points,* which stored the number of points the user would gain by completing the exercise, and *ExerciseDisplayName,* which stored the data about the sub-module displayed to the user (see Figure 45 for the screenshot).



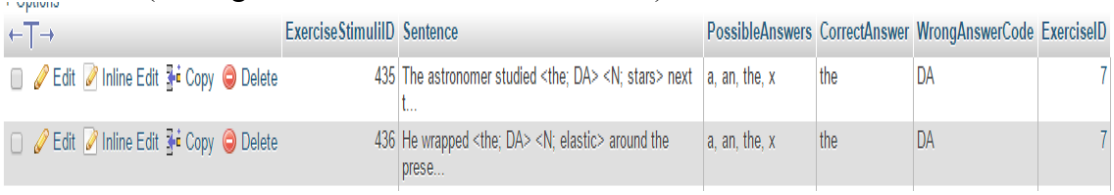
+ Options

	ExerciseID	ExerciseName	ExerciseType	Points	ExerciseDisplayName
Edit Inline Edit Copy Delete	1	00c-pre-post-assessment-countable-uncountable-noun...	click-the-button	0	Countable uncountable nouns test
Edit Inline Edit Copy Delete	2	00d-pre-post-assessment-two-way-nouns	click-the-button	0	Two way nouns test
Edit Inline Edit Copy Delete	3	00e-pre-post-assessment-a-or-an-with-nouns	click-the-button	0	`a` or `an` with nouns test
Edit Inline Edit Copy Delete	4	00f-pre-post-assessment-first-mention-nouns	fill-in-the-gap	0	First mention nouns test
Edit Inline Edit Copy Delete	5	00g-pre-post-assessment-have-be-with-nouns	click-the-button	0	`have` and `be` with nouns test
Edit Inline Edit Copy Delete	6	00h-pre-post-assessment-sports-nouns	click-the-button	0	Sports nouns test
Edit Inline Edit Copy Delete	7	00i-pre-post-assessment-definite-article-with-noun...	fill-in-the-gap	0	Definite article with nouns test
Edit Inline Edit Copy Delete	8	00j-pre-post-assessment-second-mention-nouns	click-the-button	0	Second mention nouns test

Figure 45. Exercise table screenshot.

The table also contained the parameter *ExerciseID*, which served as the key to the table *Exercise Stimuli.* The table *Exercise Stimuli* had the parameters *ExerciseID*, which served as the relation to the table *Instruction.* This table also had the following parameters: *ExerciseStimuliID,* which stored the unique identifier for an individual task, *Sentence*, which stored the individual task, *PossibleAnswers,* which stored the range of answers to be displayed to the user, *CorrectAnswer,* which stored the correct answer for the task, *WrongAnswerCode*, which held the code for the feedback, and *ExerciseID,*

which was the key to the table and determined which individual tasks belonged to the sub-module (see Figure 46 for the screenshot details).



	ExerciseStimuliID	Sentence	PossibleAnswers	CorrectAnswer	WrongAnswerCode	ExerciseID
Edit Inline Edit Copy Delete	435	The astronomer studied <the; DA> <N; stars> next t...	a, an, the, x	the	DA	7
Edit Inline Edit Copy Delete	436	He wrapped <the; DA> <N; elastic> around the prese...	a, an, the, x	the	DA	7

Figure 46. Exercise stimuli screenshot.

Each exercise stimulus in the *Sentence* field was annotated in the following way: the left angle bracket (<) signalled to the e-learning tool (Gillian 2015a) that an article choice in the stimuli would be made and the correct choice was *the* in the example of Table 30. The semi-colon after the article choice told the programming logic that the correct choice or choices are completed and the next item will be the wrong answer code. In the example of Table 30, the wrong answer code was *DA,* which stood for *determiner article.* The programming logic could use this wrong answer code to access the appropriate feedback message (see Appendix B for a list of wrong answer codes and their meanings and associated feedback messages). Then, the right angle bracket (>) signalled to the e-learning tool (Gillian 2015a) that the article choice in the stimuli was finished. Following this character, the left angle bracket (<) signalled to the e-learning tool (Gillian 2015a) that the associated noun for the article choice would occur. In the example of Table 30, the code was *N*, which represented the grammatical category *noun* The semi-colon after the article choice told the programming logic that the correct noun code was completed and the next item would be the noun, which in the example of Table 30, was the word *stars*. Finally, the right angle bracket (>) signals to the e-learning tool (Gillian 2015a) that the noun choice in the stimuli was finished.

Table 30. Example of annotation.

<the; DA> <N; stars>

Appendix B

Feedback messages

Meta-linguistic feedback

Exercises: 02b1-count-uncount-noun-exercise-a, 02c1-change-count-uncount-exercise-a

Noun type	message
countable noun	This is a noun that we can count. It can be single or plural.
uncountable noun - abstract (action)	A noun that we cannot count that talks about action in general
uncountable noun - abstract (concept)	A noun that we cannot count that talks about an idea.
uncountable noun - abstract (education)	A noun that we cannot count that talks about education.
uncountable noun - abstract (feelings)	A noun that we cannot count that talks about feelings.
uncountable noun - abstract (language)	A noun that we cannot count that talks about language.
uncountable noun - abstract (feature)	A noun that we cannot count that is something we think or a characteristic.
uncountable noun - mass (disease)	A noun that we cannot count that is about disease.
uncountable noun - mass (food)	A noun that we cannot count that is about food.
uncountable noun - mass (group)	A noun that we cannot count that is about a group.
uncountable noun - mass (liquid)	A noun that we cannot count that is about liquids.
uncountable noun - mass (materials)	A noun that we cannot count that is about materials.
uncountable noun - mass (weather)	A noun that we cannot count that is about the weather.

Exercise: 02c2-change-uncount-count-exercise-a

Noun type	message
Noun starting with a consonant	This word is singular and starts with a consonant sound.
Noun starting with a vowel	This word is singular and starts with a vowel sound.

Exercise: 03b-indefinite-a-or-an-exercise-a

Noun type	message
Noun starting with a consonant	This is a noun that starts with a consonant sound.
Noun starting with a vowel	This is a noun that starts with a vowel sound.

Exercise: 05b2-first-mention-exercise-a

Noun type	message
First-time-mention plural noun	The noun is plural and we say it for the first time.
First-time-mention uncountable noun	The noun is uncountable and we say it for the first time.
First-time-mention single noun starting with a consonant	The noun is single, starts with a consonant, and we say it for the first time.
First-time-mention single noun starting with a vowel	The noun is single, starts with a vowel, and we say it for the first time.

