

The Role of Instructional Method on Efficiency of Academic Writing

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Abstract:

In this study, we focused on which method of teaching university students how to write academic papers is most beneficial. In this study, we looked at the impact of writing preference (planning versus rewriting) on academic writing ability, as well as the distinctions between observational learning and learning by doing. In one experiment, 145 undergraduates were divided into two groups and given the choice between two different methods of learning: learning by action or learning by observing. In observational learning, students were able to obtain insight into the writing processes of both strong and weak models. They learned by doing, and this was accomplished via writing tasks. After completing a questionnaire about their writing style, participants were divided into two groups: planners and revisers. Learning by doing, planning, and revising were all components of a 2x2 between-subjects design used to examine the impact of the sessions on students' writing preferences (observational learning). Academic writing abilities were assessed by requiring participants to compose an abstract for an empirical research paper. Neither teaching method nor writing choice had a significant impact on our study results. Despite the fact that both groups profited from observational learning, simple effect analyses showed that revisers benefited slightly more than planners. Planners outperformed their peers in both observational learning and hands-on training. It appears that planners who learn by doing outperformed revisionists who learn by doing. Students participating in academic writing courses may benefit from observational learning, according to our research. On the other hand, further investigation into instructional methods is necessary.

Keywords: Observational learning, learning by doing, academic writing, writing preference

1. Introduction

Academics routinely voice their concerns about students' inability to examine, integrate, and synthesise scientific material (e.g., Granello, 2001). Over the course of history, numerous ways to teaching students how to improve their academic writing abilities have been taken. In this study, we compare the two techniques of teaching students how to write an academic paper: observational learning and learning by doing.

Content writing is a challenging and time-consuming task.. (Kellogg, 2008). So, what is it about the process of book authoring that is so difficult? One possible explanation for this phenomena is cognitive exhaustion (Braaksma, 2002). During the writing process, there is an interplay between four key cognitive activities: planning (generating ideas, organising information, and setting objectives), translating (putting thoughts into language), reviewing (evaluating and changing text), and monitoring (keeping track of progress) (deciding when to move from process to process). Every single one of these characteristics is important to keep in mind while writing a story (Flower & Hayes, 1981). They may lose sight of their own ideas due to the fact that they have to perform various tasks simultaneously and pay attention to numerous textual aspects at the same time (Braaksma, 2002). While this holds true for all authors, newcomers to the field should take note. There is little cognitive energy left over for the learner to gain knowledge from the writing process when the learner becomes so immersed in the writing process. Writing and learning to write are two distinct processes, but Observational Learning distinguishes between the two and provides a clear relationship between the writing process and the final output (Braaksma, 2002).

People learn through seeing and analysing the actions of others in observational learning (Bandura, 1997). Bandura (1977) uses his Social Learning Theory to describe four sub-processes that occur between the observation of modelled occurrences and the formation of a matching pattern of behaviour. Viewers should focus on the behaviour exhibited by the models first and foremost. Second, viewers must be able to recall particular aspects of the behaviour they watched in order to duplicate it. Observers symbolically organise and practise the modelled behaviour before performing it in the actual world in the third phase of the replication sub-process. To conclude, the individual who is seeing the activity in issue has an impact on whether or not he or she chooses to repeat the actions he or she watched.

Braaksma, Van den Bergh, Rijlaarsdam, and Couzijn (2001) looked at observation activities that were beneficial to students learning to read and write argumentative texts for the first time and found a similar four-step strategy there as well.

An important difference between observational learning and most college coursework (learning by doing) is the absence of real writing in observational learning. This is especially true when it comes to learning to write. Students see and respond to the writing processes of an instructor, as well as the development of the final texts, which exhibits the depth and breadth of writing to the teacher. You may be able to shift your focus from performing writing duties to learning new knowledge by watching (Couzijn, 1999; Rijlaarsdam&Couzijn, 2000; Braaksma, 2002).

A number of studies have shown that pupils of all ages benefit from observational learning when it comes to writing (as well as many other academic subjects) (e.g. Zimmerman & Kitsantas, 2002; Braaksma, Rijlaarsdam, & Van den Bergh, 2002; Rijlaarsdam et al., 2008; Raedts, 2008). According to Couzijn and Rijlaarsdam (2004), students in an experimental course on writing an argumentative paper in ninth grade were divided into two groups: those who watched learning and those who learned by doing. They came to the conclusion that learning by doing was inferior than learning by observation. To the participants, who realised via practise that they needed a theoretical comprehension of argumentative writing, it was offered to them. Many literary assignments were completed in line with theory. It was exactly the same theory supplied to participants in the observational learning condition as in the prior condition. Attendees watched two peers do homework and thought aloud while they did so, rather than performing the assignments themselves. In order to judge whether or not the models successfully applied theory to their conditions, the participants were instructed to focus their attention on the models' performance before watching. Afterward, participants were asked to determine if one model did better than the other and to explain why this particular model fared less well. It was necessary for them to distinguish between "strong" and "weak" models as a result of this. Researchers Couzijn and Rijlaarsdam (2004) found that students who learnt by doing outperformed those who learned by following peer models while generating an argumentation composition.

An important reason why observational learning is so effective in teaching writing is because observers are actively engaged in metacognitive activities as part of the process of learning by doing. Watching the models' writing, as well as applying and establishing standards for writing, is the primary goal of this exercise. Models are observed and conceptualised, performance is evaluated, and explicit reflection on observed performance is undertaken.

