

SOURCE-BASED WRITING IN PROFESSIONAL SPANISH AS A FOREIGN LANGUAGE: SOME PEDAGOGICAL INSIGHTS BASED ON A QUALI-QUANTITATIVE APPROACH¹

ESCRITURA BASADA EN FUENTES EN ESPAÑOL PROFESIONAL COMO LENGUA EXTRANJERA: ALGUNAS REFLEXIONES PEDAGÓGICAS DESDE UN ENFOQUE CUALI-CUANTITATIVO

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ABSTRACT

Source-based writing is a crucial skill for communication professionals. This study investigates how master students in professional communication incorporate sources in synthesis writing tasks in their L1 (Dutch), L2 (English) and FL (Spanish and French). To show the complexity that characterizes the use of sources, we will first present a case study of two students in Spanish as a foreign language. We will then link it to the results of a factor analysis that points out which variables are descriptive indicators of the way in which master's students (N = 209) deal with sources during the writing process. There are three components that can determine source use (75% of the total variance in the data): a) initial reading time, b) interaction with sources, and c) degree of variation in source use. In L1 there seems to be a correlation between the initial reading time and interaction with sources, on the one hand, and the quality of the writing, on the other; also, the time spent consulting sources compared to writing time is considerably longer in FL than in L1 and L2. These findings allow us to reflect upon how to develop effective teaching strategies to

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promote writing skills from sources in a foreign language. More specifically, we will focus on developing process feedback, based on the recording data, that promotes reflection and self-regulation.

Keywords: Writing from sources, professional writing, writing process, recording writing, feedback strategies, self-regulation.

RESUMEN

La escritura basada en fuentes es una habilidad crucial para los profesionales de la comunicación. Este estudio investiga cómo estudiantes de máster en comunicación profesional incorporan las fuentes en tareas de escritura de síntesis en su L1 (neerlandés), L2 (inglés) y LE (español y francés). Para mostrar la complejidad que caracteriza el uso de las fuentes, presentaremos primero un estudio de caso de dos estudiantes en español como lengua extranjera. Después lo vincularemos con los resultados de un análisis factorial que señala qué variables son indicadores descriptivos de la forma en la que los estudiantes de máster (N = 209) tratan las fuentes durante el proceso de escritura. Hay tres componentes que pueden determinar el uso de las fuentes (75% de la varianza total de los datos): a) el tiempo de lectura inicial, b) la interacción con las fuentes y c) el grado de variación en el uso de las fuentes. En la L1 existiría una correlación entre el tiempo de lectura inicial y la interacción con las fuentes, por un lado, y la calidad del escrito, por otro; asimismo, el tiempo de consulta de las fuentes comparado con el tiempo de escritura es considerablemente mayor en la LE que en la L1 y la L2. A partir de estos hallazgos reflexionamos sobre cómo desarrollar estrategias de enseñanza eficaces para promover las habilidades de escritura a partir de fuentes en un idioma extranjero. Más específicamente, nos centraremos en la elaboración de una retroalimentación del proceso, basada en los datos de grabación, que promueva la reflexión y la autorregulación.

Palabras clave: Escritura a partir de fuentes, escritura profesional, proceso de escritura, grabación de escritