

Writing Accuracy: Implicit Versus Explicit Instruction

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Abstract

This study aimed to determine the effect of implicit and explicit instruction on the writing accuracy of Dutch secondary school students. To investigate this 430 Dutch learners of English were taught either implicitly (N=202) or explicitly (N=228) during the first two years of secondary education. At the end of the second year, they were given a written task. The results were analysed using an error analysis, divided into five categories: Lexical Errors, Word Order, Missing Word, Verb Use and Verb Form. The results showed that overall the explicit group scored better than the implicit group on Lexical Errors, Verb Use and Verb Form, but there are differences depending on the level of education that the students had. Explicit instruction seemed to be best for Verb Form in all cases, but for Verb Use the implicit group only made significantly more errors on *vwo* and *mavo* level, not on *havo*. Furthermore, the explicit group only scored significantly better on Lexical errors in *havo*, whereas in the other educational levels the results were not significant. No significant differences were found for Word Order and Missing Word. The results suggested that overall, implicit instruction negatively affected most of the measured errors, however when looking more closely the results differ depending on the educational level. The results show that overall explicit instruction seems to be better to prevent Verb Form errors. It is possible that implicit teaching only works well for the highest and the lowest scoring students, and explicit teaching does not give any extra positive effects either.

Introduction

English is taught around the world, both as a Second Language (ESL) and as a Foreign Language (EFL). In the Netherlands, English is taught as a Foreign Language and is an obligatory course for every middle and high school student. However, the manner in which it is taught differs per school. The final proficiency levels and primary objectives of EFL in the Netherlands are established nationally, but all secondary schools have the freedom to divide their focus between different aspects of language proficiency and choose the method to reach these goals, as long as their students reach the established level in the national exams at the end of high school. Many secondary schools follow the same teaching principle: They work from a book with exercises that mostly teach grammar and vocabulary. In other words, they have an explicit way of teaching, assigning their students vocabulary lists to study and grammar rules to learn.

Explicit teaching is however, not the only way to teach a language. Even though there is evidence that supports the claim that language instruction has a positive influence on language proficiency, there is still discussion on which teaching method yields the largest influence (De Graaff & Housen, 2009). A great part of this discussion entails the question if grammar should be taught separately, or should be included naturally when learning English productive and receptive skills (Ellis, 2006). There are several theories on which teaching method is the most effective. Sometimes these theories even contradict each other (Doughty & Varela, 1998; Ellis, 2003; Krashen, 1982; Krashen & Terrell, 1983; Long, 1991). Some researchers argue that teaching EFL should be done as if English is a first language (L1) instead. Explicit instruction thus can be abolished and students are instead provided with a communicative setting to learn English (e.g. Krashen, 1982). In line with Krashen (1982), there are researchers that claim that teaching a language does not necessarily entail explicitly

taught grammar and vocabulary, but that students can learn grammar and vocabulary by implicit instruction instead (Long, 1991; Doughty & Varela, 1998).

One of the main differences between implicit and explicit instruction is that the latter provides students with metalinguistic input, whereas in implicit instruction metalinguistic input is lacking (N. Ellis, 1994; Norris & Ortega, 2000). At this moment there are three main varieties of either explicit or implicit language instruction. Firstly, there is focus on forms (FonFS), which is explicit grammar teaching. Learners acquire the structure of a language by learning the grammar rules. One of the ways the learners receive this grammar instruction is by filling in decontextualized grammar exercises. Secondly, there is focus on meaning (FonM), which does not focus on form at all, but solely on meaning. The only language that is used in FonM is that which is needed to successfully communicate and no grammar rules are taught. Lastly, there is focus on form (FonF). This is a mixture between implicit and explicit language teaching, but the main goal is to be able to convey your message in the language. The teacher can pay explicit attention to the form of the message, for example by focussing on a grammatical aspect that helps the learner convey the message better, but there are no decontextualized grammar exercises that students must fill in.

There is a lot of literature on these theories, though most of them focus on FonF and FonFS, and not on FonM. Norris and Ortega (2000) for example, give an overview of research into FonF and FonFS. They found that language instruction using either FonF or FonFS, has a positive influence on language acquisition. However, for studies focussed on FonM, the results are generally inconclusive. There are studies that suggest FonM has a positive effect on language acquisition, but also studies claiming the opposite (De Graaff & Housen, 2009). Important to keep in mind though, is that there are some problems related to studies focussing on FonFS, FonF or FonM. Most of the research in this field is not done in a classroom, but are instead laboratory studies. In other words, these laboratory studies do not

reflect reality per se. Moreover, interventions tend to be relatively short and focus only on one or two grammatical features (e.g. Ellis, Loewen and Erlam, 2009; Nazari, 2013; Scott, 1990). On top of that the research methodologies sometimes lean more towards either explicit or implicit teaching methods and therefore the outcomes (and therefore also the implications in the classroom) are still questionable (see Section 1). For example, implicit instruction does not provide the learners with metalinguistic (and thus explicit) knowledge. Research testing metalinguistic knowledge are therefore methodologically biased towards explicit teaching methods. Moreover, metalinguistic knowledge is not the only factor in measuring language proficiency, and studies that only use metalinguistic knowledge as a proficiency measure do not show the whole proficiency of the participants. On top of that, there is a surprising lack of longitudinal studies that looks to all the results of both types of instruction (Piggott, 2016).

Therefore, the aim of this study was to investigate the effect of implicit (excluding grammar teaching) and explicit (including grammar teaching) instruction in a classroom setting. This study used the data collected by Piggott (in preparation) to compare the effect of implicit and explicit instruction after a two-year period. Piggott's study followed two groups of students for two years, an intervention group with implicit grammar instruction, and a control group receiving explicit grammar instruction, to find out if there were differences between them. The groups received tests of oral and writing proficiency at the end of their first year and the end of their second year. The current study aims to investigate if there are differences in lexical and grammatical accuracy in English writing after a two-year period of intervention.

This thesis is structured as follows. In Section 1, the differences between implicit and explicit knowledge will be discussed. Moreover, the theoretical debate on the effectiveness of implicit and explicit instruction will be addressed. In addition, Section 1 will go into detail about acquiring an L2 in minimal-exposure settings. Section 1 will also provide an answer as

to why writing is taken as a measure of language proficiency. This will lead to the research question and hypothesis that are discussed in section 2. Section 3 outlines the method, materials and explains the data analysis. Section 4 presents the results, which will be discussed along the lines of previous research in section 5, along with the limitations of this study and suggestions for further research. Section 6 presents conclusions from this study.

1. Theoretical framework

1.1 Explicit and implicit knowledge

There are two positions on what linguistic knowledge is. The first one is based on the work of Chomsky (1976). Chomsky claims that linguistic competence is dependent on a biological ability to acquire languages, known as Universal Grammar. This mentalist view of language is largely restricted to grammar, as it emphasises “the contribution of a complex and highly specified language module in the mind of the learner” (Ellis, 2005).

The connectionist position on the other hand, does not see language learning as cognitively different from any other form of learning. They assume language learning draws on a general mental capacity for storing lexical, phonological, and grammatical sequences correspondingly to their distributional properties in input. Linguistic knowledge, in their view, arises when learners acquire new sequences and restructure the ones they already acquired. Over time the learners will acquire the underlying patterns that resemble rules, and this learning is driven mostly by input (Ellis, 2005).