In the same manner that adults learn how to write academic papers through observation, would it be appropriate for university students to learn how to do so? Only a few studies have looked at this issue, all of which were done by Raedts and his colleagues (e.g., Raedts, Rijlaarsdam, Van Waes&Daems, 2007). These studies compared the influence of observational learning with learning by doing on task knowledge and text quality among undergraduate students. All students were given a quick introduction to theoretical ideas during the first session. This was followed by writing tasks for the students who had learned by doing and watching videos in which a weak and strong model accomplished the same activities that they had done in class. Students were instructed to write down the procedures used by each model after completing their observations in order to determine which was the most effective model. Students in the observational learning condition, contrary to projections, did not have a better understanding of what a good literature review should look like. Their knowledge of effective writing techniques, on the other hand, was far more comprehensive. Specifically, training had an influence on information gathering and preparation of the content, but no effect on text creation and editing techniques. Study participants who learned by watching outperformed those who learned through action in terms of text quality, the researchers found. Compared to students who were learning by doing, those who were exposed to observational learning were more likely to link their sources and produce better-structured literature reviews (Raedts et al., 2007). (Raedts and colleagues, 2007).

For the first time, research by Raedts and colleagues suggests that students learning how to write academic papers may benefit from a method known as "observational learning". It's yet unclear how the unique traits of each kid will affect their test scores, for example. Depending on how they are taught to write, for example, students may have different preferences. Galbraith and Torrance (2004) outline two separate approaches to writing in research: a

planned approach and an interactive approach, which are often used. Before beginning to compose the entire text of their work, writers who employ the planning strategy focus on finding out what they want to portray. As soon as they know what they want to say, they concentrate on getting the message over in the most effective way. The development of a conceptual framework and outline of the text might be included in this method in order to organise the text's structure (Kieft, Rijlaarsdam, Galbraith, & Van den Bergh, 2007). Under the interactive approach, written material grows through a series of draughts because authors determine what they want to communicate as they are writing (Galbraith & Torrance, 2004). "an organic, developmental process in which you begin writing from the very beginning." is what Elbow (1998) explains in his article on the interactive method. Several pre-writing activities, such as free-writing, can be incorporated into this method (Elbow, 1998), and several draughts can also be written (Murray, 1980). In some cases, a planned strategy may be equally as effective as an interactive one, according to Galbraith and Torrance (2004). They say that because people's preferences for various strategies appear to vary, it may be necessary to accommodate different cognitive styles in education. According to Galbraith, Torrance, and Hallam (2006), students gained the most from writing instruction that was diametrically opposite to their chosen method of expression. Students who did not employ skills like brainstorming on their own benefited from writing instruction since it provided additional support and encouraged them to do so on their own.

Kieft, Rijlaarsdam and Van den Bergh (2008) evaluated the effect of adapting a writing course to students' writing methods on their performance. The authors refer to this method as a "revising strategy" while discussing it. They identified a correlation between personal writing preferences and writing instruction when conducting their investigation. Learning more about the writing process was more beneficial to students who preferred to prepare or modify their work via the use of their preferred medium. Rijlaarsdam et al. (2008) suggest that tailoring observational learning tasks to students' chosen writing styles may be useful. Observational assignments that offer feedback on planning difficulties may be useful for students who favour planning, while those who prefer revision may gain more from observations of writers who are dealing with revision obstacles. Observational activities that are diametrically opposite to the students' preferred means of learning, on the other hand, may yield more benefits for students, as suggested by Galbraith et al. Therefore, in this study,

researchers are interested in determining if a writer's preference for an educational technique influences academic writing performance.

We drew on the work of Raedts and others to build a study that compares learning by doing to learning by observation. A theoretical component is typically followed by a series of pre-structured writing projects for participants to complete. Participants in observational learning have access to the same theoretical information as they would in traditional learning, but they are instead obliged to observe and remark on the behaviour of models completing identical tasks (see for example, Braaksma, Rijlaarsdam, & Van den Bergh, 2002; Couzijn&Rijlaarsdam, 2004; Raedts, 2008).

Using a similar approach, we've done the same thing in the present investigation. Observational learning was compared to learning by doing. All of the participants had the opportunity to learn about successful writing techniques. It then followed that observers were shown peer models thinking aloud while they completed a range of writing tasks in front of them, and this was followed by the observational learning condition's participants. The observers were presented a weak and a strong model, and they were asked to explain why they thought one model was better than the other. However, they didn't really compose the essay. In the learning-by-doing condition, models were undertaking tasks that people had completed in the observational learning condition, but they were doing so on their own.

As part of the research, participants were tasked with either seeing or taking part in the preparation of an introduction to an empirical research report using index cards (summaries of scientific articles). The participants had never done this before. Students are often obliged to prepare empirical research reports and literature reviews during their academic careers (Froese, Gantz, & Henry, 1998). Defining and clarifying a subject, reviewing previous research and finding linkages between multiple sources of information, discrepancies, gaps and inconsistencies within the literature are all necessary steps in writing about an issue. The academic writing assignments in Raedt's studies in the current study are more sophisticated and thorough than those in prior research, such as Kitsantas and Zimmerman (2002), because writers must mix various source texts and the texts do not have a pre-arranged format (2002).

Students in higher education need to learn how to analyse and synthesise the material they have gathered into cognitively sophisticated judgments of the literature in a systematic,

deliberate, and well-grounded manner, according to Granello (2001). Despite the fact that students may be unable to properly analyse and synthesise literature because they have not received clear instruction on how to do so, university teachers usually presume that students have these abilities, according to Green and Bowser (2006). As Green and Bowser (2006) point out, many university professors make the mistake of assuming that their students already have these skills since they haven't been taught how to teach them.

Raedts' literature review and this study's introduction posttest have a key difference: participants in our study were obliged to make sure that their literature review logically related to their (previously supplied) research topic and hypotheses. For our posttest we asked participants to write a short introduction to an empirical research article, which was part of the standard course evaluation for both Dutch for Academic Purposes and a course in research methodology. The effectiveness of an observational learning strategy in a presently given course might be evaluated using this approach.

The ability to write is one of the student attributes that we want to take into account. More planning-like acts including organising content, developing a text's structure, and condensing information into a paragraph were observed in four of six observation sessions in this study. Students who prefer planning over revising may benefit more from pre-writing observation than students who prefer revising, because the majority of the observations are based on models who are involved in pre-writing planning activities before commencing their writings.

