

Learning-by-Observation in English as a Second Language Writing
Education

*Eye halve a spelling chequer
It came with my pea sea.
It plainly marques four my revue
Miss steaks eye kin knot sea.*

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*I hereby declare that this thesis is an original work, written by myself alone.
Any information and ideas from other sources are acknowledged fully in the text and notes.*

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1. Introduction

The development of writing skills in the English language is important in English proficiency programmes at Dutch secondary schools. This thesis studies the didactic method known as *learning-by-observation* and its effectiveness in the teaching of writing at the beginners' level of English as a second language.

This initial chapter will ascertain why writing skills training in a second language such as English are important, at secondary school level; moreover, it will provide information on how writing skills are taught in Dutch secondary schools, and to which groups of learners it is typically taught. It will also explain what heterogeneous groups, in the current study, mean. Furthermore, this chapter will introduce the didactic method of learning-by-observation and it will make clear why this didactic method may be effective for second language writing education. This discussion prepares the way for a report of an experimental study that was conducted to investigate whether the didactic method of learning-by-observation is effective for English writing education in heterogeneous groups of learners at Dutch secondary schools.

Writing skills are extremely important in daily life. Being able to write effectively is very important to become successful in the world (Reif-Lehrer, 1992: 212). This is why the development of writing skills takes up a considerable part of educational programmes around the world. For example, colleges, universities and employers demand that applicants for study programmes or jobs can sufficiently communicate in writing. The development of this ability “will depend to a large extent on the educational level, including good communication skills” (Reif-Lehrer, 1992: 219). The importance of good didactic methods for teaching writing skills in secondary schools is therefore not to be underestimated. Dutch secondary schools develop the writing skills of their students in both the native tongue and second languages, for example English, French and German. This specific study will focus on English writing skills. Teaching writing skills in the English language is reasonably important at Dutch secondary schools: the attainment targets for English, as described in the Common European Framework of Reference (CEFR), are consistently higher than the attainment targets for other second languages, respectively level B2 instead of level B1 (ERK, 2010). Research into didactic methods for improving writing skills in a second language like English is therefore necessary.

As a background to second language education in the Netherlands, it is important to note that Dutch secondary schools cover three types of secondary education: pre-vocational

education¹, senior general secondary education² and pre-university education³. Depending on the type of education, students get four, five, or six years of language education, during which students practise their writing skills as part of the English language proficiency programme. This implies that students taking different types of secondary education will have to reach different attainment targets. In the case of writing, English teachers are required to teach their students how to communicate adequately in written communication with native English speakers. Students, at graduation, are expected to be able to present written information properly, their opinion and arguments depending on their readers and the writing objective. Furthermore, it is expected that students have acquired the ability to write a report on a pre-specified topic (Examenblad, 2010). This means that teachers have to coach students' writing as an important component of developing their proficiency in a second language. The development of writing skills is part of the English education programme in the Netherlands, but it usually takes up a small part in the curricula at secondary schools. This means that writing education can be short and demanding. Developing didactic methods for writing education that meet the needs of students as directly as possible is therefore recommendable. It is consequently suggested that writing didactics be developed which are as comprehensive and as thorough as possible.

In the existing language proficiency programmes in the Netherlands, it can be difficult for second language teachers to comply with this latter recommendation. In secondary school practice, the amount of individual feedback on written work is usually sparse due to limited time for elaborate analyses with students. It is often restricted to the correction of spelling and grammar, rather than the communicative effectiveness of the text itself. A didactic method that offers adequate feedback relevant to all students in one or few groups, rather than on an individual basis, is consequently desirable. However, groups of students in Dutch secondary school are heterogeneous. As Dutch secondary schools have different types of curricula, it will be clear that large differences will exist between the students and their individual demands of writing education. Firstly, the type and year of education students are in creates differences in the English language proficiency level. This suggests that it is important to establish whether a didactic method is effective for students with different proficiencies in the English language. Secondly, other individual differences between students need to be considered. Although it is expected that students have more or less the same English language

¹ VMBO

² HAVO

³ VWO

proficiency level when they are in the same type and year of education, their learning strategies will differ and student dependent factors like self-esteem, level of competence, status, and so on, influence the effectiveness of didactic methods. This automatically has its repercussions on the content and form of the didactic method of learning-by-observation, as it should not just be effective for students with different language proficiencies, but it should also create a learning effect regardless of other individual differences between students. In the second half of this thesis, the didactic method learning-by-observation will be experimentally investigated which offers feedback that is effective for heterogeneous groups of students. This means, in the context of this study, that the didactic method should improve writing skills of groups of students with different language proficiencies and other individual differences.

Learning-by-observation is a didactic method that may be effective in second language writing education for the heterogeneous groups of learners described earlier. This method aims to improve writing skills through observation of peer response towards written work (Rijlaarsdam, Braaksma, Couzijn, Janssen, Kieft, Broekkamp and Van den Bergh, 2005: 140). By observing other writers or readers – also referred to as models – inexperienced writers, who are starting to develop their writing skills, can acquire the meta-cognitive skills needed for going through a successful writing cycle. The observation of the writing and reading process of peers creates a moment of self-reflection and evaluation of the observer's knowledge and use of cognitive skills to produce a successful text. This may result in improvement of the written work. Previous research indicates that this is why learning-by-observation may be an effective didactic method for writing education in the native tongue and in a second language. However, much of this research was targeted at individual students, rather than at groups of students with different language proficiencies and personal needs. The research chose specific models that were expected to meet an individual learner's educational requirements, rather than developing feedback that could be effective for groups of learners, regardless of differences in English language proficiency or other individual differences. For that reason, research into the effects of learning-by-observation on heterogeneous groups of learners is useful.

This thesis and its associated experiment explores whether learning-by-observation can be effective for English writing education for heterogeneous groups of students at Dutch secondary schools. The following chapter reviews the relevant literature, which aim is to give an understanding as to why and under what circumstances this didactic method may be effective. Furthermore, the review is used to discuss, and cover, the influence of models on feedback effectiveness to establish which requirements have to be made of observational

feedback for heterogeneous groups of learners. This literature discussion will serve as a theoretical background to the study into the effectiveness of learning-by-observation.

Having established this theoretical background, this thesis will report on a study that was carried out on a Dutch secondary school to investigate whether learning-by-observation is effective for heterogeneous groups of students learning to write English as a second language. The hypothesis of the current study is that the use of this didactic method in relatively short and demanding English writing education will lead to an improvement, and in fact hopefully a statistically significant improvement, of the written work of students in comparison to that of a control group. The selected Dutch secondary school, school A, wishes to remain anonymous. School A can be considered, for current purposes, representative of standard secondary schools in the Netherlands. A second and fourth year class of senior general secondary education participated in the project, and they are taken as representing an average group of Dutch students in secondary school. In this experiment, they were asked to write a manual to a short physics experiment twice: first without instruction, then again three weeks later following either written feedback or observational video feedback. These manuals were then analysed for completeness, spelling, grammar, communicative effectiveness and overall quality, using both an analytical and a holistic approach. Such different analyses can be used to indicate if improvements have been made and, if so, where these occur. If writing skills improve, the manuals should be more complete, more communicatively effective and the overall quality of the manual should be significantly higher after rewriting. It can be assumed that when there is improvement in spelling and grammar that the students have understood that correct use of the English language improved the text: note that this is different from improvements in the language proficiency. A more elaborate and detailed description of the participants and the experiment is given in the methodology chapter. The results of this study can indicate whether learning-by-observation can be an effective didactic method for heterogeneous groups learning English as a second language in Dutch secondary schools.

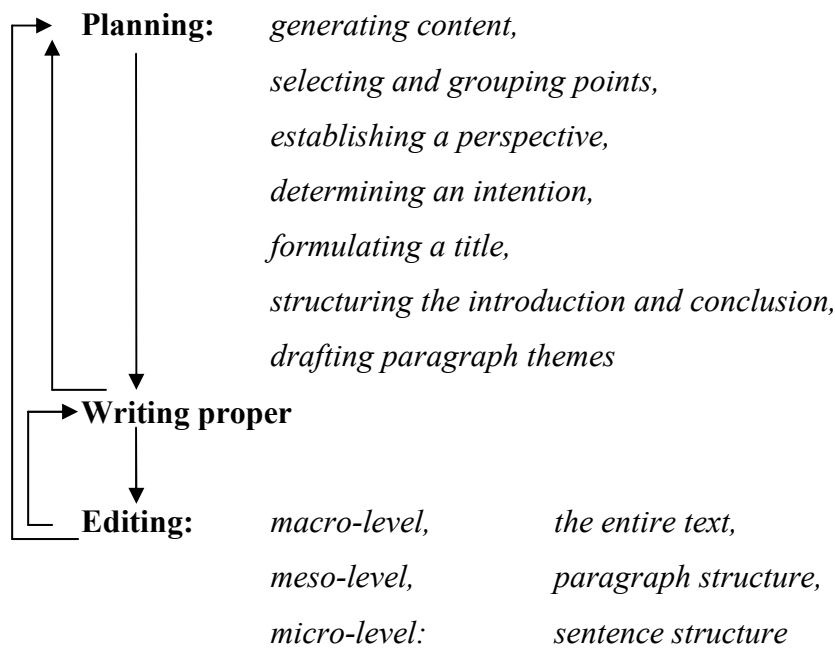
2. Theoretical background

The following chapter will review the relevant literature about writing education. Firstly, the writing-cycle will be reviewed. It will be made clear that cognitive skills are indispensable to go through an effective writing cycle, as students produce better texts when they go through an effective writing cycle, and finally, that it is necessary for students to actively train and apply the cognitive skills needed in an effective writing-cycle to produce better texts. Secondly, current practice in writing education at Dutch secondary schools is discussed, presenting the didactic method of learning-by-doing. Problems with this didactic method will be identified. Thirdly, learning-by-observation is presented as an alternative didactic method, which has the potential to be effective for heterogeneous groups of learners in relatively short and demanding English writing education at Dutch secondary schools. Lastly, model requirements for implementing learning-by-observation are discussed. This review will serve as a theoretical background to the methodology chapter.

2.1 The writing cycle

To improve English language writing education in Dutch secondary schools, it is important to understand what it is that makes a successful text. Research indicates that a good text is produced based on an effective writing-cycle that the writer goes through. Writing instruction may be more effective when didactic methods are based on improving the writing process that inexperienced writers go through, rather than focusing on the final product. This, especially in second language education, might focus too much on grammar and spelling, rather than the actual writing process. By investigating which skills help students go through an effective writing-cycle and what the needs of inexperienced writers are, didactic methods for writing education may be improved.

Writing is not as straightforward as it may seem. It is more than the production of text, to be understood as a process or writing-cycle that consists of several phases. Hannay and Mackenzie (2002) recognise three processes: planning, writing proper, and editing. They suggest that these processes come in a succeeding order in a writing cycle, but that successful writers allow these processes to overlap (17). Furthermore, each process can be divided into multiple sub-processes, some of which are summarised below.



Hannay and Mackenzie’s representation of a writing-cycle cannot be accepted as a definitive representation of what a writing-cycle should look like. However, it can be considered a good example of what many writing cycles may look like. Naturally, writing-cycles, processes and sub-processes may differ depending on personal preference and skill of the writer, thereby creating differences in the quality of the final project.

The effectiveness of a writing-cycle does not purely depend on going through the aforementioned phases of writing. Rijlaarsdam, Braaksma, Couzijn, Janssen, Kieft, Raedts, Van Steendam, Toorenaar and Van den Bergh (2009) present writing as a problem-solving process. They claim that writers are unaware of the qualities a text should have, in order to meet the specific communicative needs between the writer and the reader. When the writer arrives at a text that fulfils this communicative need, it can be considered effective. Evers-Vermeul and van den Bergh (2008) argue that several cognitive skills are needed to produce an effective text. They argue that successful writing is based on three representations that a writer constantly needs to be aware of and mediate between. Firstly, the writer needs to know what he wants to say. Although the original intention of the text might be quite clear to the writer, the actual text will be different from this initial intention. Secondly, the writer needs to consider the actual produced representation of text critically, as this is a different representation from the aforementioned initial intention. This requires a constant cognitive synchronisation between what the writer wants to say and what is actually written down. Thirdly, the writer needs to make a social adjustment in order to determine how the reader will interpret the text. Therefore, a writer needs audience awareness to make this final

translation. This cognitive and social process can be very difficult for inexperienced writers. This means that the chosen didactic technique should focus on improving the cognitive skills needed to go through an effective writing cycle.

The cognitive skills students need to improve their ability to go through an effective writing-cycle have to be identified to discern what didactic methods should be used in writing education. Rijlaarsdam et al (2005) review empirical studies into factors that facilitate effective writing instruction. To this end, they review a selection of studies into writing processes. They refer to the Hayes-and-Flower model (1980) for the main sub-processes active in writing cycles – planning, translating and reviewing – and apply them to think-aloud-protocols to establish the effectiveness of writing cycles in producing text. They review Breetvelt, Van den Bergh and Rijlaarsdam (1994), who asked fifteen-year-olds to think aloud while writing an argumentative essay in 60-90 minutes. They concluded, “the occurrence of a process was related to the quality of the resulting text” (130). Based on this, Rijlaarsdam et al conclude that many different writing processes exist which can lead to a good text. Furthermore, from think-aloud studies with students aged fourteen and fifteen Van den Bergh & Rijlaarsdam (1999) concluded that different cognitive activities are functionally related. This means that some activities – like generating ideas based on the assignment – may be more effective in the beginning of the writing process rather than in the end. This means that a didactic method should focus on a scope of cognitive skills, rather than on one or two specific skills. To meet students’ needs, teachers should use a didactic method that allows inexperienced writers to explore the skills they do not have, help them develop those further, and help them to mediate better between different representations of a text.

A didactic method should not just suffice in teaching students cognitive skills, but it should also incorporate ways in which to apply them effectively. Rijlaarsdam et al (2005) refer to a study by Van der Hoeven (1997) who concludes that the ability of students to apply cognitive activities like planning and revising their writing process affects how often and how effectively students call on these skills. Van der Hoeven measured revision skills of eleven-year-olds using independent tasks. The more competent students are in using revision skills, the more they applied other cognitive activities like structuring, producing written text, rereading, evaluating and transforming already-written text. Nevertheless, having certain skills does not guarantee that students actually apply them to improve their written compositions. Rijlaarsdam et al (2005) conclude that “writers compensate for less developed skills” (135) and that students should therefore be made aware of the existence of cognitive activities they can use to improve their written work. They should be able to develop the

ability to practise and apply these processes at the correct moment in the writing process. An effective didactic method should help inexperienced writers reflect on their own writing process and use of cognitive skills to mediate between different representations of the text.

The discussed reviews show that an effective writing-cycle can only be established when inexperienced writers are taught which processes and cognitive skills are needed to produce a good text. By improving meta-cognitive skills, inexperienced writers are able to mediate better between different representations of a text. Inexperienced writers have to practise their skills and be made aware of when to use them effectively to meet the needs of their readers. Therefore, creating audience awareness in inexperienced writers proves very important. When developing a didactic method for writing education in the English language at Dutch secondary schools, it is important to focus on improving the meta-cognitive skills needed in an effective writing cycle. A didactic method that provides these learning opportunities for inexperienced writers may be successful in second language writing education in Dutch secondary schools.

2.2 Writing education at Dutch secondary schools

Writing education at Dutch secondary schools takes place during the subject Dutch and second language subjects. In the case of second languages, writing skills are taught in addition to developing the second language proficiency. An effective didactic method for writing education in English language classes offers students the means to develop their writing skills, rather than their language proficiency, by developing the cognitive skills needed to go through an effective writing cycle. This review aims to identify areas in need of improvement in present writing education in the Netherlands.

At Dutch secondary schools, the greater part of writing instruction takes place during the subject Dutch, the official language in the Netherlands. Several writing objectives are practised, and students are expected to transfer most of this knowledge to the second language courses they are taking, most commonly English, where they are asked to expand this knowledge further by learning about the most common foreign writing customs. The traditional didactic method used is learning-by-doing (Couzijn, 1995). This entails that students first familiarise themselves with the subject matter by reading a textbook, or by a teacher's explanation, before applying the subject matter to one or more exercises. Writing exercises are usually quite time-consuming, for both students and teachers. This results in limited practice. After a writing exercise the teacher evaluates the written work and returns it to the students. Sometimes a group discussion of the results takes place.

The didactic method learning-by-doing approaches writing education in a way that is unfortunately not without fault. Evers-Vermeul and van den Bergh (2008) present three problematic areas in this approach to writing education:

Firstly, Evers-Vermeul and van den Bergh argue that the writing done is usually with the objective of conveying information about a certain subject, and that the work is therefore graded on content rather than form. Feedback focused on the student's writing skills is therefore limited or non-existent.

Secondly, Evers-Vermeul and van den Bergh suggest that this didactic method asks students to both write and learn to write. This means that during the exercise set for them, students will focus mostly on getting the task done, rather than concerning themselves with how they could improve their writing.

Lastly, it is argued that many writing assignments in Dutch secondary schools are artificial, and that students will therefore not be concerned with, for example, their audience. They write because they have to.

Couzijn (1995) considers the needs of inexperienced writers and the common Dutch didactic method of learning-by-doing, and identifies several points of criticism. Inexperienced writers have two sources of information for revision. Firstly, the writer can proofread his own text. This is problematical, as inexperienced writers do not yet have the cognitive and social skills to mediate between their own text and their audience. They rely instead on their previous knowledge about what they wanted to say. This means that although spelling and grammatical errors may be corrected, it is rather difficult for inexperienced writers to evaluate their own text on other levels such as analysis of paragraph structures, sentences and overall readability. (Couzijn, 1995: 92). Secondly, inexperienced writers can only rely on a teacher's evaluation of the work. This is also problematic, as students receive their mark and perhaps some notes, but usually after some time has passed. Couzijn refers to Mayer "[...] feedback is known to be effective mainly if it follows directly on task execution" (Mayer, 1987: 102-112). The teacher, acting as an external evaluator, therefore usually identifies flaws in the written work: functional reading tasks are usually not performed and the students are not asked to engage actively with their written work in order to improve their cognitive writings skills (Couzijn, 1995: 92). Furthermore, relatively often the written work is marked on content rather than form, creating feedback that also focuses on content. This means that there is no concrete situation in which meta-communicative knowledge can be gained. In order to offer students a learning environment in which they are able to experiment with writing and

develop the cognitive skills required to write effectively, other didactic methods have to be considered.

Couzijn (1995) bases an experiment on the aforementioned criticism on the didactic method of learning-by-doing. He suggests learning-by-observation may be more suitable for writing education as it focuses the learner's attention on monitoring and evaluating writing activities. Couzijn therefore tests the learning effects of the instructional methods learning-by-doing and learning-by-observation as feedback. The secondary school students taking part in this experiment were approximately 15 years old. They were divided in a learning-by-doing and a learning-by-observation group. Both groups were asked to write a manual for a physics experiment. Consequently, students in the learning-by-doing group were divided into two more groups; one group did not have to write a second version of their manual. The second group had to evaluate the manual for completeness and comprehensibility using a guided revision. The students in the learning-by-observation group were divided into three more groups: one group observed readers of their self-written text formulating comments aloud. The second group also observed the reader of their self-written text, but they also received some written comments. The third group observed a reader commenting on another writer's text. All writing and reading was done individually, rather than in a group. The comparisons between the five groups of learners were based on a scoring model. Couzijn concluded that all writer groups in the learning-by-observation group were able to improve their text. Furthermore, writers who observed a reader and received additional comments scored higher, regardless of observing a reader of their own or someone else's text. Couzijn concludes that these benefits over learning-by-doing arise from being able to observe the reader's needs and problems during the reading of a text and being able to reflect actively on the written work.

The didactic method of learning-by-doing has several shortcomings. The assignments are artificial and feedback is limited, focusing more on spelling and grammar than improving cognitive skills needed in the writing cycle. This method has limited influence on self-reflection and evaluation needed for the development of cognitive skills required for an effective writing cycle. Furthermore, other didactic methods like learning-by-observation prove more effective in writing education. If these didactic methods prove effective for heterogeneous groups of learners, rather than individual learners, they can be implemented into English language writing education in Dutch secondary schools, hopefully making writing education more successful.

2.3 Learning-by-observation

An effective writing process demands that writers rely on cognitive and social procedures that cannot be learned without self-reflection and evaluation. Several studies have been conducted into didactic methods that might introduce a moment in the learning process where students can reflect on their written work. Learning-by-observation is an example of a didactic method that incorporates moments of self-reflection on a written product through the observation of peers performing a writing task or through observing readers. Rijlaarsdam, Braaksma, Couzijn, Janssen, Kieft, Raedts, van Steendam, Toorenaar & Van den Bergh (2009: 441) refer to findings by Crashnick and Lumbelli (2004) “Witnessing the factual problems of readers may help to understand how reading works, what it takes, and how texts can either help or hinder reading”. This suggests that learning-by-observation might induce audience awareness in students and therefore stimulate the development of the cognitive and social processes involved in mediating between different representations of a text. Because of this, learning-by-observation may be a successful writing didactic method. The theory behind learning-by-observation will be reviewed below.

Couzijn (1995: 72) summarises the main reasons why learning-by-observation may contribute to effective writing education. Firstly, Couzijn stresses that learning-by-observation is a process-oriented instructional method that can be compared to teaching-by-demonstration. This means that students are shown the behaviour that is to be learned in addition to an explanation. Secondly, empirical evidence suggests some cognitive tasks, involved in the writing process, are more effectively acquired by observation and imitation, than by inactively performing these tasks. Furthermore, Couzijn explains that students construct mental plans that specify the activities performed in the tasks. The type of tasks that are taught within the learning-by-observation method can be of various types, including cognitive and self-regulating tasks, like writing. Couzijn identifies four essential sub-processes to learning-by-observation: attention, retention, reproduction and motivation. Firstly, Couzijn argues that it is very important that *attention* is drawn to relevant behavioural components, and that the demonstration needs to be done by eligible models. Secondly, *retention* can be enhanced when the behaviour is related to existing knowledge. Thirdly, students should *reproduce* and evaluate the modelled behaviour, possibly followed by more corrective feedback. Lastly, the *motivation* of students can be stimulated if they understand desirable and undesirable behaviour related to the task at hand (69). When learning-by-observation is implemented this way, it may be an effective didactic method in writing education.

Couzijn (1999) recognises different types of learning by observation, and studies their effectiveness in comparison to learning-by-doing. He distinguishes between three different types of observational learning; observation of models performing a writing task, observation of one's readers, and observing readers and writers interacting. Couzijn argues that all types of observation may be more effective than learning-by-doing, because observation of models focuses the learner's attention to evaluation of concrete, realistic writing task examples. In addition, the observation of readers and writers may cause the learner to focus more on the evaluation of his own work. Secondary school students aged approximately fifteen were asked to participate in the study. They were asked to participate in class where they would learn to write an argumentative text. The students were then divided into different groups with different learning activities: doing exercises, observing model-writers, observing writers and readers, and doing an exercise and observing a reader as feedback. Pre- and post-tests were administered in groups, but the tasks themselves were done individually. Then learners' performances were compared for learning effects. Couzijn concluded that both observation of models and observation as feedback are more effective than learning-by-doing. This suggests that further research can specify which type of learning-by-observation creates the greatest learning effect in heterogeneous groups of students in secondary schools.

