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The Efficacy of Implicit Versus Explicit Spelling Instruction

A Study of EFL in the Upper Secondary School
Classroom

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Abstract

English serves as an indispensable gateway for a multitude of professional opportunities and higher education courses. The ability to speak and comprehend English is often perceived as paramount; however, the skills of reading and writing in English are equally critical. A recent syllabus revision in Sweden has increased the demand for new methods for teaching these written aspects of language. This study focuses on the teaching of spelling in EFL education, and the method of an intervention study was used to compare the efficacy of implicit and explicit teaching of spelling with learners from Swedish upper secondary school. Half of the participants received explicit teaching in the form of a lecture on selected spelling rules in English while the other half received implicit teaching in the form of reading a text in which words that were connected to the selected spelling rules appeared. The results showed an increase in spelling ability in the explicit group and no overall change in the implicit group. The results of the latter group were however still better than the former group indicating that explicit teaching could be more effective for weaker spellers. How much the students of both groups improved varied by which extramural activities they spend time on, education level of their parents, first language, and gender. It is, however, not possible to draw hard conclusions based on these relations, due to a limited number of participants, leading to some categories only including 1 or 2 students.

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1 Introduction

Within the context of Swedish upper secondary education, English stands out as one of the select subjects universally required for all students. This mandate underscores the pivotal role of English as a global lingua franca, where proficiency in the language extends beyond casual communication with non-native Swedish speakers or the consumption of international media. Significantly, English serves as an indispensable gateway for a multitude of professional opportunities and higher education courses, outside and within the confines of Sweden (EF Education First, 2022). The ability to speak and comprehend English is often perceived as paramount; however, the skills of reading and writing in English are equally critical for the aforementioned uses. Consequently, one would naturally expect that teaching fundamental writing components, such as spelling, would be an integral part of any language curriculum. Surprisingly, an examination of the syllabi for the trio of English courses offered in Swedish upper secondary schools reveals a glaring omission: from 2011 to 2022, there was no reference to spelling instruction or any related activities (Skolverket, 2011). The syllabi were instead formulated to require teaching learners how to structure their language, to clarify and be precise in their written language. For many teachers this, somewhat vague, formulation was still interpreted as instructing students in aspects such as spelling, vocabulary, and grammar but since these terms were not explicitly mentioned, alternative interpretations that did not involve a focus on spelling were equally acceptable.

The omission in the syllabi has, however, been rectified in a recent revision of the steering document released in 2022 (Skolverket, 2022) which explicitly mentions spelling. This indicates a newfound emphasis on *explicit* instruction of spelling, signalling a shift in educational priorities and a desire to clearly state what is required and deemed effective in Swedish EFL education. For teachers that previously put little effort into spelling instruction, perhaps focusing on other aspects of written production in their teaching, a need to find effective methods of spelling instruction is now a pressing issue. Similarly, teachers who did involve a degree of focused spelling instruction could see a need to adjust their methods to these new requirements in order to spend their precious lesson time as effectively as possible and help their students reach the desired level of spelling proficiency needed to finish their education. To inform their adjustments, teachers should understand what methods have been examined by previous studies and what conclusions have been made by linguistic research in the past.

Prominent researchers in the field, such as Stephen Krashen, advocated for a pedagogical approach where spelling instruction is most effectively imparted through implicit means, extensive reading being the foremost of these. According to Krashen (1989), learners gain spelling proficiency as they engage with written material, internalizing the structure and form of words, which subsequently enables them to accurately produce these words in their own writing. Drawing from personal experiences both as a learner and an educator of English, it is evident that these principles regarding the acquisition of spelling skills are deeply ingrained in the Swedish schooling system. Teachers tend to prioritize reading comprehension and vocabulary development derived from textual analysis, placing less emphasis on the *explicit teaching* of spelling, in other words the teaching of the rules and patterns that govern the spelling system of the English language. This educational stance reflects a broader understanding of language learning as a holistic and contextualized process, rather than a series of isolated mechanical exercises. The introduction and widespread adaptation of the CEFR scale since 2001 could be an explanation to this stance in Europe due to its focus on the communicative aspect of language (Council of Europe, 2001). The recent syllabus changes, with their focus on spelling, may well represent a response to the evolving linguistic demands of the global landscape, where written communication holds significant sway.

Two terms that are essential for this paper are *implicit* and *explicit instruction*. Reber had a long career of researching implicit teaching and was later named by DeKeyser as “the pioneer of implicit learning research” (DeKeyser, 2003, p. 314). For Reber (1976), the vital component, or in this case lack of component, was if the learner was conscious of the structure being learned or not. Implicit instruction would, therefore, see the learners apprehend the teaching material through unselective and passive means and apprehend potential structures in the material through attending to frequency cues. Explicit teaching would, according to Reber, involve using a set of strategies for learning the desired information or actively present the material to the learner, including its structures (Reber, 1976). DeKeyser (2003) simplified this definition and stated that explicit instruction involves deduction and induction, i.e. if the instruction includes rule explanation or if the learners would be asked to find the rules themselves by attentively noting the form and patterns of the material presented to them respectively. The understanding of these terms in the present study is based on DeKeyser’s definition and the main difference between implicit and explicit teaching performed is therefore the inclusion or lack of instruction on rules and patterns in the material.

The primary aim of the present study is to compare the efficacy of implicit and explicit spelling instruction in the Swedish upper secondary school context. The results of this study could inform language teachers in Sweden of how to implement efficient teaching of spelling to meet the demands of the recent revision in the course syllabus for English. A secondary aim is to compare the results to findings from similar research in other countries and school systems as well as examining the efficiency of the teaching in relation to variables such as learners socioeconomic background, gender, first language and extramural activities resulting in the following research questions:

RQ1: Does explicit or implicit teaching of spelling in EFL lead to better spelling ability among students in a Swedish upper secondary school?

RQ2: How does the level of education of the students' parents affect the efficacy of explicit or implicit teaching of spelling?

RQ3: To which degree do variables such as learners' gender and extramural activities affect the efficacy of explicit or implicit teaching of spelling?

After this introductory section, where I detail the aims and research questions of this study, section 2 will give an overview of selected previous research in spelling development and spelling instruction, focused on research regarding teaching in English as a foreign language (EFL) education. This is used as the basis for my own research including data collection in the form of testing and *intervention* (see section 3.3), the methodology of which is outlined in section 3 of the paper. The results of the data collection are thereafter presented in section 4 followed by a discussion in section 5 where the implications of the data are discussed and analysed. Finally, in section 6, I will share the conclusions I have been able to make during this project.

2 Literature Review

This section provides an overview of selected previous research on the topic of second language development theory in general, then going more in detail on implicit versus explicit spelling instruction. This overview sketches out the background and serves as a frame of reference to my own research regarding the Swedish upper secondary school. The previous research mentioned hereafter has also laid the foundations for the methods I used later in this paper.

2.1 Second language development

Krashen (1989) suggests that vocabulary and spelling are acquired in the same way as other language aspects, through comprehensible input, particularly reading. When comparing results from a wide range of studies they concluded that the findings align with their previously proposed *Input Hypothesis* (IH), which posits that language is subconsciously acquired by understanding messages. This contrasts with other language theories named by Krashen, in particular the *Skill-Building Hypothesis* (SBH) and the *Output Hypothesis* (OH). The former suggests that language is best learned through conscious study and practice while the latter emphasises using the language to produce one's own text or speech. Krashen argues that IH is the most efficient way to gain competence in spelling and vocabulary, as it involves subconscious acquisition through reading, while SBH and OH are limited by the capacity of non-specialized mental faculties. Even though teaching based on building skill and producing output was said to have an impact, Krashen argued that the acquisition of language proficiency from input of comprehensible material is far greater and would be preferable to all other types of teaching activities (Krashen, 1989).

Roughly 30 years later, Lichtman and VanPatten aimed to assess Krashen's conclusions in light of the research produced since the publication of Krashen's work (Lichtman & VanPatten, 2021). Although Krashen's claims attracted considerable criticism in the succeeding years, for instance for overlooking other factors of language acquisition like language practice and explicit grammar instruction, Krashen's emphasis on the importance of input in second language development had a significant impact on most second language acquisition theories moving forward. Various linguistic, psycholinguistic, and cognitive theories developed after Krashen share the emphasis on the crucial role of input in second language acquisition. These theories might, however, differ in their perspectives on what constitutes useful input data and the cognitive mechanisms involved in processing it.