Exercise: 05d2-have-be-with-nouns-exercise-a

Noun type	message
Plural noun	This noun is plural and we use it with the verbs `have` and `be`.
Uncountable noun	The noun is uncountable and we use it with the verbs `have` and `be`.
Single noun starting with a consonant	The noun is singular, starts with a consonant, and we use it with the verbs `have` and `be`.
Single noun starting with a vowel	This noun is singular, starts with a vowel, and we use it with the verbs `have` and `be`.

Exercise: 05e2-sports-exercise-a

Noun type	message
Sports noun	This is a sports noun.

Exercise: 08b2-definite-articles-single-plural-noun-exercise-a

Noun type	message
Specific noun	This noun is specific.

Exercise: 08c2-second-mention-noun-exercise-a

Noun type	message
Second mention noun	The noun has been said before.

Exercise: 08d2a-do-with-nouns-exercise-a

Noun type	message
Plural noun	This noun is plural and countable.
Uncountable noun	This noun is uncountable.
Single noun starting with a consonant	This noun is single, countable, and starts with a consonant.
Single noun starting with a vowel	This noun is single, countable, and starts with a vowel.

Action verb	The action is identified and the verb is `do`.

Exercise: 08d2b-play-with-nouns-exercise-a

Noun type	message
Musical instrument noun	The noun is a musical instrument and the verb is `play`.

Exercise: 08e2-pre-modified-noun-exercise-a

Noun type	message
First-time-mention plural noun	This noun is plural and we say it for the first time.
First-time-mention uncountable noun	This noun is uncountable and we say it for the first time.
First-time-mention single noun described an adjective starting with a consonant	This adjective starts with a consonant and we say it for the first time.
First-time-mention single noun described an adjective starting with a vowel	This adjective starts with a vowel and we say it for the first time.
Second-time-mention noun	This noun is identified with an adjective before it.

Exercise: 08f2-post-modified-noun-exercise-a

Noun type	message
Second-time-mention noun	This noun is identified with the adjective phrase after it.
First-time-mention plural noun	This noun is plural and we say it for the first time.
First-time-mention single noun starting with a consonant	This noun is single, starts with a consonant, and we say it for the first time.
First-time-mention single noun starting with a vowel	This noun is single, starts with a vowel, and we say it for the first time.

Exercise: 08g2-special-second-mention-noun-adjectives-exercise-a

Noun type	message
Noun with sequence adjective	This noun is used with the sequence adjective.
Noun with superlative adjective	This noun is used with the superlative adjective.
Noun with unique adjective	This noun is used with the unique adjective.

Exercise: 08g4-special-second-mention-noun-exercise-a

Noun type	message
Universal noun	This noun is a universal noun.
Concrete noun	This is a noun we can see, hear, or touch.
Regional noun	This is a noun known in the region.

Exercise: 08h2a-special-name-politics-noun-exercise-a

Noun type	message
Political regional grouping noun	This is a noun talking about groups of regions.
Political noun with the word *of*	This is a single political noun talking about continents, countries, cities, cities, departments, or officials and with the word `of`.
Political noun without the word *of*	This is a single political noun talking about continents, countries, cities, cities, departments, and offi-

cials.	

Exercise: 08h2b-special-names-noun-geography-exercise-a

Noun type	**message**
Geographical singular noun for ocean, river, canal, or desert	This noun is singular and an ocean, river, canal, or desert.
Geographical plural noun	This noun is plural and islands, mountains, or lakes.
Geographical singular noun for island, mountain, or lake	This noun is single and an island, mountain, or lake.

Exercise: 08h2c-special-names-noun-culture-exercise-a

Noun type	**message**
Cultural noun with the word *of*	This is a single cultural noun with the word `of` talking about streets, holidays, and schools.
Cultural noun for groups of people	This is a noun talking about groups of people.
Cultural noun without the word *of*	This is a single cultural noun talking about streets, holidays, and schools without the word `of`.
Cultural noun for languages	This is a single noun talking about language.

Exercise: 08i2-names-noun-exercise-a

Noun type	**message**
Noun that is the name of a company	This noun is the name of a company.
Noun that is the name of a person	This noun is the name of a person.

Explicit feedback

Exercises: 02b1-count-uncount-noun-exercise-b, 02c1-change-count-uncount-exercise-b

Noun type	**message**
countable noun	This noun is countable.
uncountable noun - abstract (action)	This noun is uncountable.
uncountable noun - abstract (concept)	This noun is uncountable.
uncountable noun - abstract (education)	This noun is uncountable.
uncountable noun - abstract (feelings)	This noun is uncountable.
uncountable noun - abstract (language)	This noun is uncountable.
uncountable noun - abstract (feature)	This noun is uncountable.
uncountable noun - mass (disease)	This noun is uncountable.
uncountable noun - mass (food)	This noun is uncountable.
uncountable noun - mass (group)	This noun is uncountable.
uncountable noun - mass (liquid)	This noun is uncountable.
uncountable noun - mass (materials)	This noun is uncountable.
uncountable noun - mass (weather)	This noun is uncountable.

Exercise: 02c2-change-uncount-count-exercise-b, 03b-indefinite-a-or-an-exercise-b

Noun type	**message**
Noun starting with a consonant	The article needed is `a`.
Noun starting with a vowel	The article needed is `an`.

Exercise: 05b2-first-mention-exercise-b, 05d2-have-be-with-nouns-exercise-b

Noun type	message
First-time-mention plural noun	No article is needed.
First-time-mention uncountable noun	No article is needed.
First-time-mention single noun starting with a consonant	The article needed is `a`.
First-time-mention single noun starting with a vowel	The article needed is `an`.

Exercise: 05e2-sports-exercise-b

Noun type	message
Sports noun	No article is needed.

Exercise: 08b2-definite-articles-single-plural-noun-exercise-b

Noun type	message
Specific noun	The article needed is `the`.

Exercise: 08c2-second-mention-noun-exercise-b

Noun type	message
Second mention noun	The article needed is `the`.

Exercise: 08d2a-do-with-nouns-exercise-b

Noun type	message
Plural noun	The article needed is `the`.
Uncountable noun	No article is needed.
Single noun starting with a consonant	The article needed is `a`.
Single noun starting with a vowel	The article needed is `an`.
Action verb	The article needed is `the`.

Exercise: 08d2b-play-with-nouns-exercise-b

Noun type	message
Musical instrument noun	The article needed is `the`.

Exercise: 08e2-pre-modified-noun-exercise-b

Noun type	message
First-time-mention plural noun	No article is needed.
First-time-mention uncountable noun	No article is needed.
First-time-mention single noun described an adjective starting with a consonant	The article needed is `a`.
First-time-mention single noun described an adjective starting with a vowel	The article needed is `an`.
Second-time-mention noun	The article needed is `the`.