Models are especially important to the success of learning-by-observation. Rijlaarsdam et al (2005) consider a study by Zimmerman & Kitsantas (2002), who analysed the acquisition of writing skills with different types of models. Behaviour had to be acquired on four sequential levels according to a social design of sequential skill acquisition by Schunk & Zimmerman (1997). This social design suggests skills are acquired by *observation* of model's behaviour, *emulation* of model's performance, *self-controlling* student's creative effort by comparison with standards based on model's performance, and *self-regulating* student's performance, shifting between focus on modelled processes to reader responses. Zimmerman & Kitsantas analysed the first two levels, observation and emulation, using different observational models. Students were asked to combine sentences into coherent non-repetitive sentences. The students were given a strategy to solve the problem on a handout. Then they were divided into three groups. One group had no model to observe and was only confronted with the problem that they had to solve. A second group had an observational model who was able to solve the presented problems without making any errors – a so-called master-model. The last group was presented with an observational model who made errors, but who gradually solved the problem – called a coping-model. After the observational phase, the students had to solve a similar problem. Then half of them got feedback, while the other

half did not. The results showed that the students who observed a model received higher scores than the students who did not observe a model. Furthermore, students observing a coping-model scored higher than those observing a master-model. When they considered the effect of feedback after the practicing phase, it became apparent that the students who observed a model *and* received feedback got higher scores than the students who did not observe a model. The students who observed a coping-model again received the highest scores. This research shows that writing skills improve after observation of models performing a writing task (Rijlaarsdam et al 2005:140-144), and that different types of models have different effects on students.

Rijlaarsdam et al (2009) discuss writing within the domain of referential communication as defined by Yule (1997). Within this domain, “writing is seen as a cognitive and social process” (438), as is described earlier. To improve the skills needed for going through this process, writing researchers have suggested that inexperienced writers should develop a sense of audience awareness (437). By observing actual readers, writers learn about readers’ responses to particular communicative representations of texts. Rijlaarsdam et al (2009) review studies in which the hypothesis is tested that “*observation and evaluation of speakers and/or listeners in communication tasks would result in meta-cognitive knowledge*”.

Rijlaarsdam et al discuss the Yummy Yummy Case (443), a lesson series designed to test the relevance of communicative roles. The objective of the study was to see if students could improve their writing by drawing on implicit knowledge of writing by switching between the roles of writer, reader and observer. In four lessons of 45 minutes students, aged 12-13, were assigned the roles of writer, reader and observer of texts. The teacher devised the plan and the work sheets. During the lessons, the teacher performed the role of spectator and stimulator. Firstly, all students had to write a letter of complaint to the fictitious board of the candy bar company Yummy Yummy. Secondly, the students were divided into groups of 4-5 students. Each two groups were paired A and B. Group A was assigned the role of readers, or the so-called board members, who had to evaluate the written letters and decide which were the best two. Group B were assigned the role of observer. They had to interpret ‘what works’ in a letter of complaint. In the third lesson, the students present their work to each other, the best two letters and the criteria for a good letter of complaint. The last lesson the students had to rewrite their letters. The results of the study show that the revised letters had many improvements. Students in the research teams improved more than those in the board members teams (effect size 1.30 versus 0.30; Rijlaarsdam and Braaksma, 2004). The Yummy Yummy Case shows that students are able to discern the quality of a text by switching

between communicative roles. This suggests that meta-cognitive knowledge is gained by *observation and evaluation* of writing and communication tasks.

Rijlaarsdam et al refer to a study by Toorenaar and Rijlaarsdam (2005a, 2005b), who investigated the learning community format in which students met the target group they had to write for (445). In one case, teachers asked students of 15-16 years old to prepare an 'activity-morning' for children of 6-7 years old. The students were divided in writing groups of three to four students. The project ran for two consecutive years. During the first year of the project, the writing teachers focused on the relationship between the writers and their readers by actively generating ideas for bedtime stories through interactive group discussions. After the central discussions, the students were asked to continue their discussions in smaller groups, thereby creating 'audience awareness'. However, the written stories of the various groups differed greatly in quality. Therefore, the design of the project, during the second year it ran, was different; the students were asked to watch videos of the first year students reading their own stories aloud to the primary school children. This way they were able to picture the concept of a real audience and develop the criteria for an effective story. During the writing process, the teacher guided the writing groups in classroom discussions on the best character, most interesting events, etc. When the stories were read aloud during the activity morning an independent jury evaluated the stories. The jury found that second year stories were better and more suitable for their younger students. Observation of actual story-telling and actual listeners in addition to the group discussions clearly improved the grasp students had of criteria for successful story writing. This indicates that audience awareness influences the effectiveness of a written product.

Learning-by-observation could be effective in English writing education at Dutch secondary schools. Observation of both the writer and the reader constitute a learning effect in inexperienced writers. This learning effect occurs due to the stimulation of the cognitive and social skills required to mediate between different representations of a text. Learning-by-observation creates a moment in the learning process where observation and evaluation of written work takes place, whereby audience awareness and cognitive skills can be developed. If learning-by-observation proves effective for heterogeneous groups of learners, implementation of this method in Dutch secondary schools can constitute to better second language writing education.

2.4 Learning-by-observation and observational models

In English classes at Dutch secondary schools, it is often difficult to offer students extensive individual feedback on their writing. Feedback based on learning-by-doing for the whole class is usually not very effective, as classes consist of heterogeneous groups of learners. Observational learning as feedback seems to lend itself better for structural implementation in language proficiency programmes, as it might be effective for groups of learners with different language proficiencies and other individual differences. However, the success of learning-by-observation depends largely on how the feedback is constructed. Different types of models create differences in the effectiveness of learning-by-observation. Their relevance will be discussed further below.

When schools try to implement learning-by-observation on a larger scale, it is very important to develop the feedback that meets the needs of the class carefully. Inexperienced writers have difficulty with effectively diagnosing their problems and correcting them: “Apparently, writers do not have the tools at their disposal for effective error detection” (Rijlaarsdam et al., 2009). By observing readers, other writers, and role switching between the two, learning-by-observation may offer writers the “essential complements to the cognitive, process-oriented view on writing education [...]” and thereby stimulate “[...] the ‘implementation and evaluation’ stage of the problem solving process that is often taken as a metaphor for writing” (447). This means that selecting an adequate observational model when developing feedback is crucial for creating a learning effect. However, Couzijn (1995: 71) suggests that different types of observational models have different effects on different types of learners. When feedback is constructed, it is therefore important to consider the learner types in the classroom and the desired effect.

Unfortunately, in secondary schools it is not always possible to meet all individuals’ needs. When creating feedback for learning-by-observation writing lessons it is therefore important to appeal to the average student, as developing individual feedback is too time-consuming. Feedback that appeals to the average student in class ensures that the method is effective for as many students as possible. Mueller concludes, “behaviour may be acquired without any evident reinforcement [...] simply through the observational capabilities of the individual and primarily because of the informative role of modelling influences” (1978: 254). However, the observed behaviour must be clear to the observers: Rijlaarsdam et al. note that students must be able to detect failures and successes, take them seriously and be able to attribute them to their own task behaviour, rather than the observed writer or reader. This suggests that when one uses a model that the majority of students can relate to, for example

students' peers in a didactic observation model, most students will benefit from the information conveyed. Rijlaarsdam et al. (442) conclude that "Simply adding a revision task does not work, that observing readers before revising your own text improves the revision significantly, and observing your own readers after having written your first draft helps even more". These results suggest that if a writing lesson based on learning-by-observation is constructed in this way, learning-by-observation may prove successful for most students. Therefore, learning-by-observation may be implemented successfully in Dutch secondary schools, when one bears the attainment targets in mind and constructs the feedback carefully.

It is very important to understand the relationship between the observational model and the learner's behaviour when developing observational feedback. Mueller (1987) studies the effects of social observation modelling on creative production. In his study, 120 female university students were divided into three groups: one group was presented with a highly creative model, one group with a low creative model, and one group with no model. All three groups of students were asked to perform a creative task, after which only two of the three groups watched a model. Then the groups were asked to perform a similar creative task again. The pre- and post-tests were assessed for general creativity, fluency, flexibility, originality and elaboration. No educational methods were used in the experiment to enhance creativity other than the models. The results showed that the students who were exposed to a highly creative model displayed more creativity in their post-tests. Students exposed to a less creative model displayed less creativity compared to the control group. This research shows the relation between model and learner: choosing the correct model for learners influences the learner's consequent behaviour. When devising feedback it is very important to choose an adequate model who displays the behaviour that students should acquire.

Although many models may be able to display the behaviour that learners have to acquire, their effectiveness may be influenced by extraneous factors. Halpin, Halpin, Miller & Landreneau (1979) study how observer characteristics relate to the imitation of model behaviour. Halpin et al recognise the importance of observational learning, but argue that many extraneous factors may influence its effectiveness (134). They assigned 167 children aged between 11 and 13 to four different modelling conditions. A white female was selected as a model for all groups. The first group watched a video of her displaying low flexibility and low originality behaviour. The second group observed the same model displaying high flexibility and low originality behaviour. The third group watched both high flexibility and high originality model performance. The fourth group received test instructions from the same model but with no creative examples. After watching the video, the students were asked to

perform two tests. The students were tested for fluency, flexibility, originality and elaboration characteristics. Their performance was then related to their race, sex, locus, self and achievement. Significant interaction was found between model and race, self-esteem and achievement. The interaction between model and race is not easily explained. However, the results for self-esteem and model are clearer. Students with a high self-esteem performed less well after being exposed to a model, possible because they resent the model's influences. Overall, Halpin et al conclude that certain types of individuals may be more responsive to model behaviour than others. The relationship between models and observers is complex, and therefore it is important to consider carefully how a particular model may influence learners.

Understanding when and how particular observational modelling types influence learners is very important when developing feedback. Couzijn's (1995) findings that different types of models may vary in effectiveness for different types of learners is therefore highly relevant when trying to implement this method in secondary schools. Significant findings on the influences of feedback models indicate that observing a high-status model, like a teacher, can create a learning effect because of his/her expertise: "his/her behaviour may seem a good criterion for test behaviour" (71). Observing a peer, however, may also create a learning effect, because the observer may have the impression that the correct behaviour "is within reach" (72). These models can be considered "master-models". However, coping-models – of peers whose hesitations and errors are very recognisable – can be very reassuring for other inexperienced writers. Couzijn refers to findings by Schunk, Hanson, and Cox (1987), who found that observing "one coping-model, several coping-models or several master-models was [...] more effective than observing *one* master-model" (72). These results suggest that different types of observational models have different effects on different types of learners. This implies that models used for heterogeneous groups of learners will only create a learning effect when the majority of the class recognise and accept the models.

Further research indicates that the effectiveness of observational models is also related to the familiarity of learners with the writing task. Rijlaarsdam et al (2005) review studies into observational learning and the effect of models on the acquisition of cognitive skills needed to go through an effective writing process. The study by Zimmerman & Kitsantas (2002) already mentioned in a previous section showed that differences in learning effects exist due to modelling types; the use of either a master- or coping-model. Rijlaarsdam et al (2005) review another study into these modelling effects by Braaksma, Rijlaarsdam & van den Bergh (2002). Braaksma et al concluded that model effectiveness depends on learner's proficiency and newness of the writing task. A learner with few writing skills or experience will benefit

most from observing two peer models performing the writing task, while focusing on the weaker of the two. When this type of learner is familiar with the writing task a learning effect will come from performing the writing task, rather than observing the better writer. However, this is different for learners with a higher writing proficiency. When learning something new, this type of learner benefits most from performing the writing task or observing the stronger writer of two peer models. However, when the task is more familiar to the learner, a learning effect will only be created by observing a more experienced model (Rijlaarsdam et al 2005: 144-149). This shows that in addition to the modelled behaviour and the relationship between the learners and model's characteristics, the moment when a particular model is effective in the learning process is equally important.