An introduction to a long and complex writing project, like a research paper, is the focus of this study, which examines how instructional approaches and writing preferences affect academic achievement in the context of learning to write such an assignment. We believe that academic writing performance will be improved by observational learning rather than traditional learning by doing (H1). In terms of overall performance, we expect writers who favour planning to perform on par with writers who prefer revising. A propensity for writing may, on the other hand, lessen the impact of educational methods (H2).

2. Method

2.1 Participants

The study included a total of 211 undergraduate students from Tilburg University studying Communication and Information Sciences (n = 211). A obligatory course for Communication and Information Sciences majors, Dutch for Academic Purposes, recruited the participants. This course introduces students to the academic writing process. Various kinds of academic writing and their value are examined. None of the participants had ever written an academic paper at the university level before. Study findings were based on only first-time enrollees, those who showed up during both sessions and completed a questionnaire on their writing style, and native Dutch speakers. Final sample consisted of 54 males and 91 women, resulting in 145 participants. For the study, we included 72 pre-masters students with a high school diploma or GED (M age = 22.5, SD = 1.64), as well as seventy-three first-year bachelor students (M age = 18.5, SD = 1.25).

Nine instructional groups were formed from the attendees. First, they selected a time slot that matched their teaching schedule, and then groups were randomly assigned to either the learning-by-doing or observational learning conditions: five groups were assigned to the former and four to the latter. When they signed up for the tutorial groups, participants had no idea what they were getting themselves into. In the end, 81 people participated in a condition where they learned by doing, and 64 people participated in an observational learning condition. Table 1 summarises the characteristics of the people in each condition.

Table 1. Sex and mean age in years (SD) of the participants per condition

Instructional Method	Sex		Age	Educational Background	
	Male	Female	M (SD)	Bachelor	Pre-master
Learning by Doing	30	51	20.5 (2.46)	43	38
Observational learning	24	40	20.5 (2.45)	30	34

Participants in both conditions were comparable in terms of gender ($\chi^2(1) = 0.003; p = .95$), age ($t(139) = 0.09; p = .93$) and educational background ($\chi^2(1) = 0.55; p = .46$).

2.2 Design

Observational learning and doing were the two teaching approaches employed, as were the writing preferences of plan and revise. A two-by-two layout was used for the overall design. Participants were shown recordings of student-actors executing writing tasks while thinking aloud, and they were then asked to finish the assignments. Traditional writing assignments in a learning-by-doing context enhanced student performance dramatically. It was necessary for participants to fill out a questionnaire on their personal writing styles prior to the sessions starting. The findings of this questionnaire characterised them as either a planner or a reviser. Academic writing performance was evaluated following a post-test assessment of teaching approach and writing preference. High-level design information may be found in Table 2.

Table 2. General Research Design

Lecture	Duration (minutes)	Measurement
-	-	Writing style questionnaire Language proficiency test
3	50	Session 1
4	50	Session 2
-	-	Posttest: introduction to an academic paper

2.3 “Procedures and materials used in the sessions are described in detail below. The sessions' content was divided into three categories”

They were held in conjunction with course Dutch for Academic Purposes, which was currently in session at the time of the sessions. They had no prior understanding of the subject and no prior experience with academic writing when they attended these tutorials, which were held in the third and fourth weeks of their university studies. Lecturers demonstrated how an article's abstract, introduction, method and results sections, together with a discussion of the findings, a conclusion and citations, were all necessary components of an article. In the third and fourth weeks of the course, four teachers led tutorials under the guidance of the first author, who also happened to be one of the instructors at the time. There were two groups of students allocated to each instructor: an observational group and a learning-by-doing group.

During a meeting a week before the sessions, they went through the processes, a thorough lesson plan, and a presentation that included the exercises.

Six movies were given to participants one-on-one over the course of two sessions in the observational learning condition (three in each session). It took around 50 minutes for each session. Participants could copy and paste an introduction written by two peer models using four index cards from the videos. The models had to incorporate a synopsis of a scientific article in their introductions for the competition on each index card. Each video focused on a different component of how to write an academic paper's beginning (Table 3). Based on the literature on effective and ineffective writing methods (e.g. Graham & Perin (2007), as well as ideas from a study by Raedts and colleagues (2009), the substance of the films was based on the research (2007). (2009). Teaching students how to prepare, revise, and edit their writing is a very successful approach of enhancing their writing, according to Graham and Perin (2007). According to some, students should be taught methods for summarising readings in order to better communicate their understanding in written form. These sorts of activities were therefore integrated into the workouts and movies that we made.

Rather than just acting out a scenario for camera, these actors acted out a script and were told to think aloud as they recorded it. The script included examples and detailed directions on how to type phrases and make observations out loud while thinking. The following is an excellent example of a model instruction: 'Tell kids that the first paragraph should focus on how much more attention they are receiving these days and how they are utilising ICT. Create a bullet point with the introductory paragraph's keywords in it to get things started. Actors who were students also had a chance to submit their own thoughts and help make the videos more authentic and compelling. Two models were chosen because students are more likely to identify with at least one of the models when they watch them in action (Schunk, 1987). Both models employed successful techniques to finish tasks (strong model), whereas the other model used counterproductive strategies to accomplish the assignments (weak model) (weak model). This is in accordance with prior studies (Groenendijk, Janssen, Van den Bergh, & Rijlaarsdam, 2011; Raedts et al., 2008; Couzijn & Rijlaarsdam, 2004). This is a flimsy model. While the weak model just read the index cards, the strong model compared and contrasted the studies on each index card to see if there was a correlation between

methodology and results. A student actor (Anne) played the strong model in all of the videos, while a student actor (Kristel) played the weak model in each one. The films were only accessible to participants during the training sessions.

iMovie was used to edit the films, which were filmed using Camtasia, which allows for simultaneous, picture-in-picture recording. A tape of the model using the computer, her voice, and the Word screen she was working on were all used in the creation of each artwork. Even when the models were not writing (e.g. reading and scrolling through index cards, pausing etc.), the participants were able to see exactly what the models were doing. The participants gained insight into the models' cognitive processes and writing techniques by capturing their voices. Participants were able to watch the models' on-screen writing operations, including as typing, erasing, and rewriting, by recording the computer screen. Films ranged in duration from five to thirteen minutes. One of the videos is shown in Figure 1. When it comes to making an eye-catching first line, Kristel is having a difficult time.