Exercise: 08f2-post-modified-noun-exercise-b

Noun type	message
Second-time-mention noun	The article needed is `the`.
First-time-mention plural noun	No article is needed.
First-time-mention single noun starting with a consonant	The article needed is `a`.
First-time-mention single noun starting with a vowel	The article needed is `an`.

Exercise: 08g2-special-second-mention-noun-adjectives-exercise-b

Noun type	message
Noun with sequence adjective	The article needed is `the`.
Noun with superlative adjective	The article needed is `the`.
Noun with unique adjective	The article needed is `the`.

Exercise: 08g4-special-second-mention-noun-exercise-b

Noun type	message
Universal noun	The article needed is `the`.
Concrete noun	The article needed is `the`.
Regional noun	The article needed is `the`.

Exercise: 08h2a-special-name-politics-noun-exercise-b

Noun type	message
Political regional grouping noun	The article needed is `the`.
Political noun with the word *of*	The article needed is `the`.
Political noun without the word *of*	No article is needed.

Exercise: 08h2b-special-names-noun-geography-exercise-b

Noun type	message
Geographical singular noun for ocean, river, canal, or desert	The article needed is `the`.
Geographical plural noun	The article needed is `the`.
Geographical singular noun for island, mountain, or lake	No article is needed.

Exercise: 08h2c-special-names-noun-culture-exercise-b

Noun type	message
Cultural noun with the word *of*	The article needed is `the`.
Cultural noun for groups of people	The article needed is `the`.
Cultural noun without the word *of*	No article is needed.
Cultural noun for languages	No article is needed.

Exercise: 08i2-names-noun-exercise-a

Noun type	message
Noun that is the name of a company	No article is needed.
Noun that is the name of a person	No article is needed.

Appendix C

Pilot Study

This appendix describes the methodology employed in the pilot study and the results of the pilot study.

Pilot study recruitment and screening process

The head teacher from the one private English school in Gorzów Wielkopolski, Poland who taught students from grades seven and eight was asked to aid the recruitment of possible participants.

The first stage of the recruitment process was a briefing for the head teacher about the aims of the main study, information sheets, and consent forms from the primary investigator. The head teacher was asked to employ criteria in the Common European Framework of Reference for Languages: Learning, Teaching, Assessment (CEFR) (Council of Europe 2011) to assess the students' English written language skills and ensure that the students had achieved a minimum level of A2 (elementary) before being referred for prospective selection in the main study.

At the same meeting, the researcher described the e-learning tool (Gillian 2015a) being a web-based learning tool and the technological requirements; particularly, the need for reliable Internet access. The head teacher reported that the private school had wireless local area networking (Wi-Fi) available for the staff and students to use.

The head teacher was asked to approach parents/caregivers of prospective participants to avoid the possibility of coercion by the researcher. Also, that teacher was asked to propose prospective participants in the main study as she was more familiar with students and their written language skills than the researcher.

After the briefing, the teacher identified possible students for the main study, using her professional judgment and the criteria in the briefing process. One meeting was held at the school where the prospective students and parents/caregivers were invited. At that meeting, they were informed about the purpose and conduct of the study at an information session and were given information sheets and consent forms to take home to discuss and complete. The caregivers/parents of the participants then filled in and returned the consent forms to the researcher.

Screening process

Participants in the main study were recruited from one private English school in Gorzów Wielkopolski, Poland. At the time of the pilot study in 2016, the school had about 400 students attending classes. The first language of all the students was Polish and none were reported to have visual or hearing difficulties. There were 27 students in the age cohort of 13 to 14 years. Many of the students at the school reported to come from middle to high socio-economic backgrounds. Five participants were recruited for this project from the school. The initial recruitment of only 13 to 14 year olds proved to be problematic and the age inclusion criterion was expanded to include 11 year olds and 12 year olds. The inclusion criteria were as listed in Table 31:

Table 31. Pilot study screening process: Inclusion criteria.

Inclusion Criteria
• age: students 11 to 14 years of age – (3 13-year-olds, 1 14-year-old; 1 11-year-old, 1 12-year-old) • read and write fluently in Polish • achieve an A2 level (elementary) in English reading and writing according to CEFR curriculum assessment tool (Council of Europe 2011)

Participants

Five consent forms for the pilot study were signed and received from parents. Four family questionnaires were completed and returned from the parents. Subject PS3's family declined to complete the questionnaire. The demographic information for participants is presented in Table 32.

Table 32. Demographic details of pilot study participants.

Participant [5]	Gender (F - Female, M - Male)	Age (years; months)	Vision difficulties	Hearing difficulties	Years learning English	Number of English lessons per week
PS1	F	13;08	Yes	No	6	1
PS2	F	13;03	No	No	9	5
PS3	F	14;04	-	-	-	-
PS4	M	11;01	Yes	No	5	2
PS5	M	12;03	Yes	No	6	2

All subjects' parents reported that the father and mother had completed post-secondary education.

Procedure

The pilot study incorporated a pre-test stage assessing the written language skills of the participants with standardised or formal measures. The pre-test stage was to evaluate the writing skills of the participants and the strength of any correlations between the OWLS-II (Carrow-Woolfolk 2011) assessment scores and the e-learning tool (Gillian 2015a) assessment scores.

The pilot study also incorporated a teaching/evaluation stage incorporating a comparative design with a questionnaire to help evaluate:

1. if the e-learning tool was providing appropriate input and feedback to the students
2. the technological requirements of the e-learning tool on a web-based server so as to observe and mediate any technological problems.

[5] The initials representing each participant are pseudo-anonymous to ensure the anonymity of the participants

Pre-test stage

The goal of the pre-testing was to measure the effectiveness of the teaching stage, through analysing data statistically in order to strengthen the interpretation of the data from the experimental design. The participants' written language skills were assessed using the OWLS-II (Carrow-Woolfolk 2011), an assessment standardised on a sample of 2123 individuals ranging in age from 3 to 21. Pre-testing was completed before the teaching stage commenced. It must be noted that the results using this normed data from the OWLS-II must be treated with caution in terms of population validity as the statistical norms for the OWLS-II apply directly to students from the US and not to students from Poland. Also, it must be noted that the norms for the 11-14-year-old students on this assessment do not include a separate sub-scores for the appropriate usage of English articles, unlike the norms for students aged 5-7 and 8-10. To that end, a separate assessment component was created for the e-learning tool (Gillian 2015a) based on Master's (1988) schema (see sections 1.7. and 1.7.5. for more details). For the pre-test stage, the OWLS-II assessment was employed to give the participants a holistic written evaluation that is statistically based and the e-learning tool assessment component as a direct and specific evaluation of the students' skills in the appropriate use of articles. The results of the OWLS-II and e-learning tool assessment component were compared to see if there was any correlation between the two assessment measures.