Although learning-by-observation is a promising learning method, the process learners go through is complex, and its effectiveness is influenced by the selection of the observational model. When implementing learning-by-observation, one should be careful of the choice of model. The model's effectiveness is influenced by the modelled behaviour, the model's characteristics, the learner's understanding of the writing task and the moment in the learning process. However, when one bears these factors in mind, learning-by-observation could prove effective for heterogeneous groups of learners.

2.5 Research question

Many studies have been conducted into learning-by-observation and its effectiveness when applied to writing education in the native language. Studies show that writers acquire meta-cognitive skills needed in writing by observing a model writer and/or reader engaging with their work. Learning-by-observation seems a successful didactic method in this field, but it is still unclear whether this method is equally effective for second language writing education in secondary schools for heterogeneous groups of inexperienced writers.

The current study will research the effectiveness of learning-by-observation for heterogeneous groups of inexperienced writers learning English as a second language. This study considers several factors that might influence the effectiveness of learning-by-observation when applied to second language writing education. Firstly, the students in this study have different language proficiencies. In this study, improving the language proficiency is not the target of learning-by-observation. Nevertheless, students' language proficiency might influence the quality of the text and the ability of the learner to work with video feedback and written feedback. This means that perhaps learning-by-observation may work for groups with different language proficiencies, whereas other didactic methods may only create a learning

effect in a group of learners with a higher language proficiency. Secondly, other individual differences exist between the students participating in this study that might influence the effectiveness of the didactic method learning-by-observation. Rather than using video feedback for each individual student, which is not a realistic method when considering the amount of time for writing education, this study will use just two models and feedback videos, moving from individual feedback to video feedback for heterogeneous groups.

The aim of this study is to find out whether learning-by-observation is effective in English writing education at Dutch secondary schools for heterogeneous groups of students. To answer this question the following sub-questions have to be answered:

- Does the completeness of the written text improve?
If the completeness of the text improves, the writer shows an understanding of the reader's need for complete information. It shows that the writer aims to solve the communication problem.
- Does the amount of spelling and grammatical errors decrease?
Although this study does not claim to improve the language proficiency of students, a decrease of spelling and grammatical errors might indicate that the writer tries to improve his intelligibility by using a dictionary.
- Does the overall quality of the text improve?
If the overall quality of the text improves, the whole text works better, indicating that the writer improved his writing in several ways. To accomplish this, cognitive skills are needed to establish what the reader needs to know to solve the communication gap.
- Does the communicative effectiveness increase?
If the communicative effectiveness increases, the communicative objective of the text is reached; the reader understands the writer better.
- Do the above results apply to all students?
- Is there a difference in learning effect between students with a higher English language proficiency and those with a lower English language proficiency?

The chapter on methodology will further explain how these questions will be answered. A statistically significant improvement regarding these research questions will indicate whether learning-by-observation may be an effective didactic method for English writing education in Dutch secondary schools.

2.6 Hypothesis

The hypothesis of the current study is that the use of the didactic method of learning-by-observation in relatively short and demanding English writing education will lead to a statistically significant improvement of the written work of students in comparison to the control group. This result will indicate that learning-by-observation is an effective didactic method in second language writing education for the majority of inexperienced writers in heterogeneous groups of learners. The statistically significant improvement of the written work will occur due to the introduction of high-level self-assessment in the learning process, allowing learners to develop the cognitive skills required to monitor their own writing process.

As this study consists of several sub-questions, it is important to note that its results will be specified by the aforementioned sub-questions, to improve the analysis of the results. This entails that if differences occur in the results of students due to level of English language proficiency or other individual differences, these results will be discussed and the effectiveness of learning-by-observation and its implications for second language writing education will be adjusted accordingly.

3. Methodology

The methodology used for the current study aims to analyse the effectiveness of learning-by-observation in second language writing education for heterogeneous groups of students. The effectiveness of this didactic method is tested by comparing the learning effect of learning-by-observation to the learning effect of written feedback on the writing skills of heterogeneous groups of students. When a learning effect is established in the learning-by-observation group, it can be concluded that this method is an effective didactic method for improving writing skills in groups of learners with differences in the English language proficiency and other individual differences. Data was gathered through an experiment at a Dutch secondary school. The setting, participants and procedure are specified below. Following data collection, an analytical and a holistic approach have been used to analyse the data. These methods are explained in the second and third section of this chapter.

3.1 Gathering data

An empirical study was carried out to investigate if learning-by-observation is an effective didactic approach to teaching writing skills in English at Dutch secondary schools. The objective of the study was to compare two written products by regular Dutch students writing in English, as their second language. The students were asked to write a manual to a short physics test, which was shown in class. The first time they wrote their manual, they did not receive any instruction. The second time they wrote their manual, the students were divided into two groups. The first group received written feedback; the second group received similar feedback through a video and a short discussion. By comparing the written work, conclusions can be drawn as to the effectiveness of the type of feedback.

A regular Dutch secondary school was selected as the setting for the experiment and an introductory letter⁴ was sent to apply to the board for an opportunity. When the board authorised the research project, two English teachers were approached through similar introductory letters. They were asked to allow the researcher to conduct the project in one of their classes. Two classes were selected and consisted of senior general secondary education students⁵ in their second (YEAR-2) and fourth (YEAR-4) year of education. The reason that two classes with these particular students were selected is that these groups have known group validity.

⁴ Appendix A

⁵ Dutch: HAVO. (Ministry of Education, Culture and Science)

The selected Dutch secondary school, school A, can, for the purposes of this thesis, be considered representative of standard secondary schools in the Netherlands. The graduation percentages were 90% or above in the past four years. A second and fourth year class of senior general secondary education students participated in the project. The students take 150 minutes of English education a week. School A uses the learning method “New Interface”. This learning method incorporates four language skills: speaking, listening, reading and writing. The writing exercises are small: write an article, write an e-mail, etc. The two groups that participated in the project are heterogeneous; they can be taken as representing an average group of Dutch secondary school students. As this thesis focused on writing in a second language, it is important to note that YEAR-2 and YEAR-4 students are expected to have different levels of English language proficiency. YEAR-2 students are expected to have an English language proficiency between A1 and A2 of the Common European Framework of Reference (CEFR) and YEAR-4 students are expected to have an English language proficiency between level A2 and B1 of the CEFR. A near-native speaker has a level C2 proficiency. This means that any results on the improvements made after rewriting the manual can be compared; if both groups improve, learning-by-observation proves effective for heterogeneous groups of students. If one of the groups improve, learning-by-observation proves effective for heterogeneous groups of students, with the exception that the group has to have a similar proficiency in the second language. If no significant improvement is found, learning-by-observation is not effective for heterogeneous groups of learners.

The writing assignment that was selected for this research project is ‘writing a manual’. The reason that this assignment was selected is that a manual must be short and concise, clearly conveying to the reader what he must do in order to succeed in the manual’s objective. The students were asked to write a manual to a small physics experiment. This experiment, the Cartesian diver⁶, is reasonably simple but the conductor of the experiment must be very careful in selecting the materials. All steps of the experiment need to be taken carefully for the experiment to work. Consequently, the students must not just focus on their grammar and spelling, but they also have to bear in mind who they were writing for and list all materials and steps explicitly. Although the assignment may seem simple, there are many things that inexperienced writers in all probability do not notice when they start working on this writing task.

⁶ Appendix B

Two lessons were constructed, and took place three weeks apart. Special care was taken to assure that the classes did not know the project ran in another class at their school, so the participants were unable to influence each other. The first lesson⁷ that was conducted acted as a pre-test. During the first lesson all students witnessed the physics experiment twice, once in real life, once on screen. The reason that a film of the experiment was offered is that if something should go wrong in the live experiment, a back up was present. After watching the experiment, the students were asked to write a manual. The only requirement that was made was that readers of the manual should be able to reproduce the physics experiment. A special handout⁸ was distributed, asking for some personal details, for example the native language, age, and gender. The students were given fifteen minutes to finish their assignment and they had dictionaries at their disposal. When they were finished the students were thanked for their participation but, very importantly, not informed of the second lesson. Before the second lesson could take place feedback was constructed which could meet the students' needs. This was done by clearly defining what the students' common problems were and by choosing two suitable models who were expected to influence, amongst other things, the students' sense of audience awareness.

To be able to compare the results of different types of feedback at a later stage in the research project, two types of feedback were constructed. *Group A* received normal written feedback; *group B* received additional feedback by observation of a video. All manuals, both from YEAR-2 and YEAR-4, constructed during lesson one, were analysed for completeness, by checking whether all the steps were included which were needed to perform the experiment. The researcher determined these steps beforehand. The manuals were coded and then scored G, P or F for completeness. G, P, and F stand for:

- G: Step is included in the manual with a complete and clear description of what materials are used and how the step should be carried out.
- P: Step is included in the manual with an incomplete or unclear description of what materials are used and how the step should be carried out.
- F: Step is not included.

⁷ Appendix C
⁸ Appendix D

These scores were used to calculate the percentage of occurrences of the steps in the manual. The scores showed how complete the manuals were and what steps were not listed properly or at all. This information was necessary to develop feedback.

The scores enabled the researcher to find out what kinds of mistakes were made most often. On this basis, a feedback form was developed for group A, paying attention to the most common errors. These were at the same time the discussion topics for group B, who watched two films and read two forged manuals instead of receiving the feedback form. The two manuals were prepared, one below average, one above average, also based on the most common errors made during the first lesson. Two students – who did not take part in the research project – were asked to help make the two films for group B, in which they had to perform the experiment based on the forged manuals. They were instructed to verbalise what they thought was good and clear about the manual and what was not. The students were given different manuals. This resulted in one film with a student struggling to understand the manual to get the sought result, and one student understanding and reaching the required result with relative ease. To make the films appealing to the students, amusing mistakes were made, like splashing water on oneself by accident. The objective of the two films was to show both a coping and a master model, which means that the students in group B had both model types to observe. The humorous mistakes allowed the students to relate to the students in the films, hopefully overcoming individual character differences. It was hoped that through these adjustments the films would induce a learning effect. The feedback form for group A⁹, discussion topics, the forged manuals¹⁰ and the films¹¹ were used as feedback during the second lesson.

The second lesson¹² was started by referring back to the first lesson, and with the opportunity for the students to improve their manuals. To refresh their memories, they were asked to watch the experiment again. The classes were divided randomly into a group A and a group B. Group A was asked to leave the classroom with their teacher. The teacher was instructed to take the students to another classroom, where they were given their original manual, the feedback form and a new handout¹³ to write their second improved manual on. They had fifteen minutes to complete the task and they had dictionaries at their disposal. Group B stayed with the researcher and was asked to read the two fake manuals for

⁹ Appendix F
¹⁰ Appendix G
¹¹ Appendix I
¹² Appendix E
¹³ Handout second lesson

themselves. It was important that they did not discuss the manuals until they had watched the two films of students trying to perform the physics experiment with their fake manual as a guide. Once group B watched the films, the researcher started the discussion with the question: “What do you think is the best manual, and why?” As the students had had to wait with giving their opinion, the students were keen to talk about the videos. The discussion was not too long, but covered the same topics as those mentioned in the written feedback. The students were given their original manual, fifteen minutes and dictionaries to rewrite their manual on a handout. When group A and group B were finished they were thanked for their participation and then given additional information on the research project when asked.