2.2 Implicit and explicit spelling instruction

The debate regarding the most effective method of language teaching has been active among linguists for decades. While the acquisition of vocabulary and spelling has been part of the discourse, most research on implicit and explicit teaching in a second or foreign language context has focused on grammar teaching. Scholars have generally found explicit grammar instruction to be more effective than its implicit counterpart, particularly concerning accuracy (Spada & Tomita, 2010). However, implicit instruction may yield more favourable outcomes

with respect to fluency, complexity, and functional adequacy (Piggott, 2019). Moreover, explicit instruction of spelling rules, primarily examined in first language (L1) instruction, has received considerable attention. For instance, Berninger et al. (2008) conducted an *intervention study* (see section 3.3) providing explicit spelling instruction to dyslexic students in L1 English, demonstrating its beneficial effects. Similarly, Kemper et al. (2012) compared the efficacy of explicit and implicit spelling instruction among Dutch-speaking primary school pupils, with explicit instruction proving superior in both groups.

Another aspect that should be mentioned is the effect of the learner's age. Scholars have concluded that implicit language teaching is highly effective for young children but the research strengthening this claim is usually centred around learning a first language. Children's natural, intuitive language learning system, however, seems to lessen with age and adults generally progress slower in their language prowess when taught using similar means (Lichtman, 2016). Lichtman (2016) also studied this very difference with children aged 5-7 years and adults with a mean age of 24. Their findings suggest that although children learned more from implicit teaching than their adult counterparts, the children who received explicit instruction developed their grammar to a higher extent than those that only received implicit teaching and overall showed better accuracy in their written production than their peers. The adults receiving implicit instruction could, to a higher degree, glimpse the structure of the material on their own compared to the children and could therefore through induction learn some of the rules and patterns that they were not explicitly taught. Overall, Lichtman concluded that relying on solely implicit or explicit instruction would not be beneficial to learners, no matter their age, indicating that a hybrid approach should be utilized for the greatest learning environment.

Moreover, explicit instruction was found more effective than implicit methods for both proficient and struggling spellers in a study by Russak and Kahn-Horwitz (2015). Graham and Santangelo (2014) conducted a meta-analysis of 53 studies predominantly focused on L1 English spelling instruction, with 87% demonstrating the advantage of explicit instruction. Furthermore, explicit spelling instruction was shown to have positive effects on reading development, phonological awareness, and contextual spelling. One study by Pérez Cañado (2006) implemented explicit spelling interventions for Spanish learners of EFL in primary school, indicating positive effects on EFL spelling skills. Kahn-Horwitz studied the impact of teaching orthographic conventions of English on students' ability of English spelling in the Israeli EFL context (2020). The results showed that all students improved by receiving this explicit spelling instruction.

Furthermore, Erlam (2005) suggests that explicit instruction may mitigate individual differences in language aptitude, while Tagarelli et al. (2016) propose that it can compensate for shortcomings in procedural memory. Additionally, metalinguistic (explicit) grammar interventions have proved effective for addressing language development disorders (Ravid & Hora, 2009).

Finally, explicit instruction is deemed particularly crucial in the EFL context and for struggling spellers due to limited exposure to the target language, exacerbating the procedural learning disadvantage. Nijakowska (2010) corroborates this assertion through an intervention study involving Polish-speaking secondary school students with dyslexia, demonstrating significant improvements in spelling, and reading following explicit spelling instruction sessions. In a study performed by Tribushinina et al., (2022) the researchers likewise found that explicit instruction of spelling could be more beneficial than implicit instruction for Dutch EFL learners with dyslexia.

3 Method

The efficacy of explicit and implicit spelling instruction was examined through a case study with two groups of students receiving different types of instruction, implicit and explicit. The effect of the instruction was determined using spelling tests before and after the instruction and comparing the results between the two groups.

3.1 Participants

The participants of the study consisted of 57 students, aged 16-17, from two classes in an upper secondary school around Gothenburg, Sweden. The students from one class received explicit instruction, hereafter called Group A, and the students from the other received implicit instruction, hereafter called Group B. Guidelines from the Swedish Research Council were followed in regards to the ethics of this study (Vetenskapsrådet, 2017). Both groups of participants were, therefore, informed about the study before the start of the testing, both orally and in writing, (see Appendix 4) and were given the option to opt out of participation at will. They were also informed of the steps taken to ensure the anonymity of everyone involved in the research. In accordance with the general requirements for study at this level in the Swedish school system, the estimated level of English proficiency ranged between B1 and B2 on the CEFR scale. A range of backgrounds was represented among the participants, both culturally and socially as well as geographically and ethnically. The socioeconomic

backgrounds of the participants were ascertained by including a question regarding the education level of the students' legal guardians in the survey portion of both pre- and post-test (see Appendix 5). This is a common method for attaining information on socioeconomic status and asking it at multiple occurrences has been shown to increase the data's reliability (Aarø et al., 2009). The answers showed that the education level of legal guardians was high among most students with 65% having at least one guardian with experience of 3 or more years of university studies, and 12% with up to 3 years of the same. Three participants had guardians who had no more than an upper secondary school education (*Gymnasieexamen*) and one whose guardians had no more than a secondary school education (*Grundskolebehörighet*). There was, however, a relatively large portion of the participants, 11%, who did not know their guardians' level of education or for other reasons chose not to answer.

There was a clear majority of female participants with 65% identifying as women, 26% as men, as well as 9% identifying as other. Unsurprisingly, a vast majority of students had Swedish as their first language, 86%, with a small number of students having English as their first language, amounting to 4%, with the remaining students having another first language or choosing to not answer the question. Furthermore, a fair number of students had been diagnosed with dyslexia or other neurodivergences, more so in Group A than in Group B, but the exact number was never ascertained since it initially was not a focus in this study. Another reason for not including this variable in the present study was due to the ethical implications of collecting such data and the time constraint imposed on this study.

3.2 Testing

To gauge the efficacy of an instructional technique, as was the aim of this study, Loewen and Philp (2011) strongly advice the use of pre- and post-tests as data collection instruments. These must, however, be carefully designed to accurately measure the effect of the instruction. In order to achieve this, the tests in the present study were inspired by tests used in other peer-reviewed studies: the *Test of Written Spelling* (Larsen et al., 2013) used by Kahn-Horwitz (2020), and the *Orthographic Knowledge Test* used by Tribushinina et al. (2022). Since the focus of the present study concerns spelling, a written test to gauge the spelling proficiency of the participants before and after the intervention (see section 3.3) was deemed most suitable and these previous studies combine this with dictation of the words to be spelled. This design was also adapted in the present study.

The testing of the students' ability to spell took place at two occurrences separated by 3 weeks with the intervention taking place in between. Both pre- and post-tests followed the same structure with students using a digital survey prepared in Microsoft Forms to input their responses. This survey concluded with questions regarding the student's gender, first language, extramural activities, and the education level of their legal guardians or parents (see Appendix 5). These variables are hypothesized to be related to a difference in efficacy of the two methods.

Before the start of the test, the students were asked to refrain from using any kind of spell checker software, but since there was no way of enforcing this, it is not possible to rule out that some students used unauthorized aids. During the testing, a word was read aloud together with a sentence in which the word appears. In total, 20 words and sentences were read aloud in every test (see Appendix 1 & 2). The students were then meant to write down and spell the words to the best of their ability. All included words were exchanged between the pre- and the post-tests, but they shared spelling patterns or rules. The words that were included in the pre- and post-tests were selected based on two criteria. First and foremost, the selected words all had to be spelled in accordance with the spelling rules that were to be covered in the explicit teaching (see section 3.3). Secondly, the words were to strike a balance between challenging and usability, in other words, the aim was to include words with somewhat challenging spelling for the students and simultaneously words that the students would be somewhat familiar with and would be able to use in their own production. The inclusion of words that would be too difficult for the students could have affected the validity of the research and was therefore rejected. Similarly, the inclusion of words that would be too obscure for the students was also rejected in an effort to increase the students' motivation for learning since learning to spell words they would be able to use in their own writing was believed to be more engaging.

3.3 Intervention

An *interventionist study* typically sees a researcher engaging with a select group of participants by intervening in their regular activity with an alternative technique, activity, or other change in situation, in this case a particular teaching method with a group of students in their regular classroom, with the aim to test the interventions impact during a limited timeframe. The effect of the intervention is usually tested by gauging the participants level before and after the intervention and by analysing the difference (Loewen & Philp, 2011).