Though these positions are often viewed as opposite, there is one thing that they have in common. Both positions argue that linguistic competence consists of *implicit knowledge*. The main difference distinguishing implicit and explicit knowledge is “awareness” or “consciousness”.

Explicit knowledge is seen as an intentional and conscious learning process, something Gregg (1989) called “knowing how” and Chomsky (1976) called “cognizing”. In other words, explicit knowledge requires the learner to have metalinguistic knowledge of the grammar (N. Ellis, 1994; Kidd, 1992; Norris & Ortega, 2000). According to Ellis (2005), explicit knowledge means that the learner is consciously aware of linguistic norms, has declarative knowledge of grammatical rules and fragments. The learner is thus also capable of verbalising the linguistic rules. Ellis also mentions that explicit knowledge is mostly inconsistent and anomalous knowledge, which is supported by Ullman (2001). Ullman (2001) argues that the declarative memory system seems to be specialised for learning arbitrarily related information.

Implicit knowledge on the other hand, is defined as a learning process that takes place unconsciously, without awareness. In other words, it is what language learners know intuitively, also called “knowing that” by Gregg (1989). Unlike explicit knowledge, implicit knowledge is knowledge that learners are not aware of and that they cannot put into words (Masters, 1992). Implicit knowledge is variable but systematic knowledge, and is not verbalizable by the learner. The learner has procedural knowledge of rules and fragments (Ellis, 2005). Procedural knowledge is generally associated with unconsciously learning skills or habits, and may be specialised for computing sequences (Ullman, 2001). This strengthens the claim made by Ellis (2005) that implicit knowledge is systematic.

One of the key proponents of implicit learning is Stephen Krashen. Krashen (1982) argues that there is a difference between acquisition and learning in second language (L2) learning. Language acquisition is, according to him, like children picking up their first language (L1). Language acquisition is therefore mostly unconsciously acquiring a language, whereas learning on the other hand contains conscious knowledge of an L2. Language

acquisition can thus be described as implicit learning, and language learning as explicit learning.

1.2 Explicit and implicit instruction

Krashen (1982) argues that students do not need to learn grammar rules, or at least no complicated grammar rules, only rules like past tense -ed, but instead need comprehensible input. That is to say, input that is within the zone of proximal development (ZPD) of the learner. This is the area between the learner's current developmental level and the level he or she can reach through guidance (Vygotsky, 1978). By providing the students with comprehensible input they gain implicit knowledge of the language and it helps them to learn how to use the language in a naturalistic setting (Krashen, 1982). According to Krashen (1982) explicit knowledge only functions as a monitor for actual language production, but it does not help learners to acquire a language. Additionally, Schwartz (1993) argues that the knowledge that is gained from explicit language instruction does not lead to linguistic proficiency, which is needed to communicate in a foreign language. The implicit teaching method therefore only presents grammatical structures in a meaningful context (e.g. a naturalistic setting) to students, so that language acquisition happens mostly naturally (Scott, 1990). Some researchers also claim that explicit instruction can cause a disruption of language fluency, and is therefore unpractical in communicative interaction (DeKeyser & Juffs, 2005; Meulenberg, 2017). These theories seem to suggest that implicit instruction should have better learning outcomes than explicit instruction.

Some authors make claims for both explicit and implicit instruction. De Graaff and Housen (2009) review a large body of research and based on that they make three claims, of which two are in favour of explicit instruction, namely 1) instruction can help learners

develop faster, if timed properly and 2) learners that receive grammar instruction reach a higher level of language proficiency. The third claim however is in favour of implicit instruction. The authors argue that for certain aspects of language instruction seems incapable of overcoming “the “natural” route of acquisition” (p.728), as they seem to be constrained by natural processing mechanisms or universal principles of language. This last claim is in line with Krashen (1982), who argues that the only way to acquire grammar is naturally, and explicit grammar teaching does not help learners develop their language acquisition.

To test which form of instruction works better, multiple studies have been done into the effectiveness of explicit grammar instruction. Norris and Ortega (2001) have written a review article on the effectiveness of instruction types, in which they found that the average effect sizes of FonF and FonFS instruction were both larger than the average effect size of FonM instruction. In other words, the reviewed articles showed that FonF and FonFS yield better results than FonM. Though there was no significant difference between the effect sizes of FonF and FonFS, this does seem to indicate that explicit grammar teaching (FonFS) results in more language acquisition than implicit grammar teaching (FonM). However, Norris and Ortega (2001) did point out that most of the studies they investigated tested explicit knowledge, not communicative knowledge and are therefore biased towards explicit grammar instruction. They also point out that the studies that tested implicit instruction were often not as well set up as the studies that tested explicit instruction. The studies testing implicit instruction were often more restricted and much more one-sided than the studies testing explicit instruction. A meta-analysis conducted by Spada and Tomita (2010) on the difference in language acquisition between implicit and explicit instruction also argues in favour of explicit instruction. They found that the effect sizes of explicit instruction were larger than those of implicit instruction. On top of that, Spada and Lightbown (2008) gave an overview of studies that reinforce the claim that explicit instruction results in higher language learning

outcomes. Lastly, DeKeyser (2003) suggested in his review of studies, that structures that are difficult to learn by means of simple association, for example arbitrary form-meaning connections, require more explicit instruction as they are not easily picked up implicitly.

The previously mentioned overview studies all show that explicit instruction yields better results than implicit instruction. When considering individual studies, there are a lot of researchers arguing for explicit instruction as well. DeKeyser (2005) investigated aspects like syntactic, morphological and lexical errors. He has found that it is beneficial the comprehension of sentence meaning if learners receive much instruction and training in recognising morphology, because “without such practice they tend to gloss over the morphology (especially students of a morphology-poor language like English acquiring a relatively morphology-rich language like Spanish)” (p.7). He argues that without training in morphology learners tend to ignore the morphological cues to sentence meaning. DeKeyser (2005) therefore advocates explicit grammar instruction.

Another study into the effectiveness of different kinds of grammar instruction, investigated how learners of an L2 learn simple and complex rules under implicit, incidental and instructed conditions (Robinson, 1996). This study found that learners that receive grammar instruction produced better results in learning to verbalise simple rules than learners that did not receive instruction. In this study the subjects had to write down the rule that is illustrated by the sentences. One group received instruction on these grammatical rules, and the other did not. A study by Ellis, Loewen and Erlam (2009) concluded that students that received explicit corrective feedback scored better on using the targeted grammatical aspect (past tense -ed) than students that received implicit corrective feedback. A study done by Nazari (2013) found that the group that received explicit instruction outperformed the group with implicit instruction on the use of the present perfect. This was measured with a writing and a grammar task. Nazari (2013) therefore supports the claim that explicit instruction

results in more proficiency gain than implicit instruction. Lastly, studies by Scott (1989) and Scott (1990) arrived at the conclusion that the grammatical outcomes are significantly better if the learners received explicit grammar instruction, measured by using a pre-test and then a post-test. The pre-tests and the post-tests both consisted of five multiple choice items, ten fill-in-the-blank items and five open answer items. In between the two tests the learners received either implicit or explicit instruction.