3.2 Analytical approach to completeness of the manual: steps

Firstly, the quality of the manuals was assessed through an analytical approach. All data regarding the completeness of the manuals written in lesson one and two – all steps, an introduction and a conclusion - was condensed into a spreadsheet. The scores G, P, and F were modified into respectively 1, 0.50, and 0. Then the total scores for manuals 1 and 2 were calculated for the statistical analysis.

3.3 Analytical approach to language use: spelling and grammar

Secondly, all manuals were analysed for the total number of spelling and grammatical errors. This was done to assess whether or not the students understood that correcting these errors helped improving the readability and the overall quality of the manual. It is important to point out that only spelling errors were counted, not the use of improper words (for example: bottom instead of bottle), as these words might be used incorrectly, but could be spelled correctly. The use of improper words indicates that the students did not use a dictionary, or did not use the dictionary correctly. This aspect will be dealt with in the holistic approach. There are many types of grammatical errors, multiple errors can occur in a sentence. A method was developed in order to make the counting of the errors as systematic as possible. In addition, only one assessor was used, to improve reliability. The following grammatical errors were counted:

- Time
 - o Did the writer consistently use the same grammatical presentation of time?
 - o For example: present simple, past simple, present perfect, etc.
- Active / passive

- Did the writer use active and passive sentences correctly?
- For example: present simple + past participle, inversion with subject
- Questions
 - Correct subject-verb inversion where necessary
- The genitive
 - Did the writer correctly represent possession?
- Singular, plural, and countables
 - Train (s) / bus (es)
 - A bottle, some water, etc.
- Prepositions
 - In, at, on, by, with
- Adjectives and adverbs
 - Older than, more expensive
 - Not as, as
 - More, most expensive
- Word order
 - Subject – verb – object
 - Place – time order
 - Always, usually, never, often, between auxiliary and verb

The assessor read the sentences and established if any of the aforementioned mistakes were made, and if so, whether this is due to a lack of grammatical knowledge or to a lack of vocabulary knowledge. When the assessor established that the errors were purely grammatical an error was counted.

Spelling and grammar scores were included in the aforementioned spreadsheet and the total number of words and sentences were counted to act as covariates in the subsequent analyses.

3.4 Holistic approach to the communicative effectiveness and overall quality

A holistic approach to analysing the data was necessary to investigate the overall quality of the manuals and their communicative effectiveness. To find out if the manuals as a whole had improved after feedback, native speakers graded the manuals. Three native English speakers

were asked in an introductory¹⁴ letter to cooperate by grading the manuals for their overall quality and their communicative effectiveness. In an attempt to improve inter-rater-reliability, the native speakers were asked to follow two methods of grading. The two grading methods allowed the native speakers to score the manuals twice from different perspectives.

The grading method for the overall quality was a comparison of the manuals to three anchors. These anchors were three manuals graded by the researchers as below average, average and above average. This was an attempt at having a similar starting point for the three native speakers for grading. To select the anchors, researchers read the manuals and they divided them into three groups: below average, average and above average. Three examples and their grades – 50, 100, and 150 – were listed in an example file¹⁵. Three native English speakers were asked to read all manuals and to divide them into three groups conforming to these three example manuals. The manuals¹⁶ were offered coded and mixed up so there was no logical order to discern. They consequently had to grade each manual in each group, and indicate what they thought was the overall quality of the manual. The native speakers were able to assign a score for the overall quality between 0-200, 0-50 being below average, 51-100 being average, and 101-150 being above average.

For the second grading method, native speakers were asked to indicate if they felt the manual was communicatively effective or not. They were asked to indicate if they felt confident that they could perform the experiment successfully with the manual at hand. Their level of confidence was expressed by drawing a line next to a thermometer of 9cm. The length of the line indicated their confidence in the manual's communicative effectiveness.

3.5 Statistical analysis

Data was imported in SPSS 13 (SPSS Inc., Chicago IL). A between-within-factorial ANOVA was used to analyse the steps, spelling and grammar. Cronbach's alpha was used to test inter-rater-reliability for communicative effectiveness and overall quality. Then a between-within-factorial ANOVA was used for this data.

¹⁴ Appendix K

¹⁵ Appendix L

¹⁶ Appendix J

4. Results

4.1 Analytical approach

The following statistical results were acquired through analysis of the manuals written¹⁷ by the participants. The first manual was written after seeing a physics experiment, and the second manual was written after receiving one of two types of feedback, through either a written form or a discussion and an additional video. The manuals were analysed for correctly and clearly offering the steps needed to perform the experiment successfully, and for spelling and grammar. Two-sided hypotheses were used for all three analyses, as it was considered possible that some aspects of the task received a larger amount of attention than others, as the instructions might not have stressed the importance of all aspects to the same extent. It is therefore possible that performance on some aspects increased, resulting in a decrease in performance on other aspects. In total, these analyses form the analytical approach to learning-by-observation of the current study.

4.1.1. Analysis of the steps

A between-within-factorial-analysis of variance (ANOVA) was used to establish if the manuals improved after re-writing. The within-subjects factor was MOMENT, MOMENT-1 and -2 signified the two moments of testing the writing skills. The first between subjects factor is LEVEL, distinguishing between YEAR-2, and YEAR-4. The second between-subjects factor is FEEDBACKTYPE, distinguishing between feedback through a written form and through a discussion and an additional video. Descriptive statistics are given in table 1.

Table 1: Mean (SD) of the steps analysis: number of correct steps listed in the manual specified by level, feedback type and moment of testing.

Level:	Feedback type:	Moment:	
		Moment-1:	Moment-2:
2	Video	8.29 (1.97)	11.54 (1.34)
	Form	8.80 (1.32)	9.30 (1.49)
4	Video	8.71 (1.72)	12.38 (1.87)
	Form	8.04 (1.44)	10.08 (1.87)

The main effect for the within subjects factor MOMENT proved significant ($F(1,43) = 57.93$ $p < .05$) This suggests that the students performed better after receiving either type of feedback (8.47 ± 1.59 for YEAR-2 versus 10.87 ± 1.92 for YEAR-4). The main effect for the

¹⁷ Data table in appendix N

between subjects factor LEVEL did not prove significant ($F(1,43) = .82$ n.s.). However, there was a significant effect for the between subjects factor FEEDBACKTYPE ($F(1,43) = 11.29$ $p < .05$) which suggests that students receiving video feedback improved more than students receiving a written form as feedback (14.48 ± 2.05 versus 13.23 ± 1.69). The main effects can be partially explained by the significant MOMENT \times FEEDBACKTYPE interaction ($F(1,43) = 12.42$ $p < .05$), which means that FEEDBACKTYPE does influence the improvement students make from MOMENT-1 to MOMENT-2. The two-way interaction indicates that both YEAR-2 and YEAR-4 students benefit from form-feedback, but show significantly more improvement in the video-feedback condition. This is shown in figure 1.

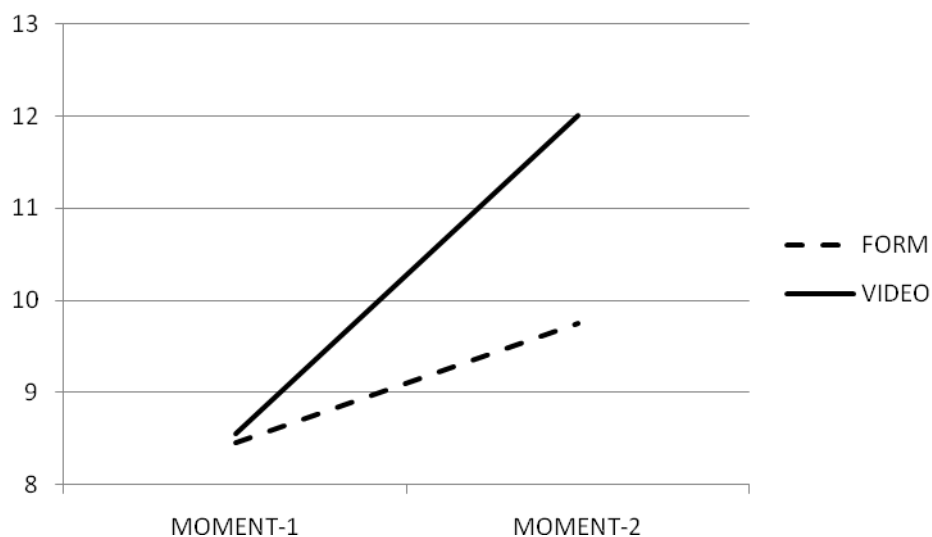


Figure 1: *The MOMENT \times FEEDBACKTYPE interaction, depicting the interaction between MOMENT and FEEDBACKTYPE for both YEAR-2 and YEAR-4 students.*

Figure 1 shows the improvement of both YEAR-2 and YEAR-4 students, who received either feedback through form or through video. The students who received video feedback improved more than the students who received written feedback. All statistical output can be found in appendix N.

4.1.2. Analysis of spelling errors

A between-within-factorial ANOVA was performed on the spelling data with factors MOMENT, FEEDBACKTYPE, and LEVEL, the latter two being the same as were used for the previous analysis. MOMENT consisted of the factors SPELL-1 and SPELL-2, the number of spelling errors in the manual before and after revision, respectively. The average number of

words of both manuals was included as a covariate. The descriptive statistics are given in table 2 below.

Table 2: Mean(SD) of the number of spelling errors per 100 words specified by level, feedback type and moment of testing

Level:	Feedback type:	Moment:	
		Spell-1:	Spell-2:
2	Video	7.58 (7.97)	7.75 (6.38)
	Form	8.30 (7.29)	6.60 (5.38)
4	Video	2.92 (3.94)	5.25 (3.82)
	Form	6.92 (9.79)	8.92 (13.7)

No significant main effect was found on any of the three factors. However, a significant MOMENTxLEVEL interaction was found: $F(1,42) = 5.39$, $p < .05$ (two-sided). The significant interaction might explain the absence of a main effect on MOMENT, since YEAR-2 students made fewer errors in the revised manual, whilst the YEAR-4 students made more spelling errors in the revised manual than the original manual. A t-test also showed that YEAR-4 students made significantly more spelling errors in the revised manual $t(24) = -2.47$, $p < .05$ (two-sided).

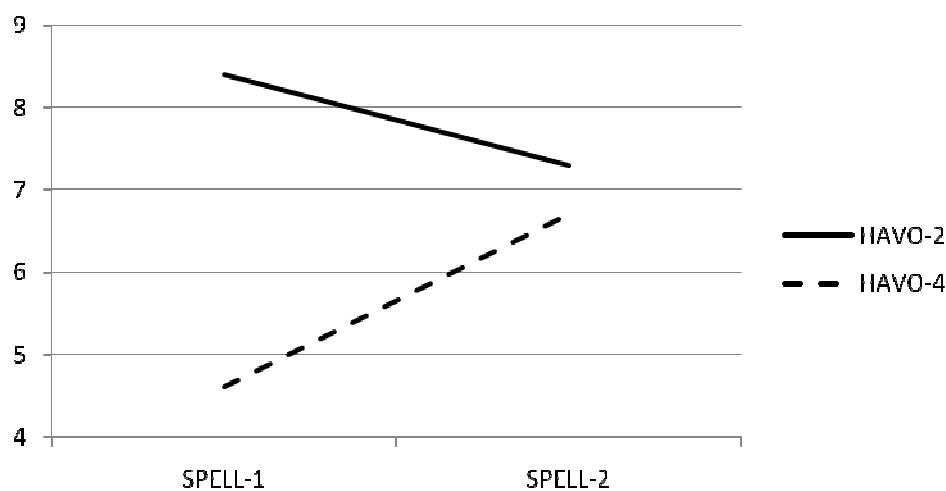


Figure 2: The MOMENTxLEVEL interaction, depicting the interaction between MOMENT and LEVEL for YEAR-2 and YEAR-4 students: only YEAR-2 students show improvement.