This type of methodology was chosen for the present study for its suitability when examining instructional methods in a classroom and the aim to be representative of an authentic instructional context, as well as the ability to compare results to previous research like Kahn-Horwitz (2020) which used similar methodologies.

In the present study, one group of students, Group A, received explicit instruction in the form of a short lecture on some rules and patterns of English spelling, taking roughly 20 minutes in total. The lecture was performed using a Power Point presentation showing the rules with some examples of words, including a thorough summary of the rules towards the end, and during the lecture, the students were also asked to supply other examples on their own. Due to time constraints, the students were not given a worksheet or exercises to practice the rules on their own¹. The rules and patterns taught were connected to the words in the pre- and post-tests, and the words in the pre-test were used as examples in the presentation. One part of the instruction focused on the spelling of words ending with the letter *y*. This included conventions regarding changing nouns ending in *y* into *ie* when writing the plural form (*battery* becoming *batteries*), changing the *y* into *i* when adding a suffix (*happy* becoming *happily*), and the exceptions of keeping the *y* intact when writing the genitive form (e.g. *baby's*) as well as in words where the *y* is used to create a consonant sound (e.g. *day* becoming *days* in its plural form) among others. The rules revolving around the letter *y* were selected to be part of the intervention because of its inherent usefulness to the students, many words connected to these rules are common and essential to know how to spell, while also being easily digestible and understandable. Since these rules are regular with very few exceptions, the possibility of effectively teaching them in the limited timeframe of the intervention was deemed to be high. The explicit instruction also included conventions regarding the spelling of prefixes, namely the retention of all letters when adding a prefix to an existing word, (e.g. *natural* becoming *unnatural*) and the changing of the prefix depending on the following letter (e.g. *in-* becoming *il-* in words such as *illegal*). These conventions were selected for their regularity but also in an effort to include words which would pose a slightly larger challenge to the participants than the other included words and spelling rules. The students were not taught or shown the spelling of the words that would be included in the post-test.

¹ For more information on the teaching, contact the author at jakob@falthammar.com.

The other group, Group B, instead received implicit instruction which consisted of reading a text (see Appendix 4) where some of the words included in the post-test appeared. Each type of spelling rule was represented by multiple words, some of which would appear in the post-test, other words that did not appear in the given text but were included in the post-test, shared similar spelling rules as the ones in the text, e.g. *happily* in the pre-test, *sleepily* in the text, and *sleepily* and *angrily* in the post-test. This aimed to examine if the spelling rules of the words learned through reading could be applied to other words with the same rules. The students were then asked to underline any word or words in the text that they doubted if they could spell accurately on their own, and rewrite these by hand on paper. The text was mainly created using ChatGPT with a prompt that included the words that had been selected for inclusion, but some minor alterations needed to be made to make the story more engaging and coherent. Also included in the prompt was an approximate length the resulting text should have as well as mentions of the target audience to ensure that the language would be of a suitable level for the students.

3.4 Analysis

The results of from the pre- and post-tests were categorized and calculated using Microsoft Excel with the data collected using Microsoft Forms, following steps for data analysis detailed in Dörnyei and Csizér (2012). Group A and Group B used separate forms to input their test and survey answers as to separate the results from each group, therefore easing the analysis procedure. Every student was given an anonymous participant ID which was entered into both pre- and post-test forms. This made it possible to compare the results from both tests without requiring the participants to divulge any identifying information. When analysing the data from the forms, the focus was to examine the overall ability of the students to spell correctly but care was also taken to understand which mistakes were being made. Some words were misspelled by not following the spelling rules that were being taught but there were also occurrences of words being misspelled in other ways. Every word which was spelled correctly was translated into a score of 1 while an incorrectly spelled word was given a 0. The words were also divided into categories based on the taught spelling rules applied in each word (see section 4.1 and Appendix 1&2). Per category, the average score and standard deviation was calculated to gauge the students' ability to spell words related to the respective rules correctly. The average total score per participant, average score per question per participant and average score per word category were correlated with the variables included in the survey. For

example, to study the difference in score improvement between men and women, the scores for men and women were collated separately for Group A and Group B. Similarly, average scores per question were collated for the other variables. Results were presented in tables, bar charts or line graphs (see section 4) which allowed to visually interpret any major differences.

4 Results

In this section, the results of the pre- and post-tests are presented, and the figures are organized under the heading of the research question they relate to.

4.1 Rq1: Explicit and implicit teaching's effect on spelling ability

In table 1, the results from the pre- and post-tests are shown, together with the standard deviation and the difference between the two tests in both score and percent. The standard deviation is a measurement to show the spread of the variable, indicating the average difference between an individual's score and the group average, i.e. a high standard deviation shows that more participants have a larger distance to the group average. Judging by the first and third columns, where the average scores in the pre- and post-test for the students in Group A, i.e. the explicit group, and Group B, i.e. the implicit group, are presented, the data shows that Gr. B scored higher on average in both tests indicating a higher average spelling proficiency within that group of students. The standard deviation is also lower in both tests for Gr. B compared to Gr. A, but the spread of answers decreased in the post-test resulting in an improved standard deviation for both groups. In other words, Gr. B had fewer outliers and scored more uniformly as a group in both tests. Gr. A on the other hand had more students with a considerably lower or higher score than the average in the pre-test but improved by a larger margin in the post-test when compared to Gr. B. The standard deviation is, however, still higher in the former group than the latter. This indicates that the participants with a low result in the pre-test likely improved and scored more similarly to the rest of the group in the post-test, more so in the group given explicit teaching. The overall scores saw a similar development with Gr. A managing an increase in overall score with 0,92 points out of a total of 20, which amounted to a percentage increase of 4,6. Remarkably, Gr. B scored the exact same average in both tests and therefore saw no difference in their overall test results. Nonetheless, when studying the results in more detail, some differences can be seen between different categories, see RQ3 and RQ4.

Table 1. The average scores of Gr. A & B in pre- and post-test together with the standard deviation in both tests. Also shown is the difference between the tests in both points and percent.

	Pre		Post		Difference	
	Average	Stdev.	Average	Stdev.	Average	%
A	13,88	4,99	14,79	4,48	0,92	4,6
B	15,24	4,08	15,24	3,90	0,00	0,0

Hereafter, the results from each group have been organized into categories depending on the type of spelling rule the words in the pre- and post-test were connected to. These are as follows: PRE for words connected to the rule that states that prefixes never add or remove letters from the root word (e.g. *misspell* or *dissimilar*), YIE: y becoming *ie* in plural nouns ending in y (e.g. *babies* or *memories*), YSUF: y becoming *i* when a suffix is added (e.g. *luckily* or *easier*), YING: y staying unchanged when adding the suffix *-ing* (e.g. *studying* or *replying*), YCON: y remaining unchanged when the letter is used to create a consonant sound (e.g. *essays* or *delays*), and finally YGEN: y remaining unchanged when the genitive 's is added (e.g. *baby's* or *company's*)². The results regarding the different categories of words also change the scale of the number reflecting the difference in correctly spelled words. Where in the previous section, the numbers indicating the scores ranged from 0, i.e. no correctly spelled words, to 20, every word spelled correctly, the numbers in the following figures instead range between 0, no student spelled this type of word correctly, and 1, all students spelled this type of word correctly. Changing the scale also makes the figures interpretable as showing a percentage difference and not only a change in score, i.e. an increase of 0,1 in the following figures shows a difference of 10 percent.

When considering the categories of words, the increase in overall results for Gr. A is seen from a different perspective and in more detail. As seen in Fig. 1, Gr. A improved their spelling of the words in some of the categories but worsened in others. The category *YGEN* saw the largest change by a 12% decrease in correctly spelled words on average. The words in the *YGEN* category, were in fact the most difficult to spell correctly for both groups, likely due to the difficulty of knowing which version of the homophones to write, e.g. *babies* or *baby's* as included in the pre-test. Both groups were repeatedly told to take note of the context in which the word appeared to understand how to spell but while Gr. B understood this to an increasing degree between the tests, Gr. A continued writing the wrong version of the homophone, which was by far the most common error in this category, resulting in a worse

² For a full list of words and their categories, see Appendix 1 & 2.

overall score in the *YGEN* category. The two categories where Gr. A had the best results in the pre-test, *YING* and *YIE*, were the only other categories that worsened in the post-test by 4% and 2% respectively. The remaining three categories, *PRE*, *YSUF* and *YCON*, all saw an increase, namely 6%, 11% and 5% respectively.