Just as for explicit teaching, there is also some research that argues an implicit teaching method is more effective than an explicit teaching method (Rousse-Malpat and Verspoor, 2012; Ke and Luo, 2017; Meulenberg, 2017). They argue for a FonM approach, without giving attention to linguistic forms. However, the number of studies that argue for greater effectiveness of implicit instruction over explicit instruction is surprisingly small. Rousse-Malpat and Verspoor (2012) compared the oral fluency of two groups of high school students, one receiving FonF and the other receiving FonM instruction. The results were measured after two years of instruction. The groups were compared on general proficiency and grammatical accuracy. The study shows that the FonM group scored higher on oral proficiency than the FonF group, and scored the same as the FonF on grammatical accuracy. Ke and Luo (2017) also argued in favour of implicit instruction. They analysed data from a free writing task in Piggott's (in preparation) project, and found that the implicit group produces longer texts than the explicit group. Ke and Luo (2017) argued that this showed the implicit group was more fluent in writing, though they did not find a difference between the groups in grammatical accuracy. Meulenberg (2017) investigated the results of an oral narrative elicitation task in Piggott's (in preparation) project. Students received holistic scores based on vocabulary, grammar, fluency, and functional adequacy. She argued that the results of the study showed that the implicit group scores better on vocabulary than the explicit group.

Other studies provide evidence that different aspects of grammar are almost impossible to learn via grammar instruction, such as aspect (Ayoun, 2004), gender (Leeman, 2003) and articles (Master, 1997). Pica (1994) also argued that some linguistic features should be taught explicitly and others should be acquired naturally. She claims that this has to do with the readiness of the learner to acquire this construct, and with the complexity of the feature itself. Especially grammatical aspects that are close to the learner's L1 should be pointed out, as the learner may not notice them otherwise. Features that do not have an equivalent in the L1, but are very common in the L2 also require extra attention. Cook (2001) found that students that score high academically, tended to benefit more from an analytic teaching style (explicit) than weaker students. On the other hand, however, Morgan-Short, Faretta-Stutenberg, Brill-Schuetz, Carpenter & Wong (2014) argued that at early stages of language acquisition there is a positive relationship between declarative knowledge and syntactic development, thus advocating explicit instruction in earlier stages. In later learning stages learners would be able to make more use of their procedural knowledge, and therefore implicit instruction would yield good results.

There are also studies that argue that neither explicit nor implicit instruction is better than the other. Macaro and Masterman (2006), for example, investigated differences in language outcomes between a group that had received a lot of explicit instruction and a group that had received no explicit instruction at all. They found that the group that received explicit instruction did better on grammar tests than the group that received no instruction, but not on free composition and translation tasks. This ties in with Krashen (1982), who argues that explicit knowledge is not necessarily useful in communicative situations like writing. In the same way, Reinders and Ellis (2009) have found no difference between groups when comparing a group that received instruction to notice negative adverbs in enriched

input (explicit) and a group that did not receive this instruction and only received the enriched input.

A lot of research that advocates implicit instruction, mentions the benefits for language acquisition of studying abroad for a while (e.g. DeKeyser, 2007; Dwyer & Peters, 2004; Llanes & Serano, 2014). This could be because studying abroad causes the learner to have more input and interaction with the language, thus resulting in more positive learning outcomes. This argument is often used to favour implicit instruction, as it shows the results of learning a language in a naturalistic setting with a communicatively meaningful context. However, the current study only focusses on a classroom setting, which suggests the following question: Is it possible to acquire an L2 in a minimal-exposure setting?

1.3 Acquiring an L2 in minimal-exposure settings

According to Krashen (1982) a necessity for both learning and acquisition is that the learner should have access to meaningful and comprehensible input. He argued that the classroom can be important for learning or acquiring an L2, but only if the classroom provides the learner with enough comprehensible input, and when the classroom is the only source of language for the learner. In other words, he argued that other sources of language learning would be better than learning a language in the classroom, but that classroom input is still better than no input at all. Unfortunately, the input that students receive in a classroom is limited. There is only a narrow range of discourse that is used in the classroom (Krashen, 1982). Also, it is debatable if the amount of input received in a classroom is enough to label it as rich input, especially without exposure to the L2 outside of the classroom (Brandl, 2008).

A study comparing the effectiveness of formal classroom education and naturalistic settings for acquiring an L2 was done by Pica (1983). She conducted a study investigating the

production of grammatical morphology by 18 adult native speakers of Spanish under three different English L2-conditions: an instruction only setting, a naturalistic setting, and a mixed setting. In result, all participants produced too many morphemes in contexts where they should not use them, and omitted morphemes where they should have used them. The former however, was done significantly more by the 'instruction only' group, whereas the latter was significantly more common in the 'naturalistic' group. Pica (1983) also noted that the 'naturalistic' group tended to omit plural -s ending on nouns when there was a quantifier before the noun, which differed significantly from the other two groups. Despite these differences in production errors though, there was still a statistically high correlation between the three groups regarding rank order accuracy for grammatical morphology. Pica concluded that that a different amount of exposure to English as an L2 does not significantly change the accuracy order of grammatical morpheme production. However, it does seem to affect the strategies learners use in producing the target feature.

In a more recent study, Dahl and Vulchanova (2014) investigated if naturalistic acquisition of English vocabulary in an early language classroom is possible. They used a control group following regular instruction and an intervention group that received increased naturalistic input over a one-year period. This increased input entailed extensive English as L2 use by the teacher during English class, but also during morning meetings and for simple instructions and classroom management. They found that even with a limited increase (from 35 minutes to 70 minutes) in the amount and density of exposure to English (1) early start L2 programs do not guarantee vocabulary development in the first year, but (2) that a focus on increased exposure to the L2 can lead to a significant increase in receptive vocabulary comprehension after 8 months already and (3) that even with modest input, learners in such an early-start L2 program can display vocabulary acquisition partially comparable to that of younger native speakers.

A study by Winitz (1996) investigated the difference between a group which received implicit instruction for Spanish, and a group which received explicit instruction. For the implicit group all the communication in the classroom was in English. Students acquired vocabulary by linking words to pictures instead of translations and using Total Physical Response activities. They had class three times a week and they had to listen to an audio recording at least once a week. The explicit group was often taught in English, and most classroom communication was in English as well. Unlike the implicit group, they were taught grammar rules. The explicit group had class four times a week. Eventually both groups had to do a grammaticality judgement test, in which they could read each sentence only once and could only spend a short time on each sentence. Results showed that the implicit group significantly outperformed the explicit group. Since the implicit group spent more time using the language, it could be argued that implicit instruction may be very useful if there is a decent amount of exposure.

1.4 Writing as a measure of proficiency and error analysis

Several studies have investigated the effect of implicit and explicit grammar instruction on writing proficiency. Though a lot of studies (e.g. Norris & Ortega, 2000; Spada and Lightbown; 2008, Spada and Tomita, 2010) found that an explicit focus on L2 grammar promotes language acquisition, Andringa, Glopper and Hacquebord (2011) argued that research comparing explicit and implicit language acquisition generally fall short in comparability. They argued that performance should be compared for both groups while also controlling for the amount of exposure. Without controlling for exposure time to a target structure the two groups are not comparable. They also noted that claims for the superiority of explicit instruction are mainly based on controlled production, and not on free response

tasks. The evidence that explicit instruction is superior on free response tasks as well is nothing but circumstantial. The study performed by Andringa et al. (2011) therefore investigated the effect of implicit and explicit instruction on learners' free written response task performance. They investigated how successful explicit instruction is in promoting the use of grammatical features in free response tasks compared to implicit instruction. To avoid a bias towards either type of instruction they controlled the amount of input so that both groups received the exact same amount. The only difference was the degree of explicitness in presentation of the target structures. They found that explicit instruction can be more effective than implicit instruction when learners received the same amount of input. However, they noted that it does depend on the nature of the target structure and on the learner's L1. This is in line with De Graaff (1997), who found that some features of certain structures are too complex to be instructed implicitly, such as syntactic structure. For syntactic structure implicit instruction seemed to be working better (De Graaff, 1997).

The implicit group in Piggott's research spent 14% more time on writing than the explicit group in the first year, whereas they only spent 5% more time on speaking than the explicit group (Abrahamse, 2016). However, in the second year the intervention group only spent 2% more time on writing, whereas the difference spent on speaking is about 12% (Schleijpen, 2017). As both speaking and writing are productive skills, both could have been chosen as the subject of this study. The reason that writing was chosen as the focus, is because writing allows the students more time to think about their answer than speaking (Emig, 1977), therefore allowing the explicit group to make more use of the grammar rules that they have learned and possibly showing a larger difference than can be seen in speaking. Thus, it is expected that the largest differences in proficiency might be findable in writing.

To measure this proficiency, the grammatical and lexical accuracy will be tested.

Grammatical and lexical accuracy is an important aspect of measuring proficiency in learning

a foreign language (Housen & Kuiken, 2009; Polio, 1997). A possible manner of measuring accuracy is an error analysis. Error analysis can focus on both lexical and grammatical errors (Burt, 1975; James, 2013; Verspoor, Schmid & Xu, 2012). Error analysis can be an important tool to determine the level a learner is on at the moment (Corder, 1967). Verspoor et al. (2012) have developed a method to analyse errors in learners' writing. The authors underline that beginning learners make more lexical errors than more advanced learners, but that grammar errors are relatively low in both groups. The frequency of verb form errors decreases the higher the level of the learners, but the frequency of verb use errors increases first, only to decrease later. As for lexical proficiency: In the lower levels, the number of lexical errors is relatively high. Most of the lexical errors made are due to transfer from the L1. When going up in level the frequency of lexical errors significantly decreases. Even so, the number of lexical errors when compared to grammatical errors is still very high.

Of course, accuracy is not the only way to measure proficiency. Complexity and fluency are also important components of language proficiency (Ellis, 2003; 2008; Housen & Kuiken, 2009; Ortega, 2003). This paper in no way tries to give more weight to accuracy as a measure of proficiency over complexity and fluency. However, it should be considered that "assessment practices at school, both formative and summative, heavily rely on counting errors and scoring them based on various types of 'gravity'" (Pallotti, 2010, p. 159). On top of that, Corder (1967) argues that errors provide a useful insight into the process of acquiring an L2, as they act as possible indicators of the proficiency level the learner is likely to have reached. Since accuracy plays an important role in language assessment, it is therefore used as an indicator of proficiency in the current study.

1.5 Focus of this study

This study will follow up on Van der Ploeg (2016), a study investigating the effect of explicit and implicit instruction on error rates after one year of instruction. . She reports that there were no differences between the explicit group and the implicit group in error rates. However, this result might be explained by the fact that during the measurement both groups only had one year of education. It could also be because she only examined a small portion of the data from year 1. The present study will therefore focus on the results of the implicit group and the explicit group after two years of education and will take the whole sample of students into account. Furthermore, the focus on lexical and grammatical accuracy in this study is relevant for Piggott's research, as her research is trying to determine the results of implicit or explicit grammar instruction on language proficiency.

In short, several things can be concluded. First of all, the opinions are divided on whether explicit or implicit grammar instruction yields the best results. There has however, also not been a lot of longitudinal studies investigating the effects of implicit grammar instruction. Most of the studies are short-term. Secondly, most research done on implicit and explicit grammar instruction focusses on only one grammatical feature. Therefore, a focus on multiple grammar aspects is necessary, such as measuring grammatical accuracy. Lastly, accuracy is measured by using an error analysis, which includes both grammatical and lexical accuracy. This study investigates the effects of a longitudinal study on implicit and explicit grammar instruction, and will focus on multiple grammatical and lexical aspects, using error analysis to determine the difference between the two groups.

2. Research Questions and Hypotheses

To investigate the effects of implicit and explicit grammar instruction on EFL writing proficiency in the Netherlands, the following research question will be addressed in this paper, including the following sub-questions:

Research question: What is the effect of implicit grammar teaching on writing accuracy of Dutch secondary school students?

Sub-question 1: Are there differences in error rates and error types made in writing between the group with explicit grammar instruction and the group with implicit grammar instruction?

Hypothesis: The implicit group has spent more time practicing writing, but has had no grammatical instruction on subjects like sentence structure, verb use and verb form. It can be argued that the implicit group will make fewer lexical errors, as they have spent less time on grammar, and therefore more time on all the other skills. This gives the implicit group more practice with vocabulary in general, and therefore they are likely to make fewer lexical errors (Meulenberg, 2017). The implicit group has had more practice with communicative skills, therefore they are expected to perform better in getting their message across. However, that does not entail that they make fewer grammatical errors as the explicit group. It is more likely that the explicit group, with their explicit focus on learning the grammar rules, will make fewer errors.

Sub-question 2: Is there a differential effect of implicit instruction for writing accuracy across learner levels?

Hypothesis: According to multiple studies (e.g. Macaro and Masterman, 2006; DeKeyser, 2005; Robinson, 1996; Norris and Ortega, 2001; Spada and Tomita, 2010; Nazari, 2013) a group with explicit grammar instruction outperforms a group without instruction on grammar. I expect to find better scores for the explicit group on all grammatically related categories of

the error analysis. There might be differences in errors made depending on which educational level the groups are in.

Research done by Harteveld (2017), who also investigated the data from Piggott's (in preparation) study, pointed out that in comparing the different educational levels, both the *mavo* students and the *vwo* students showed to benefit more from explicit instruction than the *havo* students. The latter is supported by Cook (2001), who found that stronger students score better than weaker students when an analytic teaching methodology is used. A study performed by Morgan-Short et al. (2014) found that learners in the early stages of language acquisition rely heavily on their declarative knowledge, and in later stages learners start to rely more on their procedural memory. It can thus be expected that the lower the language level of the learner, the more the learners benefit from an explicit teaching approach. These results are in line with those of Carpenter (2008) and Carpenter, Morgan-Short & Ullman (2009) who found that learners with low procedural memory tend to switch to other language learning strategies to acquire an L2, whereas learners with high procedural memory rely heavily on their procedural memory. However, Carpenter (2008) suggested that for learners with mid-range procedural memory, the procedural memory may have been strong enough to interfere with other language learning strategies, but not strong enough to lead to successful development. Based on these findings it is expected that overall the difference in grammatical errors made between explicit and implicit instruction will be higher on *mavo* and *vwo* level than on *havo* level.

As for Lexical errors, because the implicit group has had more exposure time to writing, speaking, listening and reading, they are expected to have a better vocabulary than the explicit group (Meulenberg, 2017). That can however, also lead to more Lexical errors, as they try to use a bigger range of vocabulary. It is therefore expected that on all levels of education the implicit group and explicit group will score equal on Lexical Errors. This is

because the implicit group may have a better vocabulary than the explicit group (Meulenberg, 2017), but they possibly also make more mistakes due to the complexity of their texts.

Hypothesis main research question: The effects of implicit and explicit grammar instruction are expected to differ depending on the educational level. The difference in grammatical errors made between explicit and implicit instruction will most likely be higher on *mavo* and *vwo* level than on *havo* level (Cook, 2001; Hartevelde, 2017; Morgan-Short et al., 2014; Carpenter, 2008; Carpenter et al., 2009). The results will also depend on the type of error that is looked at. The explicit group is expected to outperform the implicit group on all grammatical categories, but the implicit group and explicit will most likely score equally well on vocabulary (Meulenberg, 2017).