Both sessions of the learning by doing condition were 50 minutes long. Participants were instructed to use the material on four index cards to write an introduction to a research paper throughout both sessions. Pre-planned tasks led to a comprehensive introduction in the first session. The activities have to be completed in a short period of time. It is clear from Table 4 that under the observational learning condition, the activities were based on movie content, which will be covered in further depth in a subsequent section (in the next section the similarities between the two conditions will be discussed in more detail). As part of the second session, participants were given four index cards with information about a certain subject and were asked to write an introduction to it. Table 4 provides a breakdown of the learning-by-doing sessions' exercises.

Table 3. Content of the Videos in the Observational Learning Condition

Session	Video	Content	Duration
1	1	Reading, selecting, organizing and paraphrasing the information on the index cards	50 minutes
	2	Planning content and main structure	
	3	Organizing the body of the introduction (relating the content information from the different sources)	
2	4	Zooming in on the paragraphs (combining studies within a paragraph)	50 minutes
	5	Adding an opening to the introduction and writing a sentence at the end of the (last) paragraph to bridge the gap to the research questions	
	6	Revising the text at word, sentence and text level.	

In both cases, there are a number of parallels and differences.

Each of the situations was identical to the other in every way that could be expected. First week of class video lectures were shown to all students, with information on different aspects of an introduction (opening, literature review, bridge to research question and hypotheses). During each session, we emphasised to participants that their objective was to prepare them for writing an introduction to a certain subject (for example, the use of ICT in higher education or the importance of gestures in nonverbal communication) by synthesising knowledge from many academic sources. That method of working would be fine for drafting an introduction for the first paper, as well, students were told. In all cases, the substance of the exercises was the same for both situations. Observational learning videos 1, 2, 3, and 4 (Table 3) correspond to exercises 1, 2, and 3 from the learning-by-doing condition, video 5 corresponds to exercise 4, and video 6 corresponds to exercise 5. Watching videos 1, 2, 3, and 4 correspond to exercises 1 through 3 in the "learning-by-doing" category (Table 4) of learning. In the learning-by-doing condition, participants were obliged to do the same activities during their first session, which were captured in the films of observational learning condition. They were the same exercises.



*Figure 1: Screenshot of a fragment with weak model Kristel.
Translation of text in Figure 1: "Learning and technology.
It is impossible to imagine our society without ICT."*

The participants in both situations received index cards. In addition to the summary of an academic work pertaining to the theme of the introduction, each index card featured a synopsis of another academic article. By employing index cards, we were able to speed up the reading process while simultaneously guaranteeing that all of the students were obtaining similarly relevant information on the topic. There was an index card for the original article that had all of the information from that article, including a full citation, the research question, kind of data, and a summary of the study's most relevant findings. The first and third index cards showed two distinct points of view. Contrary to the first and third index cards, the second and fourth index cards presented an opposing viewpoint.

Table 4. Content of the Exercises in the Learning-by-doing Condition

Session	Exercise	Instruction	Time (minutes)
1	1	Read index card 1 and 2 and write a paragraph in which you describe the most important/relevant results. Refer to the sources by using APA standards.	10
	2	Read index card 3. Add the information of the index card to the paragraph you have written in exercise 1.	5
	3	Read index card 4. Add the information to the paragraph of exercise 1 and 2. Divide your text into two paragraphs, if necessary.	5
	4	Read the instructions once more. Add an opening to the introduction and write a sentence at the end of the (last) paragraph in which you bridge the gap to the research questions.	10
	5	Revise your text on text level (structure, composition) and sentence level (spelling, vocabulary, grammar).	5
2	6	Write an introduction to the topic provided. Use the information on the index cards.	50

The index card in Figure 2 is shown in an example. Index cards used in the first session by participants in the observational learning condition were similar to index cards used in session two. Similarly, the index cards used in both sessions were identical. During the second session, participants in the learning-by-doing condition received an extra four index cards, bringing the total to eight. They were provided a chart of efficient writing techniques in addition to the index cards that we gave them in both cases (Table 5). These techniques resembled those used by the 'stronger' character in the movies. As part of the experiment, those who took part in observational learning were asked to complete a table detailing the strategies used by the models in the movies they viewed.

<p>Reference</p> <p>Bennett, S., Maton, K., & Kervin, L. (2008). The 'digital natives' debate: A critical review of the evidence. <i>British journal of educational technology</i>, 39(5), 775-786.</p>
<p>Details about the research</p> <p><i>Research theme:</i> analysis of the digital natives debate, with the following research questions:</p> <ol style="list-style-type: none">1. Do students nowadays possess extensive ICT knowledge and skills?2. Do students have specific learning preferences that are different from earlier generations, because of their experience with ICT? <p>Type of research: literature review</p> <p>Data: scientific articles</p>
<p>Results</p> <ol style="list-style-type: none">1. ICT knowledge and skills<ul style="list-style-type: none">- Part of today's youth has extensive ICT knowledge and skills and uses these skills for information gathering and communication..- However, there is also a large group with less access to technology or with less skills than is sometimes assumed.- It is dangerous to generalize a whole generation: no room for individual differences between young people or between different age categories.2. Learning preferences<ul style="list-style-type: none">- Research into learning strategies shows many individual differences in learning preferences. Students adapt their strategy, dependent on the task. <p>Conclusion</p> <p>Not much empirical evidence to support the concept of <i>digital natives</i>. ICT can be important, but the situation is much more complex and unclear than expected. More empirical research is necessary to gain insight into the characteristics of students nowadays and the implications for education.</p>
<p>Quote</p> <p>With generalization of a complete generation comes the danger that those less interested and less able will be neglected, and that potential impact of socio-economic and cultural factors will be overlooked.</p>

Figure 2. Example of an index card.