Fig. 2 shows that Gr. B had a higher result in the pre-test in all categories when compared to Gr. A, except for the words in the *YING* category which had a slightly lower result. This pattern of Gr. B generally having a higher result continued in the post-test, where the exception was no longer the *YING* category but instead the words in the *PRE* and *YSUF* categories. Examining the difference between the average results of the categories in pre- and post-test shows that Gr. B saw an opposite effect when compared to Gr. A. The three categories that worsened for Gr. A were the only three that improved with the Gr. B, and the three categories that improved for Gr. A were the only categories that worsened for Gr. B. The average difference was,

however, smaller with Gr. B which saw differences between 1-5% in all categories but two, *YIE*, where the improvement was 11%, and *YING*, where the improvement was 8%. As mentioned above, most categories still scored higher the post-test by Gr. B than by the other group, except for *PRE* and *YSUF* that had a 6% and 2% lower average respectively when compared to Gr. A (see Table 2).

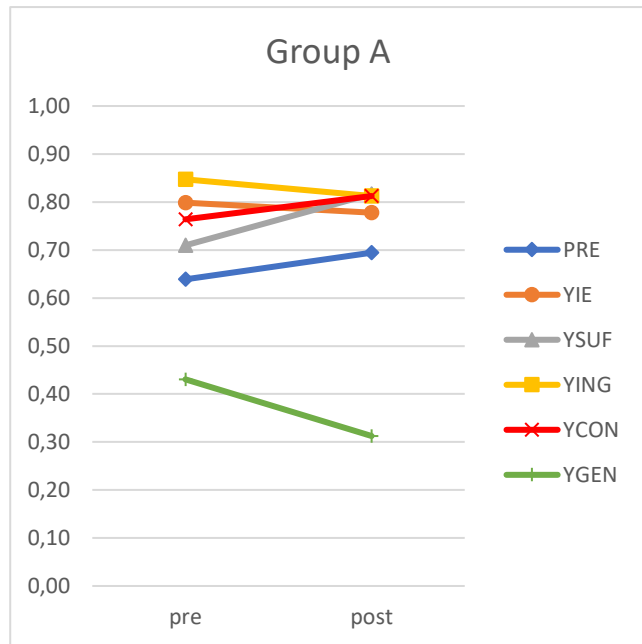


Figure 1. Difference in results per question category between pre- and post-test for Group A. Numbers can be found in Table 2.

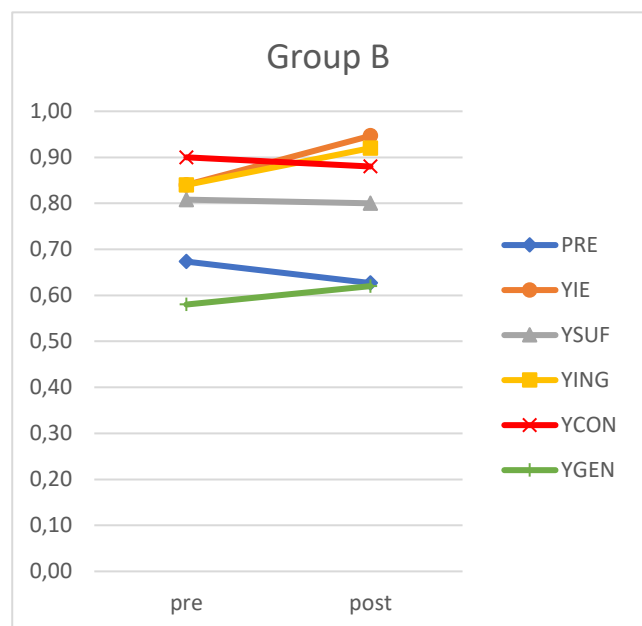


Figure 2. Difference in results per question category between pre- and post-test for Group B. Numbers can be found in Table 2.

Table 2. Average score per question category for Group A and Group B in pre- and post-test.

Pre						
	PRE	YIE	YSUF	YING	YCON	YGEN
A	0,64	0,80	0,71	0,85	0,76	0,43
B	0,67	0,84	0,81	0,84	0,90	0,58
Post						
	PRE	YIE	YSUF	YING	YCON	YGEN
A	0,69	0,78	0,82	0,81	0,81	0,31
B	0,63	0,95	0,80	0,92	0,88	0,62
Improvement in percentages						
	PRE	YIE	YSUF	YING	YCON	YGEN
A	6	-2	11	-4	5	-12
B	-5	11	-1	8	-2	4

Looking at individual differences, several students in Gr. A saw a major increase in score. There was one student in Gr. A who improved by 16 points out of 20, with multiple other students improving by 4 or 5 points. Not all students improved, however, with one student decreasing their score by 7 points. The students who improved in Gr. A were however in clear majority. The largest improvement in Gr. B was only 4 points out of 20 but one student also decreased their score by the same amount. Gr. B, in fact, had more students who decreased their score when compared to Gr. A but the difference in points was only very minor, with a few exceptions as mentioned above. Seeing that Gr. A had a generally lower score to start off with, a larger improvement was easier to achieve.

4.2 Rq2: The effect of parents' level of education on explicit and implicit teaching

Comparing the education level of the participants' legal guardians with their improvement gives the following results (Fig. 3). The vast majority of students had guardians with a university level education and this group did not see a major improvement after the intervention. Instead, the average result in fact only increased slightly for these participants in both Gr. A and Gr. B. The small number of students in Gr. A who had guardians with an upper secondary or *Gymnasium* education saw a larger increase but keep in mind that these consist of only two students, therefore, any conclusions drawn from such a limited dataset would be unreliable. The number of students with guardians who had an upper secondary education was even lower in Gr. B. In fact, only one student made that statement, making it impossible to show any results without breaking the anonymity of that participant. The same

was true for the participants whose guardians had a secondary education or *Grundskoleutbildning*, with only one student making that statement in total. Many participants in Gr. A chose not to answer this question or did not know their guardians' level of education. Only one student in Gr. B chose this alternative and is therefore excluded to preserve their anonymity. This category however, showed the largest improvement. Since the category "Other/Do not know" could consist of any combination of backgrounds it is not possible to draw any clear conclusion from this. The results do not indicate a clear connection between education level of guardians and the efficacy of the different teaching methods.

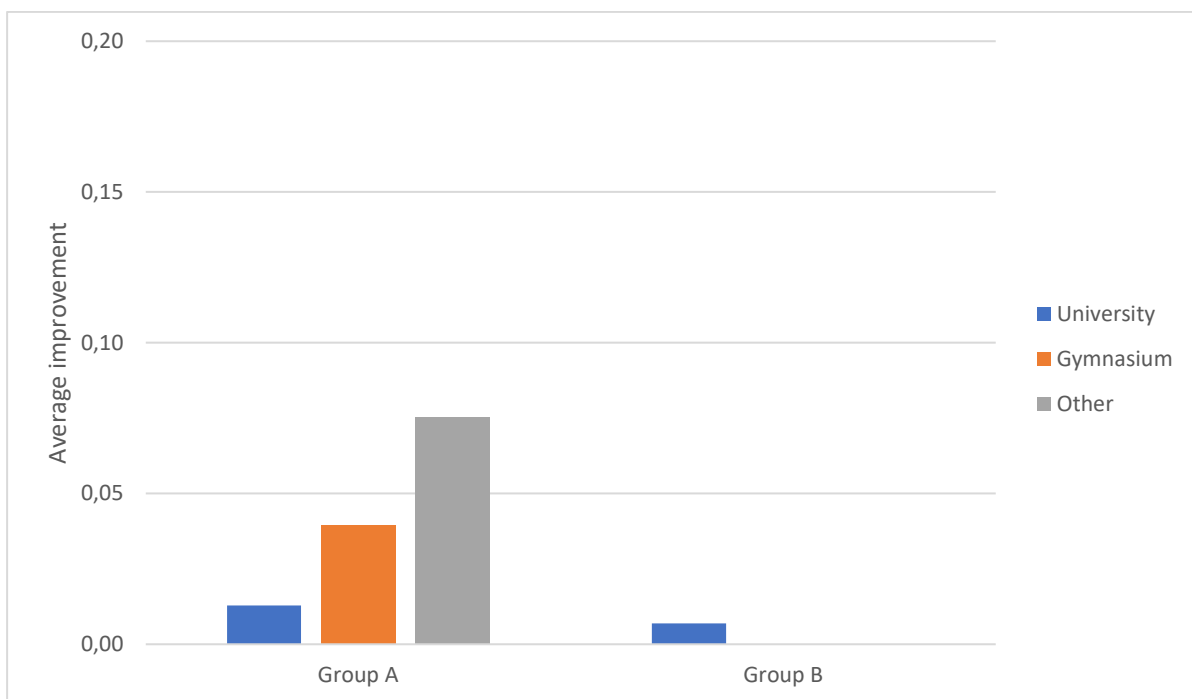


Figure 3. Average improvement per question from pre-to post-test for Group A and Group B divided by level of education of parents/guardians. The Gymnasium and Other category with Gr. B have been removed due to limited number of participants in those categories. Numbers per category can be found in Table 3.