OWLS-II pre-test results

The OWLS-II pre-test results for the participants found the percentile rank scores achieved by the participants were all within the normal range. The scores for the participants are presented in Table 33.

Table 33. OWLS-II pre-test results.

Participant	Age	OWLS-II percentile rank
PS1	13;08	53
PS2	13;03	47
PS3	14;01	19
PS4	11;01	70
PS5	12;01	18

E-learning tool assessment pre-test results

The e-learning tool assessment pre-test results for the participants found the percentage scores achieved by the participants were all above 50 percent. Subject PS2 did not complete all of the pre-tests; thus, her scores were excluded from the data. The percentage scores for the participants are presented in Table 34.

Table 34. E-learning tool pre-test results.

Participant	Age	Pre-test percentage score
PS1	13;08	65
PS3	14;01	71
PS4	11;01	74
PS5	12;01	53

Correlation between OWLS-II and e-learning tool assessment pre-test results

To determine if there was a relationship between the OWLS-II and e-learning tool assessment pre-test results, a Pearson *r* coefficient was calculated on the data presented in Table 35:

Table 35. Data on which Pearson *r* coefficient was calculated.

Participant	Age	OWLS-II percentile rank	Pre-test percentage score
PS1	13;08	53	65
PS3	14;01	19	71
PS4	11;01	70	74
PS5	12;01	18	53

There was a positive and significant correlation between the two variables for each participant, $r = .59$, $n = 4$, $p = 0.01$. This indicated that there was a positive correlation between the OWLS-II and e-learning tool assessment pre-test results.

Further analysis of the e-learning tool assessment pre-test results

As the correlation results were considered to be moderate but not high enough to be useful for the purposes of the research when the small sample size was taken into account, a further analysis of the pre-test results was conducted. The scores of the subjects

were analysed in terms of level of difficulty per pre-test. Then, the levels of difficulty were further refined into scores below 30% and between 30 and 59%. The scores below 30% could indicate that that the pre-test was below the subject's ZPD for that area of English articles. The scores between 30% and 59% could indicate that that the pre-test was in the subject's ZPD for that area of English articles. The results of the analysis are presented in Table 36:

Table 36. Analysis of pre-test difficulty.

Pre-test module	**Score below 30**	**Score between 30 and 59**	**Total**
Do with nouns Pre-test	1	3	4
First time nouns Pre-test		3	3
Definite article with noun Pre-test	2	1	3
Geography nouns Pre-test	1	2	3
Culture nouns Pre-test		3	3
Two way nouns Pre-test		2	2
Second time nouns Pre-test		2	2
Play with nouns Pre-test	1	1	2
Describing words after nouns Pre-test		2	2
Have and *be* with nouns Pre-test		1	1
Sports noun Pre-test	1		1
Describing words before nouns Pre-test		1	1
Special second time nouns Pre-test 1		1	1
Politics nouns Pre-test		1	1
Names Pre-test		1	1
Countable Uncountable Pre-test			0
A or *an* with nouns Pre-test			0
Special second time nouns Pre-test 2			0

As could be seen in Table 36, the participants received scores below 30% for only five of the pre-tests: *Do with nouns* Pre-test, *Definite article with noun* Pre-test, *Geography nouns* Pre-test, *Play with nouns* Pre-test, and *Sports noun* Pre-test. For only *the Definite article with noun* Pre-test did more than two subjects receive a score below 30%. For only three of the pre-tests: *Do with nouns* Pre-test, *Definite article with noun* Pre-test, and *Geography nouns* Pre-test, did a majority of participants have difficulties ranging from mild to severe. This indicated for the majority of the areas tested for English articles, that the subjects had skills with the appropriate use of English articles within their ZPDs when interacting with the e-learning tool.

Teaching/evaluation stage

For the teaching stage, the one intervention group received the teaching in appropriate use of English articles through the e-learning tool (Gillian 2015a).

The teaching stage was intensive and of short duration (i.e. three 30 minute intervention sessions per week for one week). The intervention sessions occurred at the school under the supervision of the researcher. The first session in this phase was a familiarization session concerning the e-learning tool for the subjects. This session explained the goals of the research, the use of the e-learning tool, and the monitoring of the students' use of the e-learning tool during the teaching sessions. Furthermore, this session discussed the article learning model contained in the e-learning tool. The session also provided the subjects with information about the basic features of the e-learning tool (Gillian 2015a) (access methods: mouse, tablet, smartphone; Screen Backward and Screen Forward buttons; saving responses). The subsequent teaching sessions focussed on the use of the e-learning tool (Gillian 2015a) to learn about the appropriate articles for nouns and to complete the learning and gameplay exercises. Each 30 minute teaching session had 20 minutes of play with the e-learning software and 10 minutes of answering questions at the end of the session. During the last session of the pilot study, the students were asked to complete an online questionnaire in Polish created on the instant.ly website (www.instant.ly). The questionnaire was designed to be short and easy to complete, covering the aspects of game usability, guidance, instructions, feedback, problems, and appropriateness of the teaching concepts. The questionnaire in its English translation is shown in Table 37.

Table 37. E-learning tool questionnaire.

Question	Rating			
1 - Please rate the game use Speed Fun Actions User Control	It's excellent	It's good	It's Ok	It's bad
2 - Please write comments about the game use				
3 - Guidance - When you do something, does the game tell you what to do?	1 = 100% of the time	2 = 60 - 90% of the time!!	3 = 30 - 59% of the time!	4 = 0 - 29% of the time
4 - Guidance - Are the pictures, buttons, and sounds easily understandable?	1 = 100% of the time	2 = 60 - 90% of the time!!	3 = 30 - 59% of the time!	4 = 0 - 29% of the time
5 - Guidance - For each action is there good feedback?	1 = 100% of the time	2 = 60 - 90% of the time!!	3 = 30 - 59% of the time!	4 = 0 - 29% of the time
6 - Please write comments about the guidance				
7 - Errors - Is there an error message if things go wrong?	Excellent - 100% of the time!!!	Good - 60 - 90% of the time!!	Ok - 30 - 59% of the time!	Bad - 0 - 29% of the time
7 - Errors - Are the help messages understandable?	Excellent - 100% of the time!!!	Good - 60 - 90% of the time!!	Ok - 30 - 59% of the time!	Bad - 0 - 29% of the time
8 - Please write comments about the errors				
8 - Sound - Are the voices clear?	Excellent - 100% of the time!!!	Good - 60 - 90% of the time!!	Ok - 30 - 59% of the time!	Bad - 0 - 29% of the time
9- Sound - Are the sound effects good?	Excellent - 100% of the time!!!	Good - 60 - 90% of the time!!	Ok - 30 - 59% of the time!	Bad - 0 - 29% of the time
9 - Sound - Are the pauses good for thinking?	Excellent - 100% of the time!!!	Good - 60 - 90% of the time!!	Ok - 30 - 59% of the time!	Bad - 0 - 29% of the time
10 - Please write comments about the sound				
11 - Learning - Are the instructions clear?	Excellent - 100% of the time!!!	Good - 60 - 90% of the time!!	Ok - 30 - 59% of the time!	Bad - 0 - 29% of the time
11 - Learning - Do the exercises make sense?	Excellent - 100% of the time!!!	Good - 60 - 90% of the time!!	Ok - 30 - 59% of the time!	Bad - 0 - 29% of the time
11 - Learning - Does the feedback help?	Excellent - 100% of the time!!!	Good - 60 - 90% of the time!!	Ok - 30 - 59% of the time!	Bad - 0 - 29% of the time
12 - Please write comments about the learning				
13 Game Concepts Uncountable nouns Countable nouns Two-way nouns Indefinite articles with vowels Indefinite articles with consonants	1 - Very, very well - 100% of the time!!!!!!!!	2 - Good - 60 - 90% of the time!!	3 - I need more practice - - 30 - 59% of the time!	4 - The program didn't help - 0 - 29% of the time