4.1.3. Analysis of grammatical errors

A between-within-factorial ANOVA was performed on the grammar data with factors MOMENT, FEEDBACKTYPE and LEVEL, the latter two being the same was used as in the two previous analyses. MOMENT consisted of two factors: GRAMM-1 and GRAMM-2; the number of grammatical errors in the original and revised manual, respectively. The average number of sentences was included as a covariate. The descriptive statistics are given in table 3 below.

Table 3: Mean(SD) of the number of grammatical errors per 10 words, specified by level, feedback type and moment of testing

Level:	Feedback type:	Moment:	
		Gramm-1:	Gramm-2:
2	Video	8.58 (6.13)	10.0 (6.31)
	Form	6.90 (4.86)	4.70 (3.09)
4	Video	4.25 (2.05)	5.33 (2.81)
	Form	4.54 (3.41)	5.85 (3.69)

The analysis produced no significant results, which means that the type of feedback did not influence grammar performance.

4.2 Holistic approach

A holistic approach was used to find out if the communicative effectiveness and the overall quality of the manuals improved after re-writing. As communicative effectiveness and overall quality is almost impossible to test with an analytical instrument, native speakers were asked to grade the manuals with a 'thermometer' and a scale of 0-200. These two grading methods allowed the native speakers to grade the manuals twice from different perspectives, increasing overall reliability. As the native speakers were asked to grade the manuals for communicative effectiveness and overall quality as a whole rather than on different aspects, one-sided hypotheses for these analyses seemed justified. The scores provided by the three native speakers were used for the statistical analyses presented below.

4.2.1. Communicative effectiveness

The results of the communicative effectiveness questionnaire showed a very low inter-rater-reliability and were not further analysed. These results suggest that future research is required regarding the development of a more reliable instrument.

4.2.2. Overall quality

The results of the grading showed a modest inter-rater-reliability. Cronbach's alpha of 0.58 (with the exclusion of one out of three raters) and 0.45 for respectively the pre and post grading. Therefore, a between-within-factorial ANOVA was used to analyse the results. The model consisted of the factors MOMENT, FEEDBACKTYPE and LEVEL, the latter two being the same as was used in the previous analyses. MOMENT consisted of GRADE-1 and GRADE-2, representing the grades awarded to respectively the original and revised manual. The descriptive statistics are given in table 4 below.

Table 4: Mean(SD) of the grades analysis, representing the mean grades awarded in the pre- and post-test.

Level:	Feedback type:	Moment:	
		Grade-1:	Grade-2:
2	Video	60.23 (26.66)	88.18 (22.18)
	Form	65.19 (38.29)	92.92 (20.37)
4	Video	105.63 (43.86)	113.06 (23.61)
	Form	105.00 (31.74)	120.61 (27.00)

The main effect for the factor MOMENT proved significant ($F(1,38) = 3.17, p < .05$), showing that the YEAR-2 students improved more than the YEAR-4 students. A significant interaction effect was found for MOMENTxLEVEL ($F(1) = 3,16, p < .05$). Figure 4 below shows this interaction effect.

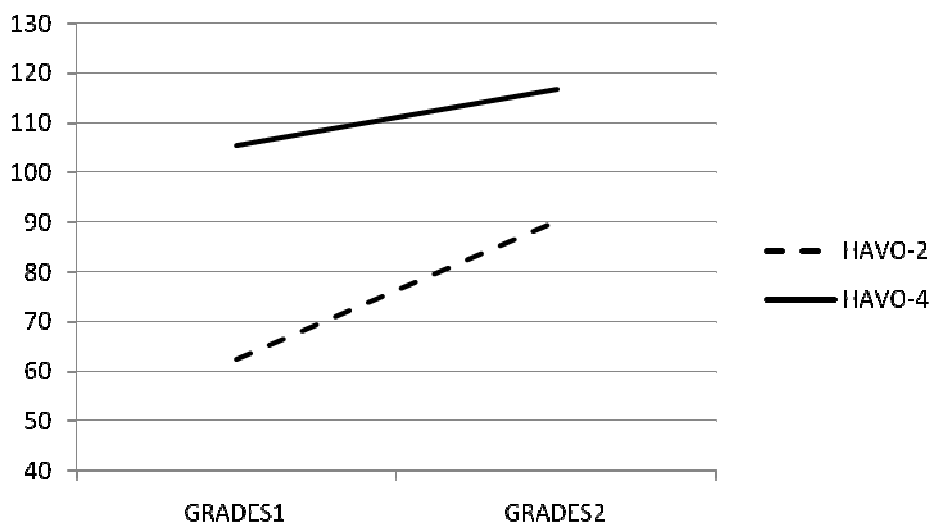


Figure 3: The MOMENTxLEVEL interaction, depicting the interaction between MOMENT and LEVEL for YEAR-2 and YEAR-4 students: YEAR-4 students consistently perform better, but YEAR-2 students improve more.

This significant interaction effect shows that YEAR-4 students consistently perform better, but that YEAR-2 students improve more.

5. Conclusion

This research project was carried out to investigate whether learning-by-observation is effective in English writing education at Dutch secondary schools for heterogeneous groups of students. Two classes were asked to participate. Different levels of English language proficiency exist between the two classes, and there are many other individual differences between the students within both classes. This study's results can indicate if learning-by-observation is effective for all students, regardless of differences in the levels of English language proficiency and other individual differences. To that end, the students were asked to write two manuals, and students received either written or video feedback. The results were then analysed for completeness, spelling, grammar, communicative effectiveness and overall quality.

In reference to the aforementioned experiment the following significant results were found. Firstly, the results of the step analysis show that the manuals were more complete after having been re-written. Secondly, the steps analysis indicates that students who received additional video feedback improved more than students receiving only written feedback. Lastly, YEAR-2 students benefited more from video feedback than from written feedback, whereas YEAR-4 students benefited equally well from both types of feedback. The analysis of the overall quality suggests that the overall quality of the manuals improved after having been re-written and that YEAR-4 students were consistently better than YEAR-2 students, but that YEAR-2 students improved more than the YEAR-4 students, independent of the type of feedback.

In the current study the manuals became more complete and the overall quality improved, which indicates that the writing skills – *not the language proficiency* – had improved after receiving video feedback. The most plausible interpretation of these results is that learning-by-observation is an effective addition to second language writing education in Dutch secondary schools. On average, all students in this experiment benefited from video feedback, regardless of differences in the levels of English language proficiency or other individual differences.

This study does indicate that differences in the effectiveness of learning-by-observation exist due to differences in the levels of English language proficiency. With respect to these differences in language proficiency, the results show that all students benefited from learning-by-observation, but that students with a lower proficiency in the English language benefited more from learning-by-observation. A probable explanation for

this result is that learning-by-observation introduces a moment in writing education where students are able to develop their cognitive self-assessment skills overtly by observing a reader of a written product, rather than reading feedback and trying to interpret the learning objectives individually. Learners with a higher second language proficiency and a further educational development have had more time to develop these skills, and are probably better at interpreting written feedback. However, as no detrimental effect has been found for students with a higher proficiency in the English language, the interpretation of these results should be that learning-by-observation does work for heterogeneous groups of learners.

The results indicate that learning-by-observation is effective in English writing education at Dutch secondary schools for heterogeneous groups of students. The didactic method stimulates the development of the cognitive and social skills required to go through and effective writing cycle, regardless of individual differences and differences in the levels of English language proficiency in a group of learners. The main conclusion of the present study is therefore that learning-by-observation is an effective didactic method and can be a valuable addition to second language writing education for writers with different language proficiencies.

6. Discussion

6.1 Introduction

The main aim of this research project was to establish if learning-by-observation is an effective didactic method for improving writing skills in second language writing education. The results gathered in this study lead to the conclusion that the didactic method of learning-by-observation is an effective addition to second language writing education in Dutch secondary schools for the majority of inexperienced writers in heterogeneous classes of different language proficiencies. However, the data is sometimes ambiguous. The data gathered and the conclusions drawn from this data will therefore be discussed below. Hopefully this discussion will aid further research in this area, which is necessary to specify how, when and for whom learning-by-doing is effective in second language writing education.

6.2. Steps

The conclusions drawn in this thesis rely heavily on the significant improvement of the steps listed in the manual after receiving video feedback rather than written feedback. This result indicates that learning-by-observation is a didactic method that successfully gears learners towards critically engaging with their own work to improve it for the benefit of the reader by making the work more complete. This significant learning effect indicates that learning-by-observation can be successful in English writing education for heterogeneous groups of learners.

The results show that YEAR-2 students improve more due to learning-by-observation than YEAR-4 students. This difference in effectiveness is probably the result of YEAR-2 students experiencing difficulties reflecting on their written work through written feedback. Furthermore, these results indicate that YEAR-4 students do not benefit as much from video feedback as YEAR-2 students, which could indicate that they have picked up the cognitive skills for self-assessment implicitly over the extra two years of education that they have benefited from since their second year. Moreover, we can safely assume that their proficiency in English is better, so their ability to understand written feedback is better. Another explanation could be that the video feedback constructed does not appeal similarly to both YEAR-2 and YEAR-4 students. Perhaps if different models were used for YEAR-4 students the results might be different. These results do not imply that learning-by-observation has limited effectiveness with regard to students in the last few years of their secondary education,

as the results also show an improvement for YEAR-4 students. Rather, it suggests that students may gain the same cognitive skills for self-reflection at an earlier stage in their education when taught ‘explicitly’ through learning-by-observation. Alternatively, if different models are used for learners with different levels of English language proficiency, learning-by-observation could be even more effective. As learning-by-observation specifically aims to develop the cognitive skills required for successfully going through the writing process, and as it is quite easy to implement this structurally into writing education, this didactic method seems rather suitable for teaching heterogeneous groups in second language education in secondary schools.

6.3 Spelling and grammar

Analyses of both the spelling and grammar data have not yielded any significant results. Rather than concluding that this proves that learning-by-observation does not gear the students towards improving their spelling and grammar for the benefit of the reader, it shows that this particular didactic method is geared towards improving the completeness and structure of the text and the efficiency of communication. Earlier research into the effectiveness of learning-by-observation in writing education in the native language may have indicated that this area also improves after receiving video feedback. However, it is not surprising that this is not the case in the current experiment; rather than dealing with writers writing in their native language this research project deals with learners of a second language writing in a second language they have not yet mastered. To illustrate: YEAR-2 students are expected to have an English language proficiency between A1 and A2 of the Common European Framework of Reference (CEFR), and YEAR-4 students are expected to have a proficiency in English between level A2 and B1 of the CEFR. A near-native speaker has a proficiency at level C2. The fact that the students’ spelling and grammar does not significantly change is therefore logical as they do not really have the knowledge to do this independently, and even though they have a dictionary at their disposal, the assignment might have directed them more towards improving the completeness of the manual, rather than looking up the correct spelling. The fact that the data does not show a significant decrease in quality, however, suggests that the students may have tried to spell as correctly as possible, and perhaps spend the rest of their time on the overall quality. However, when learning-by-observation is used more often in writing education, students might be encouraged to pay more attention to spelling and grammar. This may change the results and yield significant improvement on all factors. Nevertheless, as the primary objective of writing education is to

create an increase in the students' writing skills, rather than improving the actual language proficiency, it is sufficient if this method creates awareness in the students regarding the importance of the correct use of language.