Table 3. The number of participants in each category.

	Uni	Gym	Other
Group A	15	2	6
Group B	23	1	1

4.3 Rq3: The effect of gender, first language and extramural activities on explicit and implicit teaching

Starting with the gender variable, Fig. 4 shows an average improvement in female participants when compared to an average decrease for males in Gr. A. The changes in average score per category are, however, very small. Keep in mind that the maximum improvement would be 1,0. The students identifying as *Other* in group A improved more but as seen in Table 4, these

students were not numerous and could, therefore, indicate a bigger difference on average in the data with an improvement of only one or two participants. The gender category *Other* was removed from the results of Gr. B due to only one person being in that category in said group. The inclusion of those results would, therefore, be too identifiable toward that participant. The rest of the results regarding Gr. B show an opposite improvement to Gr. A in score per category among both categories. It could be posed from these results that the explicit teaching was more effective for female participants, and that implicit teaching improved results more for male students. The differences are, however, small and the number of participants few.

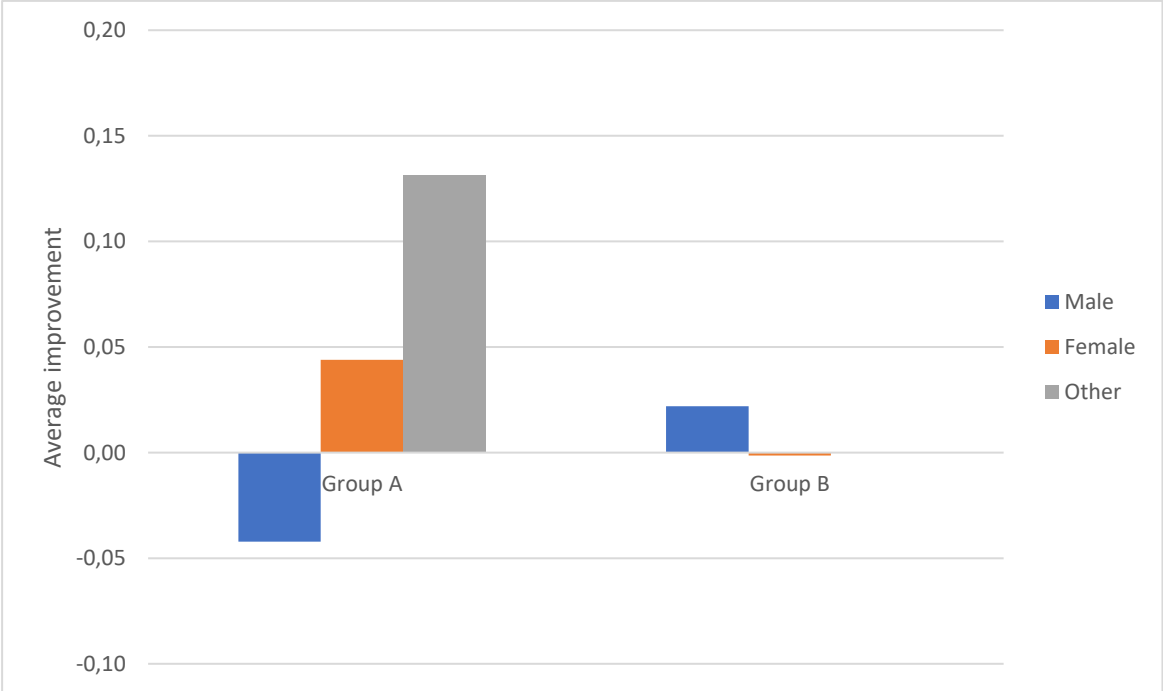


Figure 4. Average improvement per question between pre- and post-test for Group A and Group B categorized by gender. “Other” omitted from Group B due to too few participants. Number of participants can be found in Table 4.

Table 4. Number of participants in each gender category per group.

	Male	Female	Other
Group A	5	16	3
Group B	6	18	1

Figure 5 presents the results for the students divided by group and first language. Gr. B did not have any participants with English as their first language, therefore eliminating that category from this variable. The English students present in Gr. A, although few, did not benefit from the explicit teaching, while the rest of the students did. In Group B the results from the participants with Swedish as their first language remained virtually unchanged with a very minor decrease in correct answers on average. The two participants with other first languages or who chose not to answer the question improved their scores by over 10%.

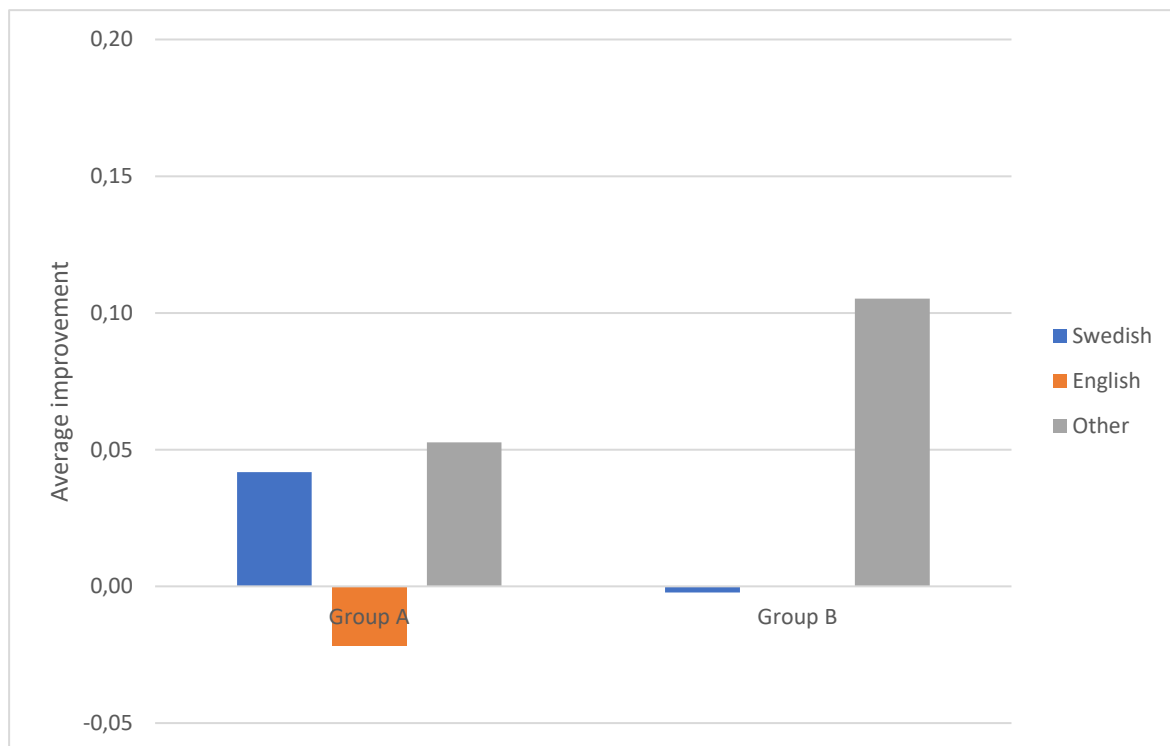


Figure 5. Average improvement per question between pre- and post-test for Group A and Group B categorized by first language. Number of participants can be found in Table 5.

Table 5. Number of participants in each category.

	Swedish	English	Other
Group A	18	2	4
Group B	23	0	2

In Figure 6 the average improvement per question is calculated based on which extramural activities the students spend their time on. It should be noted that the students had the option to fill in as many activities as they wanted, making it possible for each students' results to be incorporated in multiple categories. The results vary widely for both groups with some interesting notes. Students who spend time on *Art* or *Creating literature* improved their score based on explicit teaching, but decreased their scores based on implicit teaching. Participants in the *Gaming* and *Watching movies & tv-shows* categories showed opposite results. Those who spend time on *Sports* improved due to either method, while those who *Read books* outside of school literature performed worse for both types of teaching. *Music* and *Social media* show almost no difference regardless of the type of teaching. *Social media* especially, is the category that includes nearly all students, making the similarities in overall average results unsurprising.