Classifying nouns
First mention nouns
The verbs 'have' and 'be' with nouns
Sports nouns
Identifying Nouns
Definite Articles
Second mention nouns
The verbs 'do' and 'play' with nouns
Nouns with adjectives before them
Nouns with adjectives after them
Special second mention nouns
Special names
Personal names
14 Please write comments about nouns and articles

Setting

The subjects in the teaching group completed the pilot study sessions with the e-learning tool (Gillian 2015a) on a variety devices including laptops, tablets, or smart phones in a quiet classroom with background noise minimised. The participants received the auditory stimuli through individual sets of headphones in order to minimise auditory distraction for other participants. The room in which the study was conducted was not carpeted and had no or minimal hum from air conditioners and lights.

Teaching session observations and question results

The first session conducted on November the 10th 2016 was an introductory and familiarisation session for four of the subjects (Subject PS2 was absent). The researcher discussed the goals of the research, the e-learning tool, and that the researcher would monitor the students' use of the e-learning tool. The researcher talked about the article learning model contained in the e-learning tool and the researcher and the subjects reviewed the basic features of the e-learning tool (Gillian 2015a). Then, the subjects commenced trying out the e-learning tool. Subject PS1 was noted to have difficulties with displaying the instructional videos and interactive exercises on their smartphone (Samsung Galaxy Tab S4). The smartphone was observed to display the videos and

exercises in a pop-up window of approximately 5 cm by 5 cm that could not be resized. Subject PS5 tried to access the e-learning tool (Gillian 2015a) also with a smartphone (Samsung Galaxy Tab S4). However, he could not achieve a reliable Internet connection. The instructional videos were observed to have no synchronisation between the visual stimuli and audio stimuli. Subject PS5 then accessed the e-learning tool (Gillian 2015a) using the researcher's laptop. Subject PS3 reported that the audio stimuli were too slow. Subject PS4 reported that there were too many pauses between the speech bubbles. All subjects were using headphones.

The second session was conducted on November the 15th 2016. Subject PS1 was able to access the e-learning tool using a Samsung Galaxy Tab 10.1 tablet. The SCORM player in the e-learning tool reported that the Internet connection was interrupted. The researcher advised the subject to restart the Internet connection. Subjects PS2 and PS3 reported that the program was good but the instruction videos were too slow. Subject PS2 asked for an explanation of two-way nouns. Subjects PS4 and PS5 tried to exit activities without using the *Exit Activity* button; the researcher reminded them about the correct method to exit activities. All subjects except PS5 were using headphones.

The third session was conducted on November the 16th 2016. Subject PS3 was absent. Subject PS1 completed the exercises with her smartphone. Again, the videos and exercises were displayed in a small pop-up window that could not be re-sized. Subject PS2 preferred the *Show all questions* option when completing pre-tests. Subject PS4 attempted to edit the received score through the HTML editor; the score was not changed on the Moodle database. Subject PS4 asked about how articles and sports nouns go together. Subject PS1 asked if *anorak* had the same meaning as in Polish. All subjects except PS2 and PS5 were using headphones.

The fourth session was conducted on November the 17th 2016. Subjects PS1 and PS2 were absent. Subject PS3 asked if *kiosk* was an English word. Subject PS4 showed the received score for second time nouns pre-test (100%) to PS5. Subject PS4 asked about the meaning of *sleeping bags*. Subject PS3 provided the Polish translation. Subject PS4 assisted PS5 to complete the *Describing words after nouns* pre-test. Only subject PS3 used headphones. The researcher asked the subjects about which was better: meta-linguistic feedback or explicit feedback. All subjects reported that meta-linguistic feedback was more useful than explicit feedback.

The fifth session was conducted on November the 18th 2016. All subjects were present. All subjects completed all the pre-tests except PS2 who completed five out of 19 pre-tests. All subjects accessed the instruction videos without sound except for subject PS4. Subject PS4 commented that the fart noise in the Introduction to Nouns teaching module was crazy.

End of Pilot study questionnaire results

All the subjects completed the end of pilot study questionnaire on November the 18th 2016. The following sections summarise the main trends found in the questionnaire.

Game use

There were a range of responses for the speed of the game. One participant reported the speed was very good, one reported it was good, two reported that it was acceptable, and one reported that it was bad. Three participants reported that the e-learning tool was good in terms of fun and two reported that it was acceptable. All five reported that it was very good in terms of actions. Four out of five participants reported that the e-learning tool's control was good and one reported that it was acceptable. Two participants wrote comments about the game which were generally positive. One participant wrote: „Lepiej żeby postacie podczas mówienia ruszały ustami. Proponowałbym wprowadzić inny wygląd przez który strona będzie wyglądała bardziej profesjonalnie"[6] [Better that the figures while speaking have moving lips. I would suggest introducing a different look for that page so that it will look more professional]. Another participant wrote: „Dialogi są nie za zbytnio płynne. Jest duże utrudnienie. System sam w sobie jest idealny. Podczas nauki bardzo dużo się nauczyłem a chodzę do szóstej klasy szkoły podstawowej. Bardzo dziękuję za naukę z nowym programem." [The dialogues are not flowing enough. It is a big obstacle. The system itself is ideal. During the sessions, I

[6] All the translations from Polish sources are mine, EG

learned a lot and I go to the sixth grade of primary school. Thank you very much for teaching with the new program.]