6.4 Communicative effectiveness and overall quality

The communicative effectiveness as rated by native speakers was not further analysed, as the inter-rater-reliability was unacceptably low. Perhaps this has resulted from the native speakers putting too much stress on the errors in spelling and grammar or the use of wrong words when rating the written work. The different assessors consistently rated on different ranges of the scale. The only conclusion to be drawn is that the instrument used was not specific enough. Further studies may choose to either focus purely on analytical research, or introduce a larger group of raters who use a more sensitive instrument, thereby hoping to create a situation in which greater inter-rater-reliability is established.

The overall quality as rated by the native speakers showed an improvement after the second test, and the YEAR-4 students consistently scored higher than YEAR-2 students. No differences between the types of feedback were detected in the ratings by native speakers. The reason for this could be that no differences in improvement result from these two types of feedback: contrary to the previous test, inter-rater-reliability was established using anchors. However, the lack of a difference between the types of feedback might also be due to the fact that the native were unable to ignore errors in spelling and grammar. These errors might have masked the actual improvements of the completeness of the text that were apparent in the analysis of the steps. As already suggested, research into learning-by-observation with participants who have a higher language proficiency might show more subtle features of the data set, when using a similar instrument. When using the same participants, however, the sensitivity of the instrument should be improved.

6.5 Suggestions for further research

This research project has yielded some very interesting results. Learning-by-observation could be a great addition to second language writing education, especially when the method is further developed and added as a standardised part of educational methods currently in use.

This could enable teachers to improve more effectively the writing skills of their students. It would be informative and advisable, to conduct further research into learning-by-observation. Some questions remain unanswered, for example, how should learning-by-observation be implemented? Little is known about its optimal frequency or intensity. Different writing

objectives may also require different types of standardised videos to induce learning, and this could also be a topic for further research. Moreover, the steps analysis indicated that YEAR-4 students might benefit more if they viewed videos with different models than those used for the YEAR-2 students. The use of modelling types should therefore be researched further, because the current study indicates that at least for the heterogeneous YEAR-2 class a standardised feedback video improves results. Hopefully this type of research will improve writing education, as the importance of writing skills and effective communication in today's information driven society is not to be underestimated.

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8. Appendices

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Appendix A: Introductory letter (Dutch)

<i>School</i> <i>Headmaster</i> <i>Address line 1</i> <i>Address line 2</i>	Sterre Krooshof Stationsstraat 42a 3811 MK Amersfoort 06-13262857 sterrester@gmail.com	 <i>Universiteit Utrecht</i>
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13-03-2009

Geachte heer X,

Graag zou ik u willen uitnodigen om deel te nemen aan een onderzoek over schrijfdidactiek bij vreemde talen onderwijs, dat ik uit zal voeren in het kader van mijn MA scriptie voor de Universiteit van Utrecht.

Graag zou ik in klas H2 – van mevrouw Y – en een H4 klas – van mevrouw Z – voor de zomervakantie langskomen om een experiment uit te voeren waarbij er gebruik gemaakt zal worden van twee soorten feedback op geschreven werk: de welbekende geschreven feedback en feedback door middel van ‘observerend leren’.

Om dit onderzoek uit te voeren zal ik bij twee lessen langskomen. Tijdens de eerste les zullen alle leerlingen een simpel natuurkundig proefje te zien krijgen. Vervolgens worden zij gevraagd om hier een handleiding bij te schrijven, zodat een klasgenoot – na het lezen van de handleiding – het proefje zelfstandig uit kan voeren.

Ik ga deze handleidingen analyseren, om vervolgens twee soorten feedback samen te stellen: een blad met de belangrijkste algemene punten, en twee filmpjes, waarin leerlingen een middelmatige en minder goede handleiding zullen gebruiken om het eerdere proefje uit te voeren.

Tijdens de tweede les zal de klas in twee groepen verdeeld worden. De eerste groep zal de geschreven algemene feedback krijgen, en gevraagd worden hun handleiding te herschrijven. De tweede groep zal naast deze geschreven feedback ook de filmpjes te zien krijgen, om vervolgens te discussiëren over wat ze gezien hebben. Ook zij zullen gevraagd worden om hun handleiding te herschrijven.

De analyse van de handleidingen voor en na feedback kunnen verschillende vragen beantwoorden, bijvoorbeeld; is observerend leren een goede schrijfdidactiek binnen het middelbaar vreemde talen onderwijs? Aangezien ik ook bij twee verschillende niveaus (HAVO 2 en 4) eenzelfde experiment uit wil voeren, kan een vergelijking ook duidelijk maken of er naar mate de vaardigheid in de vreemde taal groter wordt, een bepaalde manier van feedback beter aansluit bij de behoeftes van de leerling.

Aangezien dit onderzoek mogelijk antwoorden kan geven op vragen die binnen middelbaar vreemde talen onderwijs spelen, hoop ik dat u deel wilt nemen aan dit onderzoek. Ik vraag u dan ook contact met mij op te nemen via de bovenstaande informatie zodat ik eventueel een afspraak kan maken.

Met vriendelijke groeten,

S.E. Krooshof

The Cartesian diver: a complete manual

This experiment is an example of the way submarines work. Submarines are able to rise and sink in water. This experiment explains how this is possible.

To construct a diver, we first need to make a container:

- 1. Grab a 1,5litre transparent soda bottle.*
- 2. Fill the bottle to the top with water: leave a little space for air.*

The diver needs to be airtight and so it is able to float.

- 3. Use the medium sized cap of a pen that is closed at one side.*
- 4. Grab the middle sized piece of clay.*
- 5. Block the open side of the cap of the pen*

It is important to check whether or not the diver can float.

- 6. Grab a glass*
- 7. Fill it with water*
- 8. Put the diver in the water*
- 9. When the diver is just floating upright, with the top of the pen just touching the surface, you can proceed. If the is floating above the surface, repeat 3-5 with more clay. If the diver sinks to the bottom, repeat 3-5 with less clay.*

We are now able to watch the principle behind the way a submarine works.

- 10. Submerge the diver in the bottle.*
- 11. Close the bottle with the cap of the bottle.*
- 12. Squeeze the bottle: the diver sinks.*
- 13. Relieve the pressure on the bottle: the diver rises.*

This experiment shows that as we change the pressure on the air in the diver by applying pressure to the bottle, the diver sinks. When we relief the pressure, the air expands and the diver rises. In a submarine, water is let into special tanks in order to sink, and the tanks are emptied and filled with air in order to rise.

This principle is also known as Archimedes' principle, which states that any object, wholly or partly immersed in a fluid, is buoyed up by a force equal to the weight of the fluid displaced by the object.

Appendix C: . Lesson 1 outline

Lesson 1

Teacher: **Subject:** Cartesian diver experiment
Pupils: **Timeslot:** 50 minutes

Duration:	Who/how:	What:
5 min	Researcher Pupils	Sitting everyone down, calming down the pupils. Introduce topic: <ul style="list-style-type: none"> - Introducing the researcher - Explain interest into their ability to construct manuals (<i>do not mention experiment</i>) - Explain they are going to watch an experiment and write a manual Questions?
15 min	Researcher	Perform experiment twice (see: Experiment – what the students will see) <i>Do not mention the steps.</i> <i>Make sure the pupils make notes</i>
20 min	Researcher Pupils	Explain assignment: writing a manual, offering some extra information (<i>see handout</i>) Distribute handout. Working on the assignment
5 min	Researcher	Finish lesson, thanking everyone. <i>Do not mention next session!</i>

Writing a manual

Vandaag krijg je een schrijfpdracht van een student van de Universiteit van Utrecht. We zijn namelijk geïnteresseerd in hoe goed leerlingen op de middelbare school zijn in het schrijven van handleidingen. Daarom heb je zojuist een proefje gezien. We willen je vragen of je daar een handleiding bij wilt schrijven.

Schrijf de handleiding in het Engels. Als je een woord niet weet, kun je gebruik maken van de woordenboeken. Als je meer papier nodig hebt, krijg je dat van de onderzoekster.

Voor je aan de handleiding begint willen we je vragen of je de onderstaande vragen wilt beantwoorden.

Alvast bedankt voor je deelname!

Naam:

Geslacht:

Leeftijd:

Moedertaal:

Klas:

Gemiddeld cijfer Engels:

Appendix E: Lesson 2 outline

Lesson 2

Teacher: **Subject:** Cartesian diver experiment
Pupils: **Timeslot:** 50 minutes

Duration:	Who/how:	What:
5 min	Researcher Pupils	<p>Sitting everyone down, calming down the pupils. Introduce topic:</p> <ul style="list-style-type: none"> - Refer back to the first lesson - Refer back to the manuals they produced - Explain that their manuals have all been read and that there are some points to improve. - Explain the class will be divided into two groups: A & B. - Both groups will first watch the experiment again. - Group A will then be asked to leave the classroom. <p>- Questions?</p>
15 min	Researcher	<p><i>Watch the experiment on television.</i></p> <p>Divide the class into two groups. Ask the teacher to move group A to another classroom to work on their manuals, using the handout (<i>see handout and feedback file</i>). Divide the two fake manuals among the pupils of group B. Ask them to watch the films.</p> <ul style="list-style-type: none"> - Which manual do they think is better? - Why is that manual better? - What implications does that have on their own manuals?
15 min	Researcher Pupils	<p>Explain assignment: Rewriting their manual (<i>see handout and films</i>). Distribute handout.</p> <p>Working on the assignment</p>
5 min	Researcher	<p>Group A returns, thanking everyone, answering any questions the pupils might have.</p>

Tips to improve your manual

Hieronder staan nog wat tips om je te helpen de handleiding te verbeteren. Lees ze goed door, en dan kun je aan de slag!

- When someone reads your manual, they need to know what type of experiment they are going to perform, what they need to do, and understand the results.
- A good, clear manual consists of an introduction, all steps needed to perform the experiment successfully and a conclusion.
- All steps should be explained specifically: someone else needs to be able to carry out the experiment.
- Carefully describe every material you need, how much, what it looks like, etc. Someone else needs to be able to perform this experiment in exactly the same way as you have seen it being carried out.
- Check your spelling.
- Reread your manual: use grammatical sentences.
- Once you have introduced the experiment and specifically explained all steps and materials needed to carry out the experiment, does your reader understand the results? Reread your manual to check whether or not this is the case.

Good luck!

Fake manuals and films group B

On the next two pages two manuals follow that are constructed on the basis of the manuals written by the pupils during the first session. The first manual is below average, and the second one above average.

Handleiding 1

Manual experiment

You've need:

- A glas water
- A bottle water
- Top of a pencil
- Clay

1. First of all you have to put the clay on the top of a pencil to make it air tied.
2. Than put the top of the pencil in a glas of water and test of it will drive.
3. If this is so you do the pencil top in the big bottle and you push the bottle so the the top of the pencil sinks. This is success.

Handleiding 2

Submarine experiment

This is a manual that shows how a submarine works.

You need:

- A bottle of water
- A glass of water
- Some clay
- A cap

Now I will explain what you need to do. First you need to fill a bottle with water. Then you take a glass of water and you take a pencap and some clay. Put the clay on the open side of the cap. Put the cap with the clay on it in the glass of water. The cap needs to float, if it sinks you need to put less clay. Then put the cap in the bottle of water and put the lid on. Then squeeze hard and the diver will sink. If you stop pushing it will come up again.

This is just like a submarine. Experiment succeed!