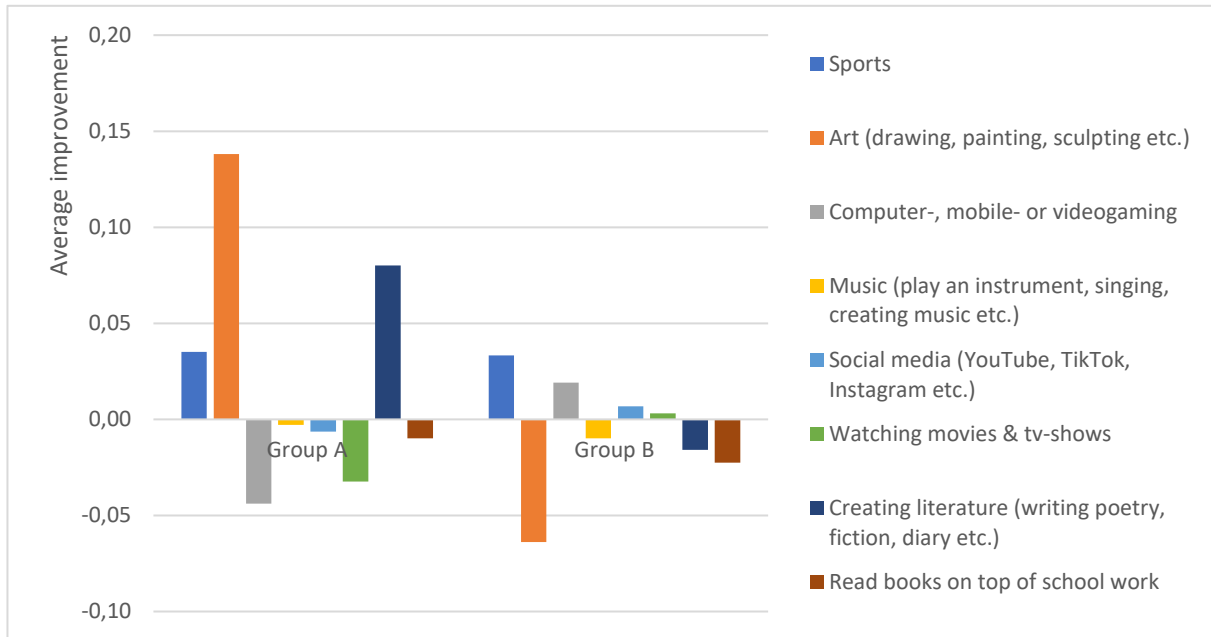


Figure 6. Average improvement per question between pre- and post-test for Group A and Group B divided by extramural activities.

5 Discussion and Pedagogical Implications

Explicit teaching of spelling proved to improve students' spelling more than implicit teaching on average. Both groups of participants included students with increases and decreases in test scores, but the students whose scores decreased after the instruction were more numerous in the group who received implicit teaching (Gr. B) than in the group who received explicit teaching (Gr. A), resulting in a greater improvement in the explicit group, both in average test scores and number of students who improved. The overall score was however consistently higher in the implicit group, indicating that this group included stronger spellers on average. The decrease in test scores could be due to students in the explicit group overthinking the rules they had been taught, making them unsure as to what rules should apply for a given word. Some of the rules taught were similar in nature and due to the limited time given for the instruction, students may have been confused and not given enough time to fully internalize the spelling patterns. In the present study for example, the *YGEN* category scored lowest for both groups of students, most notably Group A which scored lower for this category in the post-test than in the pre-test. It is possible that the students confused the different spelling rules for *YGEN* and *YIE* and therefore overcorrected. Part of the decrease could also be due to the design of the testing; the post-test might have included words that were less familiar to certain students than those of the pre-test. An alternative to the testing method in the present study based on test designs used by Tribushinina et al. (2022) was considered but ultimately

not put into effect. Tribushinina et al. used a “fill-in-the-gap”-design where the learners only wrote the part of the word related to the spelling rule in question. An example from the present study could have been to include *berr_* in the form and let the participant fill in *ies* instead of the whole word. In hindsight, this change might have improved the validity of the testing and alleviated some students’ possible confusion.

The standard deviation was relatively high for both groups showing a wide spread of test scores in both pre- and post-tests, more so in the explicit group than the implicit. When analysing the differences between scores for individual students there were several outliers both in a positive and negative sense, that greatly affected the overall scores. If the test population had been larger, singular outliers would not have affected overall results to the same degree. However, even without the biggest positive outlier, the explicit group still improved on average while the implicit did not.

The results from this study concur with conclusions from previous research, even though the test group is small, and the intervention limited in time and scope. Direct comparisons to previous research are sometimes problematic since it is not always specified what type of teaching the control group receives in other studies. Several studies named in section 2.2 have found explicit teaching of spelling to be effective (Berninger et al., 2008; Kemper et al., 2012; Pérez Cañado, 2006) but not necessarily when specifically compared to implicit teaching or when examined in an EFL context. Berninger et al. (2008) only included students with dyslexia as participants, but the study showed an overall improvement after the explicit teaching. In this study, Group A, who received explicit teaching and had a larger number of students with dyslexia, is seen performing better after explicit teaching. However, Berninger et al. (2008) also included other types of instructions, such as teaching morphology, which this study did not include. In a different study, Kemper et al. (2012) also showed that explicit spelling teaching improved overall spelling, but for students learning Dutch, and for a younger age range than this study. Pérez Cañado (2006) performed a longer-running study over the course of a year and also included several additional explicit spelling methods, concluding a clear importance of practice in learning to spell and the significance in making students aware of English spelling rules. These differences in group size, participant age, teaching method and target language do not change the consensus that explicit teaching is beneficial and can be of great importance in improving students’ spelling. Now, this study is added to the body of research, confirming the same result for Swedish students in the upper secondary school.

As mentioned above, Group A, who received the explicit spelling instruction, was also the group with a higher number of dyslexic students. This was most likely reflected in the lower overall scores for both pre-and post-tests for this group versus Group B. It is not possible to compare efficacy for implicit versus explicit teaching for dyslexic students versus the other students since this data was not collected. However, the improvement for Group A as a whole, and the several students who scored very low in the pre-test and then greatly improved in the post-test in particular, indicates that explicit teaching could be extra effective for these students. This concurs with conclusions from previous research (Nijakowska, 2010; Tribushinina et al., 2022), focused on the effect of explicit teaching for students with dyslexia. Group A also had a higher standard deviation, showing that the level of the students was more varied than the level of group B, which was more consistent. This could relate to students with dyslexia scoring lower, but also to other factors that differed between the two groups, such as a lower number of native Swedish and English speakers as well as a lower number of university-educated guardians.

When studying differences depending on gender, extramural activities, first language or educational level of parents, the biggest impact on score is shown based on group, rather than subcategory. This shows that education needs to be adapted to the target group, there is no universal best practice, and the performance of students is highly influenced by their direct peers. In this specific case, the two groups of students belong to two different programs. While officially at the same level, according to their teachers, students in group A struggle more with their performance in English compared to students in group B. This would concur with the conclusions of Russak and Kahn-Horwitz (2015), who suggest that weak spellers would develop their proficiency with more exposure to English orthography through either implicit or explicit means while strong spellers would require direct and explicit instruction to improve their spelling accuracy.

The different categories of extramural activities were chosen to study whether students who encounter different amounts of English input outside of school hours would respond differently to the two types of teaching. An unexpected result here was that students who spent time on reading (i.e. input) performed worse regardless of teaching method. One potential explanation of this would be the lack of information regarding the language in which they are reading. Reading in Swedish or in other languages other than English, would not likely aid in the participants' English spelling ability due to the input not being in the target language. Another interesting note is that the students who are creative and spend time on art and writing benefited from receiving explicit teaching. This might be due to a less analytical

inclination in those participants leading to them therefore garnering better results from clear explanation of spelling rules rather than having to deduce them by themselves through implicit teaching. Lastly, students who spend time on sports benefited to an almost identical degree from either method. It could be hypothesized that merely exposing them to spelling through either method improves their performance.