Before beginning the activities, participants in the "learning by doing" condition utilised the table to make themselves ready. Participants were also asked to fill out a table at the end of

each activity detailing the approaches they used. All participants were given a same amount of exposure to effective writing abilities, and all conditions had a similar reflective task, thus we included the table in both conditions.

In a setting where students are learning by doing, the steps are as follows:

The first session took place in a computer room during the first instructional session. During the session, each participant had access to a computer. Tables explaining effective writing processes and exercises that may be done as a consequence, four index cards, and an appendix with basic guidelines for APA-referencing were given to the participants.

Table 5. Writing Strategies presented to the participants in both conditions

Effective strategies	Corresponding actions
Reading important information	Read the research question and the results.
Organizing the information	Identify general differences and similarities.
Paraphrasing	Put important information into your own words.
Planning	Plan the content and structure by organizing key concepts.
Connecting the content	Identify the differences and similarities between studies in detail.
Combining studies	Connect the content of the different studies in your own text. Use connective words/sentences to mark the relations explicitly.
Adding a quote (optional)	Add a quote using APA guidelines to support an important point.
Revising the text	Check your own text on text level (structure, logic) and sentence level (grammar, vocabulary, spelling).

According to the teacher, who walked the students through the process, they had to complete five short writing exercises in which they drew an introduction to an academic piece on four index cards. Reading through the directions, effective writing, and index cards were given to each participant for 10 minutes each. After that, everyone was shown a presentation of the first exercise on a computer screen. Instructor presented the next exercise when a chime sounded at the end of the previous exercise. As soon as they finished each of the five tasks in the course, students were required to submit their introduction to the online learning

environment and to list the writing methods they used in a table (see Table 5) on the last page of the handout. It was the same table they had looked at before beginning the activities on it. The instructor collected the handouts together at the end of the session. Second session participants were given an example of how to make a good first impression. For instance, the strong model ("Anne") developed an introduction that was utilised as an example in the observational learning videos.

During the second instruction, the second session was conducted in the same computer room as the first. In addition to the initial handout, participants were given a second one that included the same information. People who attended the lecture were handed index cards with information on the subject and were asked to write an introduction on the handout. An effective opening, a summary of academic literature, and a bridge phrase that links the (previously supplied) research question and hypothesis are all required components of the introduction. In addition, the writing should be error-free, with no typos or grammatical mistakes. This project had a tight deadline of thirty minutes, so the team had to work rapidly. This was followed by a task in which students had to record in a table their choices of writing methods and then submit their work into an online learning environment (OLA). The teacher picked up all of the handouts at the end of the session..

The approach for observational learning is as follows:

A beamer and computer were used for the second session, which occurred during the first tutorial and the second session during the second lecture, respectively, in a conventional classroom setting. The identical method was used for both sessions. An introduction to observation exercises, four identical index cards, and three observation exercises were provided to participants for the first session of the learning by doing condition. The participants completed exercises 1, 2, and 3 for that session and exercises 4, 5, and 6 for the second session (see Table 3). Participants were instructed to observe other participants while they worked on their own writing tasks, and we explained that the exercise's purpose was to teach them how to effectively integrate knowledge from many academic sources into an introduction to a certain subject. Attendees had no idea that the models were really student actors at the event. The participants were informed that they might use the concepts they had learnt in class when writing their first paper of the semester's introduction. Before beginning

the tasks, each participant was asked to carefully read the introduction and all of their index cards.

The instructor then started displaying the first video. While viewing the film, the handout provided a place to jot down remarks. Participants were given five minutes to reply to the following questions after seeing the video: Which differences did you notice in the writing styles of the two authors? Who is the best writer in your view, and why? Because of what she did, did you think she was a worse writer than the other author? The lecturer would then begin playing the video below. In order to identify which strategies they believed the models were using, participants completed a table after seeing the last film in the session and answering the accompanying questions. This table was identical to the one that was used in the learning-by-doing experiment (see Table 5).

2.4 Measures

Mastery of a second language

They had to complete a grammar, spelling, and punctuation exam before they could begin the classes in order to rule out any disparities between them in their initial language abilities. Developed by Tilburg University's Language Center more than a decade ago, the exam is used as a diagnostic tool for undergraduate students at the university. This quiz had 25 questions in it, eight of which were about congruency and five of which were on verb conjugations. Endophoric phrases were the last item on the list (12). Verb and noun spellings, punctuation, and usage of punctuation in sentences were all examined using forty items in this study (7).

On structure was done with 10 questions: 4 on organising sentences, 3 using conjunctions, and 3 assessing paragraph structure (3). Each section might get a maximum of a quarter point for grammar, a quarter point for spelling, and ten points for structure. Grammar scores ranged from 0 to 25, while spelling and punctuation scores ranged from 40 to 10, and structure scores ranged from 10 to 40.

Preferences for the written word

Participants were asked to fill out a questionnaire produced by Kieft, Rijlaarsdam, and Van den Bergh (2006) before to the sessions to identify their favourite style of writing. As a result

of its extensive usage in research publications, this questionnaire was chosen as the best option (e.g., De Smet, Brand-Gruwel, Leijten & Kirschner, 2014; Kieft, Rijlaarsdam & Van den Bergh, 2008; Tillema, 2012). The 36-item writing style test was meant to measure participants' claimed degrees of planning and rewriting techniques..

Thirteen questions showed planning behaviour, twelve indicated revision behaviour, and the last eleven were fillers. In the writing style questionnaire, pre-writing tasks such as establishing a text schema and producing a polished first draught fall under the category of planned-type behaviour. This concept is divided into two parts: the tendency to depend on revision and the way revisers utilise text creation to arrive at a content strategy (Tillema, 2012).

On a scale of one to five, participants were asked to indicate how much they agreed with each issue (1 being completely disagree, 5 being completely agree). Questionnaires were taken through the internet. "Before I begin writing, I want to be sure that the information that will be included in the text is accurate," says a planning item. Therefore, I attach great importance on planning ahead.' As an example of revising, the following statement was made: 'When I complete a work, I generally need to read it over carefully to make sure there isn't any redundant material in it: The Appendix contains all of the objects in a dimensionally organised format (taken from Tillema, 2012).