Guidance

Four out of five participants reported that the e-learning tool had good guidance in terms of game direction. One participant reported that sometimes the e-learning tool had good game direction. Four out of five participants reported that the e-learning tool, in general, had understandable pictures, buttons, and sounds. One participant reported that the e-learning tool always had understandable pictures, buttons, and sounds.

Errors

There were a range of responses for provision of messages when things go wrong. Two participants reported the provision of messages was always good, one reported that sometimes it was good, and two reported that in general there was no provision of error messages. Two out of five participants reported that the e-learning tool always had understandable help messages and three reported that in general the e-learning tool had understandable help messages.

Sound

There were a range of responses for provision of sound by the e-learning tool. One participant reported that the sound was always clear and four out of five participants reported that, in general, the sound was clear. One subject reported that the sound effects were good in general, one reported that sometimes the sound effects were good, and three reported that in general the sound effects were not good. Four out of five subjects reported that the pauses between instructions were always good and one reported that the pauses were not good in general. This conflicts with the questioning at the end of the

teaching sessions where all participants reported that the pauses between instructions were too long; particularly for one character, Stefan.

Learning

Three out of five participants reported that the e-learning tool always had clear instructions and two reported that in general the instructions were clear. Four subjects reported the exercises always made sense and one reported that in general the exercises made sense. One participant ranked the feedback as always helpful and four ranked the feedback as helpful in general.

Teaching concepts

The participants reported that they understood well or basically understood the teaching concepts in the following areas: uncountable nouns, countable nouns, two-way nouns, classifying nouns, first mention nouns, the verbs *have* and *be* with nouns, sports nouns, identifying nouns, second-mention nouns, the verbs *do* and *play* with nouns, and nouns with adjectives before them. In the area of indefinite articles with vowels, one subject reported that they understood the concepts well, two reported that they basically understood the concepts, one reported that the concepts needed to be repeated, and one reported that the e-learning tool did not help with learning these concepts. In the area of definite articles, one subject reported that they understood the concepts well, one reported that they basically understood the concepts, two reported that the concepts needed to be repeated, and one reported that the e-learning tool did not help with learning these concepts.

Technological observations

The e-learning tool menu was observed to load within two seconds of the website being clicked. The login worked appropriately, including registration and repeated logins. Error messages for unknown users and forgotten passwords were displayed appropriately. The loading of instructional modules took between 1-4 seconds for shorter modules and 5-10 seconds for longer modules. The loading of exercise modules took between 1-4 seconds for shorter modules and 5-10 seconds for longer modules. The loading of gameplay modules took between 1-4 seconds for shorter modules and 5-10 seconds for longer modules. At times, the sound synchronisation with pictures was observed to be appropriate for all modules and videos contained within the modules. When the Internet connection was unstable, the researcher and subjects noted that the audio files lagged behind the visual files. No freezing of devices was observed during the teaching sessions.

Technological issues

Two of the key features of the e-learning tool (Gillian 2015a) to be investigated in this research were the provision of more individualised comprehensible input for users (see section 2.3.3. for more details) and more individualised feedback for the users (see sections 2.3.7. 2.6.1.4. 2.6.1.5. and 2.6.1.6. for more details). These design features depended on using the Moodle LMS restrict access parameter to restrict user access to SCORM 1.2 modules based on their scores achieved in previous modules. This feature was programmed by the researcher; however, during the final testing round of the e-learning tool before the pilot study commencement, this feature was discovered not to work. On October the 24th 2016, the Moodle LMS was discovered to delete all activity names from the topic modules where the conditional access contained percentage scores. There were no such difficulties where the topic modules had activity modules with conditional access based on activity completion (i.e. the next activity was unlocked if the user completed the previous activity). The researcher duplicated the problem on his localhost server and the MoodleCloud server. On October the 29th 2016, the researcher created a serious bug issue on the Moodle bug tracker. Initially, the bug was

closed as not a serious issue on October the 30th 2016. Following the provision of more information on this issue, the bug was reconsidered but not acted upon by Moodle support. Due to the total lack of support from Moodle on this issue, the researcher reprogrammed the e-learning tool to have activity modules with conditional access based on activity completion. Unfortunately, this seriously impacted the research goals of investigating more individualised comprehensible input and more individualised feedback.

Another issue that arose during the pilot study was how unstable Internet connections could affect the SCORM player and the recording of scores to the Moodle DB. During the pilot study, it was observed that the SCORM player could not record activity completion and/or exercise scores in the Moodle database when an unstable Internet connection occurred. The only solution found for this issue was to wait for a more stable connection and reset the user progress and exercise scores for an activity in the Moodle database.

Vocabulary

The pre- and post-test submodule contained 18 individual submodules to assess the participants' skills in appropriate usage of English articles (see Table 6 for more details). Each submodule contained 10 items to assess and re-assess the students' skills. Thus, out of 180 stimuli, the participants asked for the meaning of three nouns in the stimuli: *anorak, kiosk,* and *sleeping bags*. This equated to a percentage of 0.02 for the vocabulary items in the assessment module that the students reported that they required clarification for. Of these vocabulary items, the first two items exist in Polish and English with the same meaning.

Discussion

The literature review of this thesis suggested that very little information was available about employing e-learning to teach English articles. As the main study proposed to use e-learning to teach these grammatical structures, the pilot study was proposed to investigate whether Polish ESL students of eleven to fourteen years of age found the e-learning tool (Gillian 2015a) appropriate enough in its teaching of English article usage for the main study to proceed and to establish if the e-learning tool (Gillian 2015a) can

fulfil the technological requirements needed for its teaching of English article usage in order that the main study to proceed.

The first aim of this pilot study was to be satisfied by evaluating the writing skills of the participants through OWLS-II (Carrow-Woolfolk 2011) and the pre-test from the e-learning tool (Gillian 2015a) and assessing the strength of any correlations between the OWLS-II (Carrow-Woolfolk 2011) percentile scores and the e-learning tool (Gillian 2015a) assessment scores. The results of the pre-test stage showed that there was a moderate correlation between the OWLS-II and the e-learning tool (Gillian 2015a) assessment scores of 0.59. However, this correlation was considered to be not strong enough for the purposes of the research based on the small sample size ($n = 4$). A stronger correlation may not have occurred as the OWLS-II assesses more skills than just articles; whereas, the e-learning tool pre-test only assessed articles. Also, the OWLS-II did not assess article skills directly for this target age group age, unlike with younger age groups. Due to this lack of validation and the amount of time required to assess the subjects with the OWLS-II (between 45 minutes and 1 hour and 30 minutes), it was decided to discontinue employing the OWLS-II as an additional validation of the pre-test and post-test results in the main study.