3. Methodology

For this current study, data on writing proficiency was analysed, as a part of a longitudinal study done by Piggott (in preparation). The longitudinal study focussed on the effects of implicit and explicit grammar instruction for learning English as a foreign language in Dutch secondary education.

3.1 Participants

Two cohorts of students were followed for two years. These cohorts consisted of a total of 484 students who all went to the same school in Overijssel in the Netherlands and had Dutch as a first language. There was a total of 18 classes in the second year of the study, nine in the explicit group and nine in the implicit group. The explicit group started in schoolyear 2014/2015 with 245 students and the implicit group in the schoolyear 2015/2016 with 239

students. This study focussed on the second year of education received for both groups. This means that the data analysed is from the schoolyear 2015/2016 for the explicit group and 2016/2017 for the implicit group. Furthermore, secondary school in the Netherlands is divided into different levels of education, each of them preparing students for a different type of higher education. All levels of education were represented in the data. In the explicit group, there were two *mavo* (vocational education) classes, four *havo* (senior general secondary education) classes and three *vwo* (pre-university education) classes in the second year. In the implicit group there were three *mavo* classes, four *havo* classes and two *vwo* classes the second year.

Table 1: Number of participants per level, sorted by group

| | N explicit group | N implicit group |
|--------------|-------------------------|-------------------------|
| <i>mavo</i> | 51 | 46 |
| <i>havo</i> | 95 | 96 |
| <i>vwo</i> | 82 | 60 |
| Total | 228 | 202 |

3.2 Teaching approach

Both the explicit group and the implicit group used the course book *More!* (Cambridge University Press, 2008). This textbook is aimed at teaching English as a foreign language to lower secondary students. Whereas the explicit group received English education from a communicative language approach with explicit grammar instruction integrated in the lessons, the implicit group the grammar exercises were removed from the course book and the teachers did not instruct grammar. The time that the implicit group did not spend on

grammar, was used to incorporate extra exercises in reading, writing, listening and speaking. At the end of the first year of teaching, the teachers were interviewed to determine the difference in amount of time spent on different class activities. In the first year the explicit group spent a total of 35% of the time on grammar, 23% on reading, 16% on listening, 15% on speaking and 11% on writing. The implicit group on the other hand has spent only 3% on grammar, 30% on reading, 22% on listening, 20% on speaking and 25% on writing (Abrahamse, 2016). At the end of the second year the same was done. Results show that the explicit group spent 18,2% on grammar, 21,7% on reading, 16,7% on listening, 6,7% on speaking, 10% on writing and 26,7% on vocabulary. The implicit group only spent 1% of the time on grammar instruction, 24% on reading, 16% on listening, 19% on speaking, 12% on writing and 28% on vocabulary (Schleijpen, 2017). A large difference was noticeable between the time spent on grammar during class time, compared to the time spent on the four skills: reading, listening, speaking and writing. This showed that because the implicit group spent less time on grammar, they had more time to work on the four other skills.

3.3 Instruments

For this study, data was used from a writing assignment that was administered at the end of the second schoolyear. In the assignment students had to write a letter to their best friend about their holiday (see Appendix A). They had to write a minimum of 140 words, but there were no requirements regarding maximum text length. All writing assignments were typed on the computer afterwards, and were made anonymous.

3.4 Error analysis

To analyse the errors made by students, an adapted version of the error analysis grid as developed by Van der Ploeg (2016), based on Verspoor et al. (2012), was used. Verspoor et al. (2012) used an error analysis consisting of 31 different types of errors, divided into eight categories. The adapted version can be seen in Table 2. All the examples from Table 2 have been chosen from the checked writing assignments. The error analysis was carried out by the author, and was checked by Piggott to agree with each other.

Table 2 shows which kind of mistakes fall under which category, however, in the actual analysis the category Lexical Errors was identified as an overall category, and was not distinguished per subcategory. A reason for this adaptation is that Verspoor and al. (2012) mentioned in their article that "the numbers [of errors] were too small and there was too much variation to provide any meaningful results" (p. 253-254). By taking Lexical Errors as an overall category, there was a higher number of errors per category, and therefore more meaningful results were produced. Also, the category *missing word* was added, as there were errors made as well that did not fit into any of the categories. This was usually because a word is omitted in the text, as in the example *When we back to home* (*went* is missing). Therefore, this study also included the category *missing word*. Spelling errors were disregarded in the error analysis.

Some errors were hard to categorise, as they fell under multiple categories. For this it was necessary to reach an agreement with Piggott. An example of difficulty is *Can't wait to flight back*. *Can't wait to flight back* is perceived as a Lexical Error, and not as a Verb Form error, as the word *flight* is a noun and not a verb. Therefore, it would be illogical to perceive it as a Verb Form error. Also, if the spelling was so incomprehensible it changed the meaning of the word (or the word could not even be deciphered), it was also counted under Lexical

Errors. Lastly, if both Verb Use and Verb Form were made such as *We going yesterday*, the error was counted as a Verb Use error.

There were no requirements for length in the writing assignment. This resulted in some texts being longer than others. To be able to generalise the results, this paper therefore used the relative frequency of errors (number of errors / number of words).

Table 2: Error model by Van der Ploeg (2016) with examples from the writing assignments, adapted from Verspoor et al. (2012).

| Error Type | Remarks | Examples |
|--|---|---|
| <i>Lexical Errors</i> | | |
| 1. Dutch word | | Italië (Italy), luxe (luxurious), glijbanen (slides) |
| 2. Literal translation of L1 word, wrong word based on L1 or half English half Dutch | Aggregation of three of Verspoor et al.'s categories. | Attraction park (amusement park), rided (drove), a great (large) television |
| 3. Wrong preposition based on L1 | | In the dinner room <u>from</u> the hotel, we came <u>with</u> an airplane |
| 4. Use of an incorrect pronoun, based on L1 | | In the garden we have a jacuzzi. <u>He</u> is very nice. |
| 5. Wrong word not based on L1 | | Can't wait to <u>flight</u> back |
| <i>Word Order</i> | | |
| 1. Dutch word order or confusion <i>be/have</i> based on L1, Dutch constructions or odd word order based on L1 | Aggregation of three of Verspoor et al.'s categories. | We are going Friday away, We are been, In the car was it very warm |
| <i>Verb phrase</i> | | |
| 1. Verb form | | Last day we goes |
| 2. Verb use | | I come here with the airplane (yesterday) |
| <i>Missing word</i> | New category. | When we back to home |

The results were analysed by means of SPSS. An independent samples t-test was performed to determine the difference in (total) error rates between the implicit and the explicit group. To pinpoint possible interactions with Educational Level, a Mixed ANOVA was performed with Level and Group as between-subject variables and Error Type as a within-subject variable.

4. Results

To get an overview of the data, first the totals per group are presented in Table 3.

Table 3: Total frequencies per Group. L = Lexical Errors; WO = Word order; MW = Missing Word; VU = Verb Use; VF = Verb Form

| | N | Word tokens | Total error | L | WO | MW | VU | VF |
|----------|-----|-------------|-------------|------|-----|-----|-----|-----|
| Explicit | 228 | 39423 | 2044 | 952 | 270 | 141 | 526 | 155 |
| Implicit | 202 | 37530 | 2578 | 1177 | 298 | 108 | 621 | 374 |

Important to note here is that there is a different number of participants in the explicit group compared to the implicit group. To give a clear overview of the differences between the two groups, in Table 4 the totals are divided by the number of participants in each Group.