In the genuine questionnaire, each item was given in Dutch and in a random sequence, as mentioned above. A combined planning and revision score (Cronbach's alpha =.65) and a combined revision score (Cronbach's alpha =.60) were generated for each item. In spite of their modesty, their reliabilities are on par with those discovered in previous research (e.g. Tillema, 2012, respectively .72 and .64, and De Smet, Brand-Gruwel, Leijten, & Kirschner, 2014, respectively .71 and .63). Participants were given a mean score for planning and modifying tasks based on their replies.

Academic Writing Proficiency

As a post-course assessment, the first author rated each participant's first paper's introductory section, which they were obliged to write for the course Dutch for Academic Purposes. To test the influence of adjectives on the perceived attractiveness of a commercial advertising, participants in this article presented an experiment. Attendees who attended seminars

received four index cards that looked just like the ones they'd seen throughout the sessions. Included in this study were the following elements: a comprehensive reference to the original article, a summary of the study's most significant results, and a quotation from the source. Index cards 1 and 3 had outcomes that were very comparable, whereas index card 2 had results that were polar opposites. Because it included a new element, the research on index card 4 had the potential to influence the results of the previous three studies. We gave the students the task of coming up with an intriguing and relevant introductory paragraph for their paper. To sum up, the introduction should attract the reader's attention, be neither too formal nor too casual and define the work's premise. The following instructions were provided to the participants after they saw the video lecture from week two. To ensure that the introduction led logically to the study question and hypotheses, the students were told to incorporate all four index cards in it. All of the groups received the same instruction.

In order to gauge the quality of the students' academic writing, the texts were assessed according to the argument's structure. Six criteria were used to assess this dimension: When comparing results from index cards 1, 2 and 3, it is necessary to look for similarities and differences, as well as similarities and differences in paragraph structure, paragraph structure, and paragraph structure in general, among other things (e.g. connective words). Zero-valued items may get one or two points, with a maximum potential score of twelve for each item.

In order to remove any personal information from the papers, a teaching assistant was in charge. Afterwards, the writings were analysed by the initial author, who was fully uninformed of the respondent's identity and the experimental conditions. To ensure interrater reliability, Pearson's r values of 0.76 and 0.75 were used to compare the scores of two specially trained student assistants on each of the papers. Two trained student assistants re-scored all of the books. A codebook given with the readings had three examples for each of the potential scores for each category.

2.5 Statistical Analyses

Writing Preference (plan, rewrite) and Instructional Method (learning by doing, observational learning) were examined as independent variables in an ANCOVA along with the posttest score in order to compensate for the effects of prior schooling.

3. Results

3.1 Language Proficiency and Writing Preference

Before addressing the results of the research on the impact of instructional style on academic writing performance, it is important to review the general findings on the link between initial language proficiency and writing preference.

Acquiring Language Skills at the Start

The participants' initial level of language ability was assessed using a variety of grammar, spelling, punctuation, and structural exams. Listed in Table 6 are the mean results on each of these assessments. For grammar, spelling and punctuation, and structure ($t(140)=-0.77$; $p=.45$), there were no statistically significant differences between the conditions ($t(140)=0.94$, 0.07 , and 0.94 , respectively). Thus, it is plausible to conclude that both groups have equivalent levels of linguistic proficiency.

Table 6. Mean Scores on grammar, spelling and punctuation and structure (SD) per condition

	Grammar <i>M (SD)</i>	Spelling <i>M (SD)</i>	Structure <i>M (SD)</i>
Instructional Method			
Learning by Doing	18.25 (3.07)	32.73 (3.20)	5.57 (1.29)
Observational learning	17.72 (3.55)	32.69 (3.36)	5.74 (1.33)

Preferences for the written word

Participants' answers to a questionnaire on their writing style were used to get a mean score for planning and revising. In contrast to Revisers, who obtained a higher score for planning than for revising, the Planners were those who received a higher score for planning. This led to the hiring of 38 Planners and 120 Revisers (see Table 7 for the distribution over conditions). With regards to the results of Torrance, Thomas, and Robinson, the percentage of participants who favour planning (24.1 percent) and revising (75.9 percent) seems to be comparable (2000). 23.5 percent of the 715 essays assessed in their longitudinal research used a thorough preparation technique, which includes actions such as writing an outline and

one or more subject inquiry tasks. Most students used a revision method that enabled them to allow their thoughts to develop as they wrote the remaining essays. Even though one writing preference is more prominent than the other, the writing preferences are not mutually exclusive, even if one option is more dominant in general.

Table 7. Number of Planners and Revisers per condition

Instructional Method	Planners	Revisers
Learning by Doing	21	60
Observational learning	17	47

There were no statistically significant differences in writing preferences among the instructional technique conditions ($p = .93$; $2(1) = 0.01$; $p = .93$). Therefore, it is acceptable to conclude that the two circumstances are equivalent in terms of their preferred writing styles.

Academic writing standards

We analysed the impact of instructional methods and writing preferences on academic writing quality while controlling for educational background, and the findings were startling.. Findings from this study show that academic text quality is strongly linked with educational background. There were no significant differences in teaching approach ($F(1, 140) = 0.40$, $p = .53$), or in the kind of writing students chose to produce, when the student's educational background was taken into account using the ANCOVA. Participants who favoured planning and rewriting over other writing methods in both circumstances of the research are summarised in Table 8 of this report.