There are a few limitations to this study that must be addressed. One major limitation pertains to the scope of the project. Due to restrictions in timeframe and resources available, the intervention process of the research was limited to only one short lesson for each test group and there was, furthermore, no opportunity to perform a retention test to gauge the amount of knowledge the learners still harboured after the end of the main testing. Future research would preferably be performed with students from multiple schools to target a wider demographic. Especially regarding the education level of the participants' guardians, their gender and native language could have shown more conclusive results from a larger and mainly more varied subject group. The results shown in this paper do however show clear differentiations based on these variables, indicating that this is worth researching further, in order to be able to adapt teaching methods to all students, not only those that belong to the most prevalent group.

Swedish teachers who want to implement new methods for spelling instruction due to the new syllabus could include more explicit spelling teaching, especially when their students are weak spellers, to vary and improve the efficacy of the teaching of spelling in their classroom. The overall results of the present study point to a higher time efficiency of explicit teaching, where 20 min of implicit teaching through input made no overall difference, and 20 min of explicit instruction did improve overall results. The exclusion of obscure words from the pre- and post-test were justified in the context of such a small and time-limited study as this, but in future research it would also be interesting to include both common and uncommon words to test if explicit spelling teaching can be more effective for uncommon words. Explicit teaching would give the students resources to understand even unknown words and apply general rules, while implicit teaching would require exposure to a vast range of vocabulary to reach the same effect. The opposing results per word category between Group A and Group B might indicate a greater suitability of teaching certain spelling rules explicitly, while others can be more easily understood through implicit teaching. Suffixes, for example, are so numerous that it might be difficult to discern a pattern through only input. The students in the explicit group were also more engaged in the teaching and showed curiosity for the spelling rules, with multiple participants asking questions and wanting to take part of the teaching material after

the intervention. Many students also alluded to the lack of similar spelling instruction previously in their EFL education, similar to my personal experience mentioned in section 1. Teachers looking to engage their students more, even on seemingly ‘boring’ topics like spelling rules, could be surprised by the results of this study and implement explicit spelling teaching to diversify their teaching methods.

6 Conclusions

The aim of this study was to investigate and compare the efficacy of implicit teaching of spelling against the efficacy of explicit teaching of spelling with upper secondary school students of EFL in Sweden. Through the methodology of an interventional study, explicit teaching has been shown to lead to better spelling ability with an average improvement of 4,6 percent in post-test results when compared to pre-test, while implicit teaching did not show an overall improvement. The group who partook in explicit teaching were, however, weaker spellers on average and never reached the same results as the explicit group before nor after the intervention. Certain individual students improved their performance greatly in both groups indicating additional differences in efficacy depending on learner aptitude or background. Explicit teaching of spelling having greater efficacy than implicit teaching is expected from previous research, but now proven to also be valid in the context of Swedish upper secondary schools. It was not possible to draw any conclusions regarding education level of guardians based on the small and rather homogeneous subject group, while maintaining anonymity for all participants. Efficacy of implicit versus explicit spelling teaching does vary by gender, first language and extramural activities, but the differences are minor, and more research would be needed to draw pedagogical implications from these results. It is, however, clear from this study and previous research that both methods have a beneficial effect, at least on an individual level, but which method is most beneficial is likely to differ between learners based on this study. Further research is needed to disentangle the effects of what background, gender, native language or interests the students have on the different types of teaching as the present study indicates that there are likely differences based on these factors. Future research is also encouraged to investigate the benefits for students with dyslexia specifically in the Swedish context, as the results of this study, like previous research, make it likely that explicit teaching could especially benefit them.

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Appendix 1 – Pre-test words and sentences

Words included in the pre-test and the category assigned during analysis in parentheses.

Misspell (PRE)

As in: Take care that you write this word correctly and do not misspell it.

Flies (YIE)

As in: There are many flies swarming around my rubbish bin.

Happily (YSUF)

As in: I would happily help you with your homework.

Immature (PRE)

As in: My little brother is so annoying and immature.

Buried (YSUF)

As in: Mr. Jones passed away last week, and he was buried yesterday.

Worrying (YING)

As in: Stop worrying about me, Mom. I will be ok.

Cosiest/coziest (YSUF)

As in: Your house is the coziest house I have ever been in.

Luckily (YSUF)

As in: I ran to the bus stop and luckily caught the bus in time.

Overjoyed (YCON)

As in: The wife was completely overjoyed by her husband's surprise.

Babies (YIE)

As in: There goes a mother with her two babies.

Illogical (PRE)

As in: These rules make no sense. They are completely illogical!

Trophies (YIE)

As in: A good athlete usually wins a lot of medals and trophies.

Studying (YING)

As in: No, I can't come. I will be studying tomorrow night.

Irresponsible (PRE)

As in: Forgetting to feed the pets before leaving the house was really irresponsible.

Fly's (YGEN)

As in: A fly's wings are larger on females than males.

Trickier (YSUF)

As in: This test is trickier than our usual quizzes.

Dissatisfied (PRE)

As in: I hope you are happy and not dissatisfied with your meal.

Essays (YCON)

As in: We need to write so many essays in school. It's exhausting.

Unnatural (PRE)

As in: The robot's movements were stiff and unnatural.

Baby's (YGEN)

As in: It is the baby's teddy bear.

Appendix 2 – Post-test words and sentences

Words included in the post-test and the category assigned during analysis in parentheses.

Memories (YIE)

As in: I have a lot of fond memories of playing with my grandmother.

Sleepily (YSUF)

As in: He got out of bed and sleepily rubbed his eyes.

Irregular (PRE)

As in: The irregular shape of the puzzle piece made it hard to fit into the picture.

Happiest (YSUF)

As in: Their wedding day was one of the happiest moments of their lives.

Delays (YCON)

As in: If you travel by train, you need to count on some delays.

Copying (YING)

As in: He is cheating and is copying his neighbor's answers.

Berry's (YGEN)

As in: A biologist can study a berry's seeds with a microscope.

Dissimilar (PRE)

As in: Their taste in music was dissimilar; she liked pop, while he preferred rock.

Easier (YSUF)

As in: This word was a lot easier than the last one.

Immortal (PRE)

As in: The Greek gods were believed to be immortal beings.

Theories (YIE)

As in: Scientists have proposed various theories to explain the phenomenon.

Replying (YING)

As in: I am replying to my friend's message.

Company's (YGEN)

As in: All the workers of the factory had to strive towards the company's vision.

Angrily (YSUF)

As in: The customer complained and angrily looked at the manager.

Maydays (YCON)

As in: The coast guard received several maydays from the sunken ship.

Unnecessary (PRE)

As in: Try to pack light when hiking, so do not bring unnecessary items.

Satisfied (YSUF)

As in: After a delicious meal, they were satisfied and content.

Misuse (PRE)

As in: You have to use the equipment correctly. No misuse is allowed.

Berries (YIE)

As in: We went looking for berries in the forest yesterday.

Illegal (PRE)

As in: Committing an illegal act might result in a fine or even a prison sentence.

Appendix 3 – Text for implicit instruction

The newfound bliss in Berry Bliss bakery

In the quiet town of Willow Creek, nestled between rolling hills and whispering woods, there stood a small bakery known as Berry Bliss. Every morning, before the sun peeked over the horizon, its owner, Mrs. Thompson, would arrive sleepily to start baking. She'd hum her happiest tunes in the bakery's kitchen as she measured flour, sugar, and berries for her famous berry pies.

On one particularly chilly morning, Mrs. Thompson was met with an unnecessary surprise. A sign hung crookedly on her door, announcing in bold letters: "CLOSED DUE TO DELAYS." Confused and slightly worried, she fumbled with her keys, unlocking the door to find the source of the trouble. Inside, she discovered a most unexpected visitor: a baby's cries echoed through the bakery. Mrs. Thompson blinked in disbelief as she spotted a bundle of blankets nestled amidst the flour sacks, tiny hands reaching out for her.

"Goodness gracious! What in the world are you doing here?" Mrs. Thompson exclaimed, scooping up the infant and cradling him in her arms. She glanced around, searching for any sign of the baby's company, but the bakery remained silent except for the rhythmic ticking of the clock on the wall.

With a soft coo, the baby gurgled, seemingly replying to her question with nonsensical baby babble. Mrs. Thompson chuckled, feeling a warmth spread through her heart as she rocked the child gently. As the morning sunlight filtered through the windows, Mrs. Thompson set about her tasks, all the while keeping an eye on the little one. Time flew by as flour dusted the air like tiny flies, and the aroma of freshly baked pastries filled the bakery. Just as Mrs. Thompson was putting the finishing touches on a batch of raspberry scones, a young man burst through the door, his face flushed with panic.

"Mrs. Thompson! I'm so sorry! My cousin was supposed to be watching my little brother, but she had to run an errand, and I got held up in traffic. I hope Henry hasn't been too much trouble," the man rambled, looking immensely relieved to see the baby safe in Mrs. Thompson's arms.

"Goodness gracious, indeed! You gave me quite a scare," Mrs. Thompson chided, though her eyes twinkled with amusement. "Luckily, your brother has been the perfect little helper. Though I must say, leaving a baby alone in a bakery is quite irresponsible."

The young man hung his head sheepishly, his cheeks flushing with embarrassment. "I know, I know. It was a trickier situation than I anticipated. But I promise it won't happen again. It's just that I've had such a hard time finding someone to watch him while I'm at work. I'm James, by the way, the new delivery driver for the grocery store."

Mrs. Thompson smiled, feeling satisfied that the baby was safe and sound. "Well, as long as everyone is okay. Maybe I can watch Henry sometimes while you make your deliveries? Now, how about a raspberry scone? It's the perfect remedy for worrying too much."

As James gratefully accepted both her offer and the scone, Mrs. Thompson couldn't help but reflect on the unpredictability of life. Sometimes, even the most mature individuals find themselves in sticky situations, like a baby left alone in a bakery. But with a little kindness and understanding, even the most challenging moments could be turned into sweet memories. And as the baby's giggles filled the air, Mrs. Thompson couldn't help but feel grateful for the unexpected joy he had brought to her day. Little did she know, this would be just the beginning of their delightful adventures together.

Over the following weeks, the bakery seemed to buzz with an extra dose of energy and excitement. Mrs. Thompson found herself eagerly awaiting each day when Henry would visit, wondering what new mischief he would get into. Despite his tiny size, Henry had an insatiable curiosity that led him to explore every nook and cranny of the bakery. From the flour bins to the shelves of freshly baked goods, no corner was safe from his wandering hands and curious eyes. One particularly eventful afternoon, Mrs. Thompson found herself facing an unexpected challenge. As she prepared a batch of blueberry muffins, she noticed Henry eyeing the display case with a mischievous glint in his eye.

"Now, Henry, darling, those muffins are for our customers," Mrs. Thompson said gently, attempting to coax the baby away from the tempting treats.

But Henry had other plans. With a gleeful squeal, he reached out and grabbed a muffin, sending it tumbling to the floor in a crumbly mess. Mrs. Thompson sighed, resigned to the fact that keeping up with a baby in a bakery was no easy task. As she bent down to clean up the mess, Mrs. Thompson couldn't help but smile at Henry's antics. Despite the occasional mishap, having the baby around brought a newfound sense of joy and excitement to her life. However, Mrs. Thompson couldn't shake the nagging feeling that something was amiss. One evening, as she closed up shop for the day, she noticed a shadowy figure lurking in the alley behind the bakery. Feeling a surge of unease, Mrs. Thompson hurried inside and locked the door behind her. She couldn't shake the feeling that something illegal was afoot, and she wasn't about to take any chances with Henry's safety.

As the days passed, Mrs. Thompson found herself growing increasingly vigilant, keeping a watchful eye on her surroundings at all times. She couldn't shake the feeling that someone was watching her, waiting for the perfect opportunity to strike. Then, one fateful night, her worst fears were realized. As she made her way home after closing up shop, Mrs. Thompson was accosted by a group of shadowy figures who emerged from the darkness of the alley behind the bakery.

"Give us all your money, old lady, and nobody gets hurt," one of the figures snarled, brandishing a knife menacingly.

But Mrs. Thompson refused to back down. With a steely resolve, she stood her ground, determined to protect herself and Henry at all costs. Luckily, help arrived just in the nick of time. From out of the darkness, a familiar figure emerged.

"Leave her alone!" he shouted, rushing to Mrs. Thompson's aid.

It was James, returning from his latest round of deliveries. With a fierce determination, James and Mrs. Thompson fought off their attackers, sending them fleeing into the night. As they caught their breath, Mrs. Thompson couldn't help but feeling immensely grateful for the young man's timely intervention.

"Thank you, dear boy," she said, her voice trembling with emotion. "You saved us both."

As they made their way back to the safety of the bakery, and shut the bakery's door behind them, Mrs. Thompson drew a sigh of relief.

"After all this excitement, I need a nice cup of tea, how about you?" Mrs. Thompson said. "Would you like to come to my cottage for some supper?"

"Yes, please, that sounds wonderful" James answered with a big smile on his face as the three unlikely companions left together.

The following morning dawned bright and clear, casting a warm glow over Berry Bliss Bakery. Mrs. Thompson bustled about the kitchen, the events of the previous night still fresh in her mind. As she kneaded dough and prepped ingredients, she couldn't help but replay the harrowing encounter in the alley. Henry, oblivious to the dangers that had threatened them, giggled, and cooed in his chair, his chubby cheeks flushed with excitement. Mrs. Thompson smiled fondly at the sight, grateful for the innocence and joy the baby brought into her life. Despite the lingering sense of unease, Mrs. Thompson refused to let fear dictate her actions. With a newfound determination, she resolved to keep Henry and the bakery safe, no matter the cost.

As the day wore on, customers trickled in and out of the bakery, drawn by the irresistible aroma of freshly baked treats. Mrs. Thompson greeted each one with a warm smile, her worries momentarily forgotten in the hustle and bustle of the busy morning rush. But just as she began to relax, James appeared in the doorway.

"Mrs. Thompson, I wanted to thank you again for everything you did last night," he said earnestly, his eyes filled with gratitude.

Mrs. Thompson waved off his thanks with a dismissive gesture. "Nonsense, dear boy. You were the one who saved the day. If it weren't for you, who knows what might have happened."

The young man smiled, his cheeks tinged with color. "Well, I was lucky to arrive in time, and I couldn't just stand by and do nothing. You've been so kind to me and my brother these past few weeks. I couldn't let anything happen to you."

Mrs. Thompson felt a lump form in her throat at his words. Despite their brief acquaintance, she felt a deep sense of connection to the young man and Henry, as if they were a makeshift family brought together by fate.

As the day drew to a close and the last of the customers trickled out of the bakery, Mrs. Thompson found herself reflecting on the events of the past few weeks. Despite the challenges and dangers, they had faced, she was grateful for the unexpected joy and companionship James and Henry had brought into her life. With her husband long gone, she hadn't before realized how lonely her life had become. But thinking back to the night before – surrounded by the warmth and love of her new makeshift family, and Henry's infectious laughter ringing in her ears, she felt happier than she had been in a long time. No matter what challenges lay ahead, she knew that they would face them together – a new family forged in the fires of adversity, stronger and more resilient than ever before.

Appendix 4 – Form for survey participation

I am conducting a research study to understand the effects of different methods of teaching spelling in English as a foreign language education in Sweden. This test, and concluding survey, aims to gather information that could contribute to improved teaching methodology in the future. The findings will be analyzed and presented in the form of graphs and tables in the final research paper.

Your participation in this study is entirely voluntary and anonymous. No personal identifiers such as names, personal identification numbers, email addresses, IP addresses, etc. will be collected. Your responses will be used solely for academic purposes and will be kept strictly confidential.

The University of Gothenburg upholds the highest standards of data protection and privacy. Should you have any inquiries or concerns regarding the handling of personal data, our Data Protection Officer is available at dataskyddsbud@gu.se. Should there be any grievances, you are entitled to lodge a complaint with the Swedish Authority for Privacy Protection (IMY).

I agree to take part in this study:

Yes

No

Appendix 5 – Survey questions

These questions were originally given in Swedish to the participants but have here been translated for international readers. The terms to describe the level of education has also been adapted from the Swedish system into the terms commonly used in the English-speaking world.

State your gender:

Woman

Man

Other

Do not want to answer the question.

State your first language:

Swedish

English

Other/ Do not want to answer the question.

State your extramural activities (mark all activities performed more than 3 hours a week):

Sports

Computer-, mobile- or videogaming

Read books on top of school work

Music (play an instrument, singing, creating music etc.)

Art (drawing, painting, sculpting etc.)

Creating literature (writing poetry, fiction, diary etc.)

Watching movies & tv-shows

Social media (YouTube, TikTok, Instagram etc.)

Do not want to answer the question.

State the highest level of education of your legal guardians (State the level of education of the guardian who has studied the longest.)

Lower secondary education

Upper secondary education (2 year degree)

Upper secondary education (3 year degree)

University education (up to 3 years)

University education (3 years or more)

Do not know/ Do not want to answer the question.