Table 4: Totals per student per Group; N(Explicit) = 228; N(Implicit) = 202; SD = standard deviation

| | Tokens | Total | L | WO | MW | VU | VF |
|----------|-------------------|-----------------|----------------|----------------|----------------|----------------|----------------|
| Explicit | 172.91 (46.04) | 8.96 (5.12) | 4.18 (2.83) | 1.18 (1.29) | 0.62 (0.98) | 2.31 (2.32) | 0.68 (1.01) |
| Implicit | 185.79 (51.36) | 12.76 (7.53) | 5.83 (4.42) | 1.48 (1.49) | 0.53 (0.79) | 3.07 (2.60) | 1.85 (1.66) |

Noticeable is that the implicit group wrote more tokens per student than the explicit group, as is made visible in Figure 1. An independent samples t-test determined that the difference between the groups is significant ($t(428) = -2.74, p = .006$). Therefore, before continuing the results were normalised by calculating error rates per 100 words, as can be seen in Table 5. This ensured comparability, even though the groups differed in the number of tokens written.

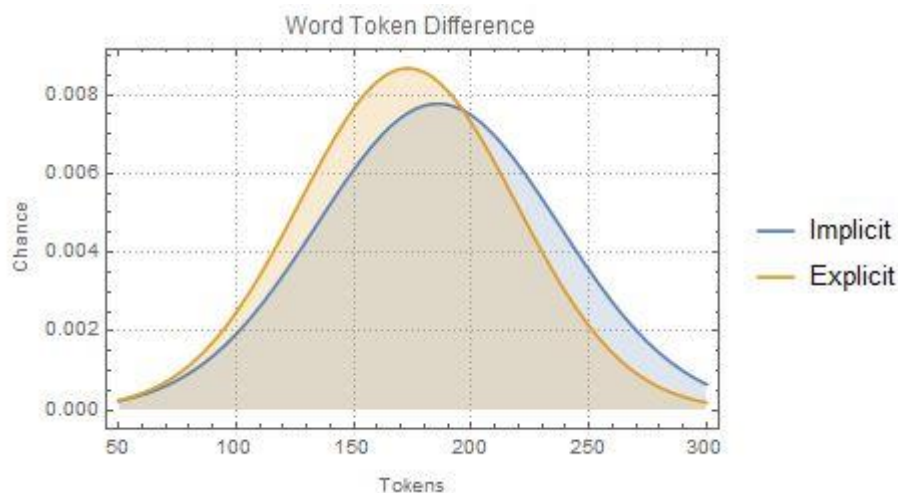


Figure 1: Word token difference per students between the Explicit group and the Implicit group

Table 5: Normalised totals per student per Group; Mean relative number of errors per 100 tokens

| | Total | L | WO | MW | VU | VF |
|----------|----------------|----------------|----------------|----------------|----------------|----------------|
| Explicit | 5.32 (5.04) | 2.48 (1.75) | 0.70 (0.74) | 0.37 (0.59) | 1.36 (1.36) | 0.41 (0.63) |
| Implicit | 7.09 (4.26) | 3.26 (2.58) | 0.80 (0.79) | 0.30 (0.44) | 1.72 (1.50) | 1.00 (0.91) |

Another independent samples t-test was done with the normalised results in order to determine if there is an overall difference in writing accuracy per Error Type between Groups. This showed no significant differences for the categories Missing Word ($p = .163$) and Word Order ($p = .164$) in the overall analysis. The implicit Group made significantly more errors in the categories Lexical Errors ($t(428) = -4.99, p < .001$), Verb Use ($t(428) = -2.62, p = .009$) and Verb Form ($t(428) = -8.00, p < .001$).

A Mixed ANOVA was performed, with Error Type as the within-subject variable and Level and Group as the between-subject variables. The Mixed ANOVA was used in order to split the data into different educational levels, to determine if there were differences between educational Levels and between the implicit and explicit Group within those educational Levels. The results showed that there was a main effect of Group ($F(1,424) = 29.22, p <$

.001). The implicit group was outperformed by the explicit group. There was also a significant main effect of Error Type ($F(4,1696) = 336.24, p < .001$) indicating that some errors were more frequent than others. Post hoc comparisons for Error Type, with a Bonferroni correction, showed that all pair-wise differences between the five error categories are significant ($p < .001$), except for the difference between Word Order and Verb Form ($p = 1.000$). Lexical Error was the most frequently made error, followed by Verb Use, Word Order, Verb Form and Missing Word respectively. The main effect of Level ($F(2,424) = 31.54, p < .001$) was significant as well. A post hoc comparison for Level, with a Bonferroni correction, showed that overall *VWO* scored significantly better than *HAVO* and *MAVO* (both $p < .001$) and *HAVO* scored significantly better than *MAVO* ($p < .001$).

The results also showed that there was a significant interaction between Error Type and Group ($F(4,1696) = 8.03, p < .001$) and a significant interaction between Error Type and Level ($F(8,1696) = 14.47, p < .001$). There was also a significant three-way interaction between Error Type, Level and Group ($F(8,1696) = 2.32, p < .018$). These significant interactions indicated that differences between the groups in the frequencies of different Error Types vary per educational Level. Therefore, a series of post hoc tests were performed for each educational Level.

To unpack the interaction, several post-hoc t-tests were performed comparing rates of different Errors Types per educational Level. What follows are three tables split by educational level. In Table 6 the results of the *VWO*-Level are presented, in Table 7 those of *HAVO*-Level and in Table 8 those of *MAVO*-Level.

Table 6: Relative number of errors for VWO organised per Error Type; N(Explicit) = 82; N(Implicit) = 60; N(Total) = 142

| | Total | L | WO | MW | VU | VF |
|----------|----------------|----------------|----------------|----------------|----------------|----------------|
| Explicit | 3.95 (2.13) | 1.81 (1.40) | 0.52 (0.66) | 0.34 (0.48) | 0.99 (0.87) | 0.29 (0.54) |
| Implicit | 5.32 (2.58) | 2.13 (1.26) | 0.72 (0.62) | 0.25 (0.43) | 1.44 (1.25) | 0.77 (0.66) |
| Total | 4.59 (2.41) | 1.95 (1.35) | 0.60 (0.65) | 0.30 (0.46) | 1.18 (1.07) | 0.49 (0.64) |

In the VWO group the explicit group significantly outperformed the implicit group in the categories Verb use ($t(140) = -2.51, p = .013$) and Verb Form ($t(140) = -4.81, p < .001$). There were no differences in the rate of Lexical Errors ($p = .159$), Word Order ($p = .074$) and Missing Word ($p = .267$).

Table 7: Relative number of errors for HAVO organised per Error Type; N(Explicit) = 95; N(Implicit) = 96; N(Total) = 191

| | Total | L | WO | MW | VU | VF |
|----------|----------------|----------------|----------------|----------------|----------------|----------------|
| Explicit | 5.78 (2.96) | 2.45 (1.53) | 0.78 (0.76) | 0.37 (0.52) | 1.74 (1.60) | 0.45 (0.63) |
| Implicit | 6.92 (3.99) | 3.34 (2.54) | 0.71 (0.77) | 0.25 (0.36) | 1.60 (1.45) | 1.02 (0.95) |
| Total | 6.32 (3.55) | 2.89 (2.14) | 0.75 (0.76) | 0.31 (0.45) | 1.67 (1.52) | 0.74 (0.86) |

For HAVO the explicit group significantly outperformed the implicit group in the categories Lexical Errors ($t(189) = -2.94, p = .004$) and Verb Form ($t(189) = -4.89, p < .001$). However, in Word Order ($p = .551$), Missing Word ($p = .079$) and Verb Use ($p = .532$) the differences were not significant.