Table 8. Academic Writing Performance in relation to Instructional Method and Writing Preference (minimal score 0, maximal score 12)

	Learning by doing Mean (SD)	Observational learning Mean (SD)	Total Mean (SD)
Revising preference	5.83 (2.78)	6.96 (2.38)	6.33 (2.66)
Planning preference	7.14 (2.33)	6.94 (3.21)	7.05 (2.72)
Total	6.17 (2.72)	6.95 (2.60)	

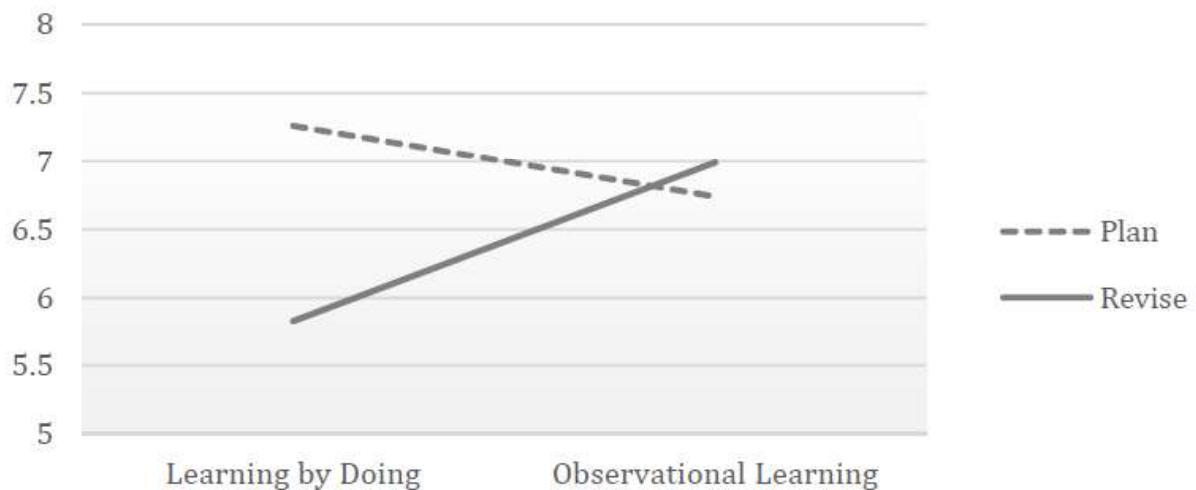


Figure 3: Academic writing performance in relation to instructional method and writing preference (minimal score 0, maximal score 12).

$F(1, 140) = 2.78$, $p = .097$, and $p_2 = .020$ indicate a significant interaction between instructional approach and writing preference. A statistically significant impact of instructional style was found for those who favoured revising, $F(1,140) = 5.16$, $p = .025$, and $p_2 = .336$ for those who preferred revising. There was a significant difference between students who revise in the observational learning condition and students who revise in the learning-by-doing condition. According to $F(1, 140) = .36$ and $p = .55$, participants who liked planning showed no differences in reaction to instructional approaches.

The propensity for writing was likewise kept consistent in simple main effects trials. Findings from these analyses show that learning by doing participants who favoured revising scored considerably better than participants who liked planning ($F(1, 140) = 4.62, p = .033$, and $P2 = .0032$). A $F(1, 140) = .112$ and a p value of $.74$ showed no difference between the observational learning and control groups. As a visual representation of data, graph 3 shows the mean scores for academic writing.

4. Discussion

To find out whether academic writing ability correlates with instructional approach (observational learning vs learning by doing) and writing choice, this research was conducted (planning versus rewriting). Our objective was to see whether observational learning is an effective method for tackling a large and difficult writing assignment while also taking into account the student's own writing style. An ecologically appropriate context for this research was an established undergraduate course inside a typical study programme, with the posttest being a real assignment.

An educational strategy was not shown to have an impact in this research. According to the findings, those who learned by looking at examples rather than by doing performed as well as those who learned by doing. There was no discernible difference between the two techniques in terms of effectiveness. However, this is at odds with the results of the study by the same authors, who found that the instructional style had a significant influence on student learning. This study was able to discover statistical differences under specified settings because of the similarity of the samples, and because the statistical analysis we used was sensitive enough to detect differences under those conditions, which shows that the participants benefited from their sessions. Similarly to Raedts et al's first research, the current one used a similar methodology. Just like the last research, the only difference was that in the learning-by-doing condition, we integrated a form of self-evaluation and reflection. A table of successful approaches was compiled by participants who learned by doing and mentioned the ways they had used while carrying out the activities they had learned from. As a consequence of this, the line between observational learning and learning by doing may have gotten more blurred. When it comes to the inconsistencies in results, we are uncertain whether or not this can be attributed to merely a small number of the sessions.

To our surprise, there was no variation in outcomes depending on how people like to write. Planners and revisers didn't do a great job. In line with Galbraith and Torrance (2004), who found no clear evidence linking a specific writing inclination to increased writing abilities.

According to our second hypothesis, a propensity for writing lessens the efficacy of an instructional strategy. We found no overall influence of instructional strategy on performance, but our data indicated unique patterns for participants who favoured planning vs those who favoured reviewing. Observational learning was shown to be marginally more useful for students who like to revise than other techniques of learning. This study found that those revisers in the observational learning condition were better at tying together the index card information, as well as creating an acceptable introduction and linking the research questions than those revisers in the learning by doing condition. Planners were shown to have minimal impact on the instructional approach. This seems to be at odds with the results of Braaksma, Rijlaarsdam, and Van den Bergh (2008), who reported that students obtained more information from a writing course that was adapted to their preferred writing style. There's a good chance that planners will gain most from observational learning since the bulk of pre-writing planning chores were seen. Some researchers believe, however, that students who utilised a revision method may have been forced to experiment with new, more successful tactics when writing the posttest introduction, as suggested by Galbraith et al. (2006).

We also believe that planners gain more from learning by doing than revisers. Less focus is placed on pre-writing methods in these activities, as compared to the more typical exercises. In any case, these strategies are likely to be used by planners. On the writing style questionnaire, for example, students who reported a greater level of planner-type behaviour used more planning activities at the beginning of task execution, says Tillema (2012). Van Weijen (2008) found a link between the probability of planning and the quality of a writer's work at the start of the writing process. In the context of learning by doing, planners tend to outperform revisers. Planners, rather than revisers, would seem to gain the most from a more conventional writing education in this scenario. Since a result, it's reasonable to say that the majority of students in our research learned how to write an academic paper by observation rather than through teaching, as planners and revisers did equally well. On the other hand, if the models are based on alternative methodologies, such as more extensive revision

processes, planners may gain more from observational learning than they did in the present research. Additionally, putting what you've learned via observational learning in regular, deliberate practise in real writing may help keep the benefits continuing for the long term..