Another aim of this pilot study was to determine whether the educational concepts in the e-learning tool created ZPDs appropriate for Polish speakers of English. An alternative descriptive analysis of the subjects' pre-test scores was conducted and this indicated that the majority of the educational concepts in the e-learning tool were able to create ZPDs appropriate for the subjects.

Another aim of this pilot study was to test the technological requirements of the e-learning tool on a web-based server so as to observe and mediate any technological problems for the main study to proceed.

As stated earlier in this appendix, the change from grade completion to activity completion for the conditional access to SCORM modules through the Moodle LMS affected the investigation into input modification and individualised feedback.

The last aim of the pilot study was to examine if the vocabulary employed by the e-learning tool was appropriate for teaching English articles. The pilot study indicated that the vocabulary was appropriate as the participants only asked questions about 0.02 of the stimuli vocabulary (3 out of 180 vocabulary items).

Results from the questionnaire indicated that the e-learning tool created ZPDs appropriate for Polish speakers of English. All five participants rated the e-learning tool highly or acceptable in terms of game usability, guidance, and errors. The questionnaire responses about the sound pauses for all the characters; and particularly for one character, Stefan, were used to shorten the pauses between audio segments produced by all characters. Results from the teaching concepts section of the questionnaire noted that the teaching concepts of uncountable nouns, countable nouns, two-way nouns, indefinite articles with consonants, first-mention nouns, the verbs *have* and *be* with nouns, sports nouns, identifying nouns, second-mention nouns, the verbs *do* and *play* with nouns, nouns with adjectives before them, nouns with adjectives after them, special second mention nouns, and personal names were appropriately presented and understood by the participants.

Therefore, it was recommended that the main study could proceed as long as the instructional modules regarding pauses between sound files were modified. The results of the pilot study demonstrated that if this step was completed, the participants of the main study would be able to understand these instructional modules and their associated concepts.

Appendix D

Traditional teaching approach - Introductory handout

DEFINITE ARTICLE

THE

Articles do not change according to the gender or number of the noun they refer to, e.g. **the boy, the woman, the children**

'The' is used:

1. to refer to something which has already been mentioned.

Example: An elephant and a mouse fell in love. **The mouse** loved **the** elephant**'s** long **trunk,** and **the elephant** loved **the** mouse's tiny **nose**.

2. when both the speaker and listener know what is being talked about, even if it has not been mentioned before.

Example: 'Where's **the bathroom?**' 'It's on **the first floor**.'

3. in sentences or clauses where we define or identify a particular person or object:

Examples: **The man** who wrote this book is famous.
'Which car did you scratch?' '**The red one**.
My house is **the** one with a blue door.'

4. to refer to objects we regard as unique:

Examples: **the sun**, **the moon**, **the world, the cinema**

5. before superlatives and ordinal numbers:

Examples: **the highest** building, **the first** page, **the last** chapter.

6. with adjectives, to refer to a whole group of people:

Examples: **the** Japanese, **the** old

7. with names of directions, geographical areas, rivers and oceans:

Examples: the sun sets in **the** west**, the** Caribbean, **the** Sahara, **the** Atlantic

8. with decades, or groups of years:

Example: she grew up in **the** seventies

INDEFINITE ARTICLE

A / AN

Use ***'a'*** with nouns starting with a ***consonant*** *(letters that are not vowels),*
'an' with nouns starting with a ***vowel*** (*a,e,i,o,u*)

Examples:

a boy, **an** apple, **a** car, **an** orange, **a** house, **an** opera

NOTE:
An before an *h* mute - **an** hour, **an** honour.
A before *u* and *eu* when they sound like *'you': a* **eu**ropean, *a* **u**niversity, *a* **u**nit - yes, yacht

The indefinite article is used:

- **to refer to something for the first time:**
  An elephant and ***a mouse*** fell in love.
  Would you like ***a drink***?
  I've finally got ***a good job***.
- **to refer to a particular member of a group or class**

Examples:

  - **with names of jobs:**
    John is ***a doctor***. Mary is training to be ***an engineer***. He wants to be ***a dancer***.
  - **with nationalities and religions:**
    John is ***an Englishman***. Kate is ***a Catholic***.
  - **with musical instruments:**
    Sherlock Holmes was playing ***a violin*** when the visitor arrived.
    (**BUT** to describe the activity we say "He plays the violin.")
  - with names of days:
    I was born on *a Thursday*

- **to refer to a kind of, or example of something:**
  the mouse had ***a tiny nose,*** the elephant had ***a long trunk.*** it was ***a very strange car***
- **with singular nouns, after the words *'what'* and *'such'*:**
  What ***a shame***! She's such ***a beautiful girl***.
- **meaning 'one', referring to a single object or person:**
  I'd like ***an orange*** and two lemons please. The burglar took ***a diamond necklace*** and ***a valuable painting***.

Notice also that we usually say ***a*** *hundred*, ***a*** *thousand*, ***a*** *million*.

NOTE: that we use ***'one'*** to add emphasis or to contrast with other numbers:
I don't know ***one person*** who likes eating elephant meat. We've got ***six computers*** but only ***one printer***.

NO ARTICLE

No article is used for:

abstract nouns used in a general sense. e.g. Love is all you need. Crime is a growing problem in the inner cities.

Names of cities, countries, and continents e.g. We live in Gorzów, We travel to Poland, We like Europe.

In front of *most* roads, streets, parks, squares or bridges e.g. We shop on Oxford Street, We walk in Central Park, We go to Times Square

most places consisting of just the name of a person, or the name of a person/place followed by a noun. e.g. We eat at McDonald's, We bank at Lloyds Bank, We pray at St. Paul's Cathedral, We leave from Kennedy Airport, We catch the train at Waterloo Station, I study at Cambridge University,

names of games or sports. e.g. Kim Clijsters plays tennis

company names. e.g. We work at Microsoft

bed, *church*, *court*, *home, hospital*, *prison*, *school*, *college*, *university*, etc. when these are used for their primary purpose. For example,

- She stayed **in bed** on Sunday instead of going **to church**.
- The dissatisfied customer threatened to take him **to court**.
- The dissident was released **from prison**.
- After graduating from high school he went **to university**.

BUT, if they are used for any other purposes, ***the*** is required.

- She sat on the bed while she changed her socks

television / TV as a general idea, but is needed when you talk about a **specific** television.

Carol saw her brother on television, She had an indoor antenna on **the** television.

In order to save space, articles are usually dropped in headlines in newspaper reports. e.g. "Iraqi Head Seeks Arms"

Appendix E

Traditional teaching approach - Usages handouts

A vs. An

USE 1

The article *A* is used before singular, countable nouns which begin with consonant sounds.

Examples:

- He is **a** teacher.
- She doesn't own **a** car.
- I saw **a** bear at the zoo.