Discussion topics for the films:

- If someone else reads your manual, do they immediately know what type of experiment they are going to perform? Do they understand the results? You should therefore write an introduction and a conclusion!
- Did you write down all the steps needed to perform the experiment successfully?
- Can someone else perform this experiment when he reads your manual? Are the steps you wrote down specific and understandable?
- Does your reader know what materials he needs? Carefully describe all the materials you need, what they look like and what how much you need. Someone else needs to be able to perform the experiment in exactly the same way as you've seen it being carried out.
- What about grammar and spelling? If you reread your manual you can make sure you haven't made too much mistakes, and whether someone else can understand the manual when he reads it.
- Once you have introduced the experiment and specifically explained all steps and materials needed to carry out the experiment, does your reader understand the results? Reread your manual to check whether or not this is the case.

Writing a manual

Een paar weken geleden heb je voor een student van de Universiteit van Utrecht een handleiding geschreven aan de hand van een proefje. We hebben je handleiding gelezen en we zijn benieuwd of je hem nog wat kunt verbeteren. Je hebt je handleiding terug gekregen en je hebt het proefje nog een keer gezien: probeer nu op de achterkant van dit vel je handleiding dus te verbeteren.

Schrijf de handleiding in het Engels. Als je een woord niet weet, kun je gebruik maken van de woordenboeken. Als je meer papier nodig hebt, krijg je dat van de onderzoekster.

Voor je aan de handleiding begint willen we je vragen of je de onderstaande vragen nog een keer wilt beantwoorden.

Alvast bedankt voor je deelname!

Naam:

Geslacht:

Leeftijd:

Moedertaal:

Klas:

Gemiddeld cijfer Engels:

Appendix I: DVD films used during lesson 1&2

Appendix J: DVD containing all coded manuals HAVO 2&4, lesson 1&2

Grading Manuals	Sterre Krooshof Stationsstraat 42a 3811 MK Amersfoort 06-13262857 sterrester@gmail.com	 <i>Universiteit Utrecht</i>
------------------------	--	---

...-07-2009

Dear

You have been invited to participate in a research project. This project is being conducted for a master dissertation. The objective of this research project is to interpret the overall quality and communicative effectiveness of manuals written by pupils. You are therefore asked to read the manuals and follow the steps below in order to grade the manuals.

You can write down your grades in the attached overview. All manuals are coded, and presented in order of the attached overview.

You are offered the needed files in print and on a DVD for your convenience. Once you have finished grading, please send the results either via e-mail or post using the contact information offered in this letter.

If you have any questions, feel free to ask the researcher.

Thank you for your help!

Sterre Krooshof

How to grade the manuals

Step 1.

The manuals you are going to grade have been written after watching a physics experiment. To understand what the manuals are about, you are asked to watch a film of this experiment, so you will understand what a manual for this experiment should contain. The researcher will explain what happens in the film, and it has been added to the DVD. Once you understand the physics experiment, you can continue with step 2.

Step 2.

Briefly read through some manuals to get an idea of the differences in quality. You are given them in print and on the DVD for your convenience.

Step 3.

Start reading the manuals one by one. You are asked to mark them twice.

a. *The overall quality.*

Do you think the manual contains all features you would like to see in a manual? What do you think of the lay-out? What do you think of the way the sentences are build? All these questions have something to do with the overall quality. Use your own interpretation of what a manual should contain and look like when you grade the manuals.

To indicate what is a below average, an average and a good manual, three

examples are given in the attached file called “Grading Examples”. These examples refer to three grades:

- Example one (below average): 50
- Example two (average): 100
- Example three (good): 150

You can award grades between 0-200. Use the examples to compare the quality of the manuals.

You can write down the grade on the attached overview.

b. Communicatively effective

You are asked to indicate what you think of the communicative effectiveness.

To do this, answer the following question: are you able to conduct the physics experiment without any problems after reading this manual?

You are asked to indicate this by drawing a line next to a master line (the width of the table in the grading overview). If it is as long, the manual is very effective. The less the length of the line you draw, the less communicative effective.

Example: _____

Master line _____

Your line:

In this case you think the manual is quite communicatively effective.

Appendix L: Grading examples

Grading Examples

Example one: below average: **50**

(1201)

- Step one. Fill a bottle with water.
- Step 2. Fill a glas with water.

- Step 3. Get a pencap and put clay on the open side.
- Step 4. Put the pencap for a test in the glas with water. look of it float and sink.

- Step5. Than put the pencap in the bottle with water.

- Step 6. put the cap on the bottle .

- Step 7. Than squeeze in the bottle and see of the pencap is sinking.

If it doesn't work you have to do it over.

You can put more clay on the pencap.

Example two: average: **100**

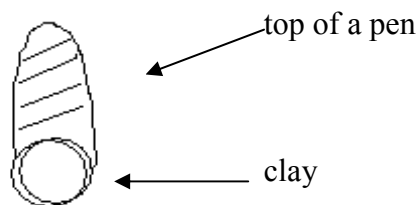
(1161)

What do you need for this experiment?

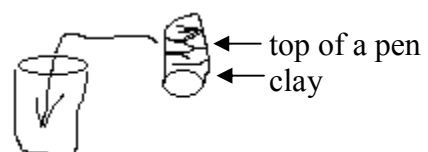
- a bottle
- a glass
- clay
- top of a pen
- water

How to do this?

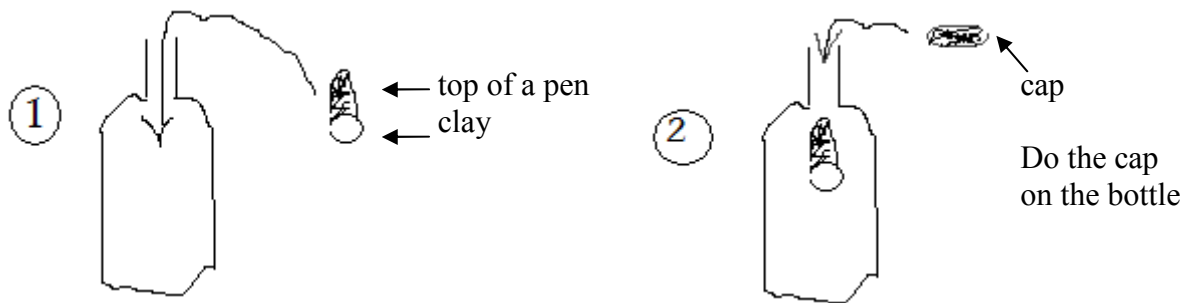
1. fill the bottle with water.
2. take a top of a pen and take a little bit clay. Do this clay on the top of the pen.



3. fill the glass with water. Do the diver in this glass. the diver is sinking? or he wouldn't go to the water?

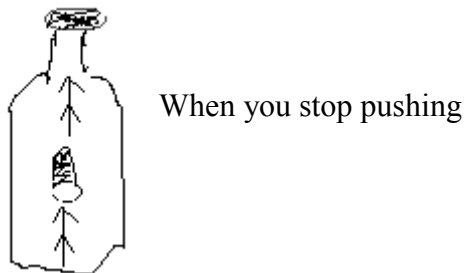
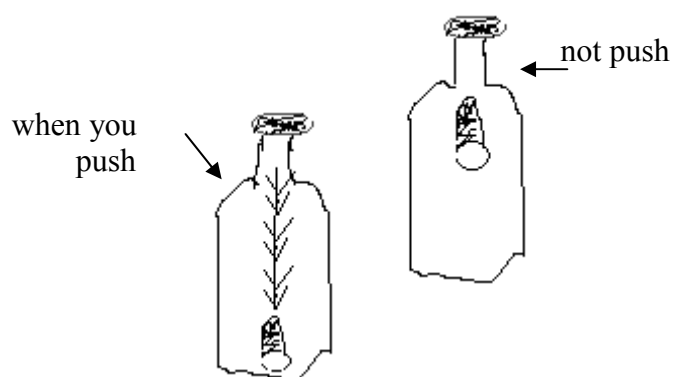


4 (if it doesn't work, you must take more clay) if it work do the diver in the bottle.



5 you can now push on the bottle and if it's working, the diver are going to the bottom.

(When you stop pushing the diver are going to the top of the bottle.)



Example three: good: **150**

(22310)

[Reconstructing a submarine]

As we all know we contain nowadays over modern technology, such a submarines. Submarines have the ability to sink under water, and float back to the surface. This phenomenon is due to what we call pressure.

We are going to reconstruct this with a model on scale.

for the preparation you will be needing the following materials:

- a few grams of clay.
- a waterglass
- an empty bottle
- the cap of a pen

Take a bit of clay in your hand, just enough to seal the pencap with it. And put that on it. Run a few tests to calculate if you're using the right amount of clay.

Take the glass, and fill it with water. Now put your pencil cap with clay on it. And lay it in the glass.

If it floats, you just have succeeded the test! Congratulations.

If not so, you will have to take little bits of the clay to make it float. After you have done this, take your little submarine out of the glass. The big empty bottle that was laying around there is now needed. Take it and fill it with water. Put your tiny submarine in it and close the bottle with the cap of the bottle. Carefully squeeze in the bottle. As you will slowly experience the submarine will sink, letting go and letting the pressure go makes the submarine rise.

You have reconstructed a submarine!

Appendix M: Grading overview native speakers

Grading overview

You are asked to grade the manuals according to the steps explained earlier in the following two tables.

Thank you

Manual codes	Overall Quality Grade 0-200
11310	
11420	
2042	
12110	
1091	
12220	
22310	150 (example)
2052	
20920	
22520	
2062	
2072	
1102	
12320	
20420	
21320	
21520	
21120	
11020	
1071	
1082	
2242	
20520	
22220	
22020	
10620	
12010	
10910	
2262	
2011	
10510	
1051	
10310	
1142	
1131	
2181	
1222	
1042	
1031	
1022	
21810	

21410	
1232	
2141	
2022	
2222	
2231	
2031	
1011	
21210	
11720	
1111	
10820	
10710	
2252	
1062	
10420	
20220	
2081	
2092	
10220	
1022	
1211	
2191	
2202	
NO CODE (2211)	
11920	
21910	
20810	
11810	
11220	
11110	
20610	
21610	
1161	100 (example)
1152	
2101	
2112	
2121	
2132	
21720	
1201	50 (example)
1192	
11610	
11520	
20310	
22110	
20110	
21010	
<wrong scan, do not grade>	Missing Value
20720	
2152	
2161	
2172	

1181	
1172	

Manual codes	Communicative Effectiveness, Draw a line according to the width of this table
11310	
11420	
2042	
12110	
1091	
12220	
22310	
2052	
20920	
22520	
2062	
2072	
1102	
12320	
20420	
21320	
21520	
21120	
11020	
1071	
1082	
2242	
20520	
22220	
22020	
10620	
12010	
10910	
2262	
2011	
10510	
1051	
10310	
1142	
1131	
2181	
1222	
1042	
1031	
1022	
21810	
21410	
1232	
2141	
2022	
2222	
2231	
2031	
1011	
21210	
11720	

1111	
10820	
10710	
2252	
1062	
10420	
20220	
2081	
2092	
10220	
1022	
1211	
2191	
2202	
NO CODE (2211)	
11920	
21910	
20810	
11810	
11220	
11110	
20610	
21610	
1161	
1152	
2101	
2112	
2121	
2132	
21720	
1201	
1192	
11610	
11520	
20310	
22110	
20110	
21010	
<wrong scan, do not grade>	Missing Value
20720	
2152	
2161	
2172	
1181	
1172	

Appendix N: DVD containing the Spreadsheet data & Statistics overview

The spreadsheet can be found on the DVD

It also contains the following statistical analyses:

- Descriptive statistics
- Analysis of the steps
- Analysis of spelling
- Analysis of grammar
- Analysis of communicative effectiveness
- Analysis of overall quality