In order to make better writing judgments, additional study is required to understand the relationship between writing preference, instructional strategy, and writing performance. Using a self-reported questionnaire, we don't know the strategies the students used when writing the posttest in this research, for example. Depending on the strategies used by students, the influence of the teaching strategy may be minimised or amplified. It's also worth noting that our decision to divide the participants into revisionists and planners may have influenced the study's findings. The participants received a mean score from the group for both planning and revising. Planners were defined as individuals who scored better on planning than on revising; those who scored higher on both planning and revising were defined as planners. This resulted in the formation of a 76 percent bigger revising group than the original planning group (24 percent). Revisers in general may use certain planning strategies, and planners may use some planning approaches as well.

Future research should examine how participants really prepare and revise before sessions and during the posttest, for example by adding keystroke recording into the experiment's design. This research will provide further information on how the use of writing strategies and their relationship to writing performance might be influenced by observational learning and learning by doing. Academic writing competence should also be assessed as part of the admissions screening process. This information was omitted from the present research. No a priori disparities in the experimental groups' languages skills exist, thus we have no basis to suppose that these early differences in language competence have an influence on the sessions' results.

A intriguing conundrum remains as to what makes observational learning at least as effective as learning by doing, especially for writers who enjoy revising their work after they've written it.. According to Braaksma, Rijlaarsdam, Van den Bergh, and Van Hout-Wolters (2004), this is owing to the observers' high levels of engagement in metacognitive activities, as previously indicated. The models' performance must be assessed and their observed performances must be openly stated after they have been seen in order for observers to create

criteria for successful writing. Learning by doing typically lacks this explicit assessment and reflection, which is fostered in observational learning by asking participants questions about the model's performance. As part of the present research, we asked participants to provide feedback on the approaches they used throughout the interventions, allowing us to compare the two learning-by-doing conditions. Nevertheless, this was a lesser fraction of the interventions in the observational learning condition than in the evaluation and reflection section. There is a lot of need for additional research into the role of self-evaluation and reflection in both observational learning and learning via action.

5. Conclusion

We studied the impact of instructional approach (observational learning vs. learning by doing) and writing choice on academic writing performance. We wanted to see if observational learning is a successful method for completing a large and complicated writing task, as well as what impact writing choice had on student performance.

We observed that neither instructional approach nor writing choice had any significant major effects in this study. This suggests that both tactics were equally effective in teaching students how to write the introduction of an academic report, and we found no indication that one writing style was more effective than the other. For students who prefer to edit their work, however, observational learning appears to be more beneficial. Introductions written by revisionists who learned via observation were well-organized than those produced by revisionists who learned through action. Planners outperformed their rivals in both observational learning and learning by doing. In the revision process, however, planners who learnt by doing seemed to outperform their peers.

As established by our research, observational learning may be an effective instructional technique for learning how to generate an academic work in which several sources must be combined and there is no pre-arranged framework. This is an interesting prospect for (online) academic writing courses when there is little opportunity for individual feedback. More study is needed, however, to discover the exact link between instructional approach, writing preference, and classroom academic writing performance.

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Appendix

Items in the Writing Style Questionnaire (Kieft et al., 2006; 2008), sorted according to which dimension they measure. *: item is negatively formulated

Planning

Before I start writing, I want to have it clear which information to put in the text.

Therefore, planning is important to me.

If I have to write a text, I spend a lot of time on thinking about my approach.

I always make a text schema before I start writing.

If I have to write something, I jot down some notes, which I work out later.

Before I start writing a text, I write something on a scribbling pad, to find out my opinion about the topic.

* Planning is of no use to me.

* When I start writing, I don't yet have a clear idea of what will be in the text.

Before I start writing, I have a clear picture of what I want to achieve with the readers.

I need to have my thoughts clear before I am able to start writing.

Before I write a sentence down, I already have it in my head.

* When I am writing, I sometimes write down pieces of text of which I know that they are not completely right yet. Still, I prefer to go on writing at that point.

* When I read over my texts, I usually find a lot to improve.

* When I read over my texts, they are sometimes very chaotic.

Revising

* I always start writing straight away: I don't need to know exactly what I will write or how the text will be built-up. That will become clear as I write.

When my text is ready, I read it through thoroughly and make improvements: a lot can still be changed at that point.

During writing I regularly check if my text does not contain any sentences which are incorrect or too long.

While writing my text, I continually ask myself if readers will be able to follow it.

For me, writing is a way to get my thoughts clear.

* I usually hand in my text without checking if its organization is in order.

If I read over my texts, and rewrite my texts, it occurs regularly that I drastically change their organization

Before I hand in a text, I always check if its build-up is logical.

* I never pay much attention to whether I have forgotten to put any sentences or ideas in a text.

When I rewrite a text, the content usually changes drastically, too.

When I finish a text, I usually need to read through it carefully, to check if there is no superfluous information in it.

I never pay much attention to whether I am satisfied with my texts.

Fillers

I write and rewrite my text sentence per sentence. Only if I am completely satisfied with a sentence, do I proceed with writing.

When I am writing, I find it hard to organize my thoughts.

Only if my text is complete, do I read what I have written.

If finally I have an approximate idea of what to say in my text, the words will flow out of my pen.

When I write, I stop writing after every few sentences to read what I have just written.

I try to write a correct version of my text in one go, so that I hardly have to make any alterations when it's finished.

When I write a text, I find it hard to come up with ideas.

When I am writing, I often find that all kinds of new ideas pop into my head.

For writing tasks, I do not find it very hard to think of arguments to support my point of view.

The texts which I write are usually not very original.

I make sure that every sentence is perfect, before I start with the next sentence.

When my text is finished, the only thing I do is check for language or spelling mistakes.