USE 2

The article *AN* is used before singular, countable nouns which begin with vowel sounds.

Examples:

- He is **an** actor.
- She didn't get **an** invitation.
- I saw **an** eagle at the zoo.

USE 3

Remember that *A(AN)* means "one" or "a single". You cannot use *A(AN)* with plural nouns.

Examples:

- I saw **a** bears in Yellowstone National Park. ***Not Correct***
- I saw bears in Yellowstone National Park. ***Correct***

USE 4

If there is an adjective or an adverb-adjective combination before the noun, *A(AN)* should agree with the first sound in the adjective or the adverb-adjective combination.

Examples:

- He is **an e**xcellent teacher.
- I saw **a r**eally beautiful eagle at the zoo.

USE 5

Use *A* before words such as "European" or "university" which sound like they start with a consonant even if the first letter is a vowel. Also use *A* before letters and numbers which sound like they begin with a consonant, such as "U", "J", "1" or "9". Remember, it is the sound not the spelling which is important. For example, "1" is spelled O-N-E; however, it is pronounced "won" like it starts with a "W".

Examples:

- She has **a** euro. *Sounds like "yu-ro".*
- That number is **a** "1". *Sounds like "won".*

USE 6

Use *AN* before words such as "hour" which sound like they start with a vowel even if the first letter is a consonant. Also use *AN* before letters and numbers which sound like they begin with a vowel, such as "F" or "8". Remember, it is the sound not the spelling which is important. For example, "F" is pronounced "eff" like it starts with an "E".

Examples:

- I only have **an** hour for lunch. *Sounds like "au-er".*
- Does his name begin with **an** "F"? *Sounds like "eff".*

USE 7

Some words such as "herb" or "hospital" are more complicated because they are pronounced differently in different English accents. In most American accents, the "h" in "herb" is silent, so Americans usually say "an herb". In many British accents, the "h" in "herb" is pronounced, so many British say "a herb". In some British accents, the "h" in hospital is silent, so some British will say "an hospital" instead of "a hospital".

USE 8

In English, some nouns are considered uncountable such as: information, air, advice, salt and fun. We do not use *A(AN)* with these uncountable nouns. (Learn more about countable and uncountable nouns.)

Examples:

- She gives **a** good advice. ***Not Correct***
- She gives good advice. ***Correct***

A(An) vs. The

USE 9

A and *AN* are called indefinite articles. "Indefinite" means "not specific". Use *A(AN)* when you are talking about a thing in general, NOT a specific thing.

Examples:

- I need **a** phone. *Not a specific phone, any phone*
- Mark wants **a** bicycle. *Not a particular bicycle, a bicycle in general*
- Do you have **a** driver's license? *In general*

Use *A(AN)* when talking about a thing which is new, unknown, or introduced to a listener for the first time. Also use *A(AN)* when you are asking about the existence of something.

Examples:

- I have **a** car. *The car is being introduced for the first time.*
- Tom is **a** teacher. *This is new information to the listener.*
- Is there **a** dictionary in your backpack? *Asking about the existence of the dictionary*

Similarly, use *A(AN)* to introduce what type of thing we are talking about.

Examples:

- That is **an** excellent book. *Describing the kind of book*
- Do you live in **a** big house? *Asking about the kind of house*
- I ate **a** thick, juicy steak. *Describing the kind of steak*

REMEMBER: You cannot use *A(AN)* with plural nouns because *A(AN)* means "one" or "a single".

Examples:

- I saw **a** bears in Yellowstone National Park. ***Not Correct***
- I saw bears in Yellowstone National Park. ***Correct***

USE 10

THE is called a definite article. "Definite" means "specific". Use *THE* when talking about something which is already known to the listener or which has been previously mentioned, introduced, or discussed.

Examples:

- I have a cat. **The** cat is black.
- There is a book in my backpack. **The** book is very heavy.
- Do you know where I left **the** car keys? *The listener knows which specific car keys you are talking about.*
- Do you own a car? Is **the** car blue? *You assume they do have a car after asking about it in the first sentence.*
- Nobody lives on **the** Moon. *The Moon is known to everyone.*

IMPORTANT: You can use *THE* with both singular nouns and plural nouns.

Examples:

- I saw **the** bear in Yellowstone National Park. ***Correct***
- I saw **the** bears in Yellowstone National Park. ***Correct***

USE 11

Many clauses and phrases make the noun known to the listener by telling the listener which person or thing we are talking about. Let's look at an example sentence:

Can you give me **the** book *on the table*.

We use *THE* in this sentence because the phrase "on the table" tells the listener which book we are referring to. We are not talking about other books, we are talking about a specific book that the listener can see or already knows about. Learning to recognize such identifying clauses and phrases will help you use *THE* correctly.

Examples:

- Did you read **the** book *which I gave you*?
- He didn't like **the** movie *that you suggested*.
- He loved **the** dessert *with chocolate and cherries*.
- **The** phone *on my desk* belongs to Ken.
- Did you know **the** man *who was talking to Leonie*?

HOWEVER: Not all clauses and phrases make the noun known to the listener. Some are simply descriptive. They add extra information, but they do not tell the listener which specific thing we are talking about.

Examples:

- He bought **the** house *with a big backyard. This combination tells the listener which specific house he bought.*
- He bought **a** house *with a big backyard. This combination tells the listener what kind of house he bought, but not the specific house he bought.*

Traditional teaching approach - Usages exercise example

Articles Exercise 9

Multiple Choice Exercise

Choose A, AN or THE for each blank below, then click the "Check" button to check your answers.

1. Did you see [ ] movie about Dian Fossey's work with mountain gorillas? It was [ ] amazing film.

2. I love [ ] good movie about historical figures or historical events. I thought "Lincoln" was fantastic. And Daniel Day-Lewis was great in [ ] film.

3. I would love to take [ ] luxury cruise next year to [ ] exotic location such as Indonesia or Panama.

4. Jimmy did not enjoy [ ] cruise to Alaska because it was too cold and rainy. The weather ruined [ ] entire trip.

5. Let's find [ ] place where we can just sit for [ ] couple of hours, drink some coffee, and have [ ] good chat.

6. That is [ ] place where Sidney proposed to Meryl. Isn't that [ ] beautiful location?

7. Suddenly, [ ] password Sandra always used to log in to her email didn't work anymore. Somebody had hacked in and changed [ ] password.

8. When Nick was on safari in Tanzania, he saw [ ] cheetah hunting prey. He took some beautiful video of [ ] cheetah.

9. Did you enjoy [ ] book I recommended to you? Wasn't that [ ] exciting novel?

10. I need [ ] smartphone which allows me to check my email and use Facebook. I really want [ ] phone with good battery life.