Table 8: Relative number of errors for MAVO organised per Error Type; N(Explicit) = 51; N(Implicit) = 46; N(Total) = 97

| | Total | L | WO | MW | VU | VF |
|----------|----------------|----------------|----------------|----------------|----------------|----------------|
| Explicit | 6.68 (3.57) | 3.63 (2.05) | 0.84 (0.80) | 0.43 (0.85) | 1.25 (1.34) | 0.53 (0.72) |
| Implicit | 9.75 (5.22) | 4.56 (3.24) | 1.11 (0.95) | 0.46 (0.55) | 2.35 (1.75) | 1.27 (1.02) |
| Total | 8.14 (4.67) | 4.07 (2.71) | 0.97 (0.88) | 0.45 (0.72) | 1.77 (1.64) | 0.88 (0.95) |

On MAVO Level, the explicit group significantly outperformed the implicit group in the categories Verb Use ($t(95) = -3.49, p = .001$) and Verb Form ($t(95) = -4.18, p < .001$), but the differences between the group in the categories Lexical Errors ($p = .090$), Word Order ($p = .144$) and Missing Word ($p = .831$) were not significant.

5. Discussion

5.1 Explicit versus implicit instruction

In line with the first hypothesis, the results showed that the explicit group outperforms the implicit group overall on Verb Form and Verb Use. These results were similar to Norris and Ortega (2001), Spada and Tomita (2010) and Nazari (2013), who also found that explicit grammar instruction seemed to work better than implicit grammar instruction. The results of this study showed that the explicit group made fewer mistakes in any category related to verbs. An explanation for this could be that in practice a lot of class time is spent on Verb Use and Verb Form. Therefore, the explicit group would have spent quite a lot of time on learning verb rules and the students in that group possibly paid more attention to this. Research has shown that L2 learners mostly use declarative knowledge when starting to learn an L2, not just in vocabulary but also in grammatical knowledge. Since declarative

knowledge is mostly explicit and this study was done in the first two years of secondary school education, it could be argued that the explicit group should have scored better than the implicit group in the first place. Only when L2 learners gain more proficiency, they slowly start using their procedural knowledge, which is implicit knowledge (Morgan-Short et al., 2014).

On the other hand, the implicit group had not received instruction on verb use and verb form and they might therefore not have paid as much attention to this as the explicit group. They had not received enough input yet to really make much use of their procedural knowledge. On top of that Verb Form and Verb Use have quite a lot of negative transfer from Dutch (Taylor, 1975) and it might therefore be a disadvantage to not receive explicit instruction to pay extra attention to verbs. It could also be attributed to the claim that some parts of a language are harder to learn implicitly than others. DeKeyser (2003) argued that structures that are difficult to learn by means of simple association, such as arbitrary form-meaning connections, seem to be hard to pick up implicitly, and thus require explicit instruction. Leung and Williams (2014) found in their study that L1 knowledge affected implicit learning, at least when natural language is concerned. The learner is subject to constraints and biases from the L1 and therefore it can be argued that the constraints of Dutch as an L1, make it harder for Dutch learners of English to learn verb use and verb form implicitly. As the written task (partially) was a free production task, the results of the writing task can be viewed as natural language.

Surprisingly however, no significant difference was found between the two groups for the grammatical category Word Order. This might be due to multiple factors. One logical explanation would be that for syntax learning both declarative and procedural knowledge are just as effective. Carpenter (2008) and Carpenter et al. (2009) argued that learners with high procedural memory rely heavily on their procedural memory, but that learners with low

procedural memory adapt by switching to other language learning strategies. It seems that for knowledge of word order, both strategies are just as efficient. The results by DeKeyser (2003) support this claim, as word order is not arbitrary and is learnable by simple association, it can be picked up implicitly by learners as well. A study by Rebuschat and Williams (2009) investigating the implicit learning of word order, supports this claim even more. Their results indicated that learners were able to acquire syntactic knowledge of a language under incidental learning conditions, even after a relatively short exposure time. They also argued that the results showed that learners can transfer this knowledge to other sentences with the same underlying structure, but different surface structure.

As for Lexical errors, the results showed that the explicit group outperformed the implicit group as well. This invalidates part of the hypothesis, namely that the implicit group would outperform the explicit group because they would have had more time to practice with vocabulary (Rott, 1999). This did not seem to be the case as the explicit group made fewer Lexical Errors. A possible explanation for this is that the implicit group simply used more complex words than the explicit group. Bakermans (2017) found that in oral proficiency the fluency of the implicit group was higher than that of the explicit group. In other words: the implicit group could possibly have scored lower because they were simply less afraid to use more complex words than the implicit group. Multiple factors could have caused the implicit group to be less afraid of writing more complex texts. The implicit group might simply be less aware of mistakes they made, or less bothered by making mistakes. Bakermans (2017) underlined that according to the teacher that were involved in Piggott's study, the students from the implicit group were less preoccupied worrying about grades and making mistakes. She argued that this could have been a consequence of the omission of grammar lessons and the omission of grammar related questions on their tests. Similar results were also found for writing by Ke & Luo (2017).

Though it could be argued that because the implicit group produced longer texts, they were more fluent in writing, the current study was focussed on grammatical accuracy. The fluency and the complexity of the writing was not investigated into detail in the current study and it can therefore not be said with certainty that the implicit group wrote more complex texts.

5.2 Does educational level make a difference?

In order to provide more insight into the results, Table 9 shows an overview per education Level of which categories significantly differ from each other. In all these cases it was the explicit group that outperformed the implicit group. These results showed that *mavo* and *vwo* share the same pattern, whereas *havo* differed.

Table 9: Significant categories per education Level; X = significant

| | L | WO | MW | VU | VF |
|-------------|---|----|----|----|----|
| <i>Mavo</i> | | | | X | X |
| <i>Havo</i> | X | | | | X |
| <i>Vwo</i> | | | | X | X |

It was hypothesised that *vwo* and *mavo* would benefit more grammatically from explicit instruction than *havo* (Cook, 2001; Harteveld, 2017; Morgan-Short et al., 2014; Carpenter, 2008; Carpenter et al., 2009). The results showed that the differences between the two groups for Verb Form were significant on all educational levels. This means that in all educational levels the explicit group scored better on Verb Form and it could therefore be argued that explicit instruction works well on all educational levels. The differences between the two groups in the category Verb Use, on the other hand, are only significant looking at *vwo* and *mavo*, thereby partially confirming this hypothesis. For the differences in Word

Order the results were not significant on any Level, which has been discussed above. The results will be analysed per educational level, in order to look at different possible reasons for different results. The *vwo* level is discussed first, followed by *mavo* (as both have similar results) and lastly the results of *havo* are discussed.

The results of *vwo* support the findings of Cook (2001), who found that stronger students tend to benefit more from an analytic – and thus explicit – teaching method than weaker students do. Harteveld (2017) also found that *vwo* had more benefit from explicit instruction than *havo*. The *vwo* explicit group indeed scored better on Verb Form and Verb Use, whereas the *havo* explicit group only outperformed the implicit group on Verb Form. However, since *vwo* students are more advanced students and therefore can rely more on their procedural knowledge (Morgan-Short et al., 2014; Carpenter, 2008; Carpenter et al., 2009) it would have been more logical if the implicit group scored significantly better than the explicit group. Instead, the opposite seems to be the case. One possible explanation is that Verb Use and Verb form are hard to learn implicitly, as they are difficult to learn with simple association (DeKeyser, 2003). Therefore, explicit instruction is required in order to learn these grammar aspects properly. The *vwo* students may also have had issues with the constraints and biases from Dutch as their L1 (Leung and Williams, 2014). It could be that for Dutch learners of English Verb Use and Verb Form are hard to learn implicitly.

The *mavo* students showed the same pattern as the *vwo* students. In this educational Level the explicit group outperformed the implicit group on Verb Use and Verb Form as well. Learners in the early stages of language acquisition rely heavily on their declarative knowledge and not on their procedural knowledge (Morgan-Short et al., 2014). These learners have low procedural memory and therefore tend to use other language learning strategies to acquire an L2 (Carpenter, 2008; Carpenter et al., 2009). Therefore, it was expected that explicit instruction would benefit *mavo* students more than implicit instruction,

which indeed seemed to be the case. Compared to *havo* the students on *mavo* level benefitted more from explicit instruction.

Havo seemed to have the least benefit from explicit instruction. Even though there was a significant difference in Verb Form, there was no significant difference between the implicit and explicit group for Verb Use. One explanation could be that students on *havo* level do not specifically benefit from an analytic teaching style, like the other two levels, but also does not have any hindrance in implicitly acquiring knowledge either. Carpenter (2008) suggested that for learners with mid-range procedural memory, the procedural memory could have been strong enough to interfere with other language learning strategies, but not strong enough to lead to successful development. This could explain why the differences on *havo* between the explicit and the implicit group were smaller than on *mavo* and *vwo*.

A surprising finding on the other hand was that the explicit group on *havo* level made significantly fewer Lexical Errors than the implicit group, even though this was not the case on the other two levels. This could be attributed to the possibility that the implicit group was generally less afraid to make mistakes (Bakermans, 2017), therefore having a higher complexity. Unfortunately, this study did not perform a complexity analysis and therefore this cannot be said with certainty. This does however, invalidate part of the hypothesis, namely that the implicit group (on any education Level) will score better than the explicit group lexically.

5.3 Relation to other projects in Piggott's study

The results of this study differ slightly from some of the other projects within Piggott's (in preparation) study. Van der Ploeg (2016) found that there were no differences between the two groups in the first year, therefore implying that implicit and explicit instruction could be

just as effective. However, this study showed that there were significant differences in the frequency of Lexical Errors, Verb Use and Verb Form in the second year. Though the results differed per education Level, overall the explicit group scored better than the implicit group in these categories. Ke & Luo (2017) found that there the two instruction methods showed different results on the category ‘tense-aspect’, where the explicit group outperformed the implicit group. This is in line with the findings of this study, though the results differ per education Level. They also found that implicit instruction contributed to more fluency than explicit instruction (as does Bakermans (2017) for speaking). However, this cannot be compared to the findings of this study as there was no complexity analysis performed. The results of this study are also not completely consistent with Meulenberg (2017), as she claimed that the implicit group outperforms the explicit group on vocabulary. However, this was measured with an oral task and might therefore not be the same for written tasks as in written tasks the learners have more time to think about the speech they produce than in an oral task (Emig, 1977).

5.4 Limitations and possible improvements

There are several limitations to this study. Firstly, the participants in this study all came from the same high school and the same part of the Netherlands. In order to make the results more generalisable, future research should focus on students that are all from different parts of the Netherlands. Moreover, it has proven to be hard to distinguish errors sometimes. Some of the errors fit into multiple categories. An example of this is *Stay in a hotel far away*, which falls under the category Missing Word (as “I” and “am” are missing). However, it is also a Verb Use error, as it should have the present continuous instead of the present simple. On top of that, it would also fall under the category Verb Form. Another example is *I hope*

you're fine. This could either be classified as a Missing Word (*I hope you're doing fine*) or as a lexical error (*I hope you are well*), depending on how the error is 'solved'. A possible way to counteract this factor is to let multiple people do the error analysis, and take the mean of the results found there. Furthermore, it is necessary for further research to build in a complexity measure to determine whether the implicit group makes more overall errors because they write more complex sentences. A possible way to measure this would be to count the use of tenses in the written products, and the use of active and passive sentences. The use of a passive sentence would, for example, be more complex than only using active sentences, and the use of multiple tenses would be considered more complex than only using one or two tenses. The complexity measure can also be used to illuminate the difference between educational Levels. Lastly, normal distribution might not be the best probability distribution to use in this study, since there cannot be less than 0 and more than 100 mistakes in 100 words. However, with normal distribution the Standard Deviation causes a lot of the numbers below 0. You cannot make a negative number of mistakes and therefore it might be better to use a probability distribution that takes this into account.

6. Conclusion

In conclusion, this study provides an overview of the differences between an implicit group and an explicit group in the number of errors made, divided into five categories. It shows both the differences between the two groups and the difference between educational levels. Overall, implicit instruction seems to negatively affect most of the measured errors, however when looking more closely the results differ depending on the educational level. The results show that overall explicit instruction seems to be better to prevent Verb Form errors. Lexical Errors are made more by the implicit group on *havo* level, but on *vwo* or *mavo* level

there are no significant differences between the implicit and explicit group. Furthermore, the implicit group makes significantly more Verb Use errors than the explicit group on both *mavo* and *vwo* level, but not on *havo* level. It could be that implicit teaching does not work as well for the students that perform neither bad nor good, as it does for the highest and the lowest scoring students, nor gives explicit teaching any extra positive effects. As for Lexical Errors, no valid explanation can be given without further research into the syntactic complexity of the written texts.

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Appendix A: Writing assignment**Writingtest****Klas 2**

Time: 50 minutes

No dictionary

Write a postcard

Think about your last holiday.

Now pretend you're still on this holiday.

You are writing a postcard to your best friend at home.

Include the following information in your postcard:

- Waar ben je?
- Hoe ben je daar gekomen (auto/vliegtuig etc.)?
- Waar verblijf je?
- Omschrijf de kamer waarin je slaapt. Wat staat er allemaal in.
- Schrijf over een activiteit die je al hebt gedaan en wat je nog gaat doen.
- Vertel wat je tot nu toe het leukst vond van je vakantie.

Don't forget a correct greeting and ending for your letter.

Write a minimum of 140 words.

Appendix B: Plotting code graphs

```
ExplicitMAVOMW = PDF[NormalDistribution[0.43, 0.85], x];
Plot[ExplicitMAVOMW, {x, -3, 4}, Filling -> Axis,
PlotTheme -> "Detailed", Axes -> True,
PlotLabel -> "Limitation Normal Distribution",
FrameLabel -> {"Number of Errors", Chance}]
Implicit = PDF[NormalDistribution[185.76, 51.36], tokens];
Explicit = PDF[NormalDistribution[172.91, 46.04], tokens];
Plot[{Implicit, Explicit}, {tokens, 50, 300}, PlotTheme -> "Detailed",
Filling -> Axis, PlotLabel -> "Word Token Difference",
FrameLabel -> {Tokens, Chance}]
```

Programa Wolfram Mathematica Editie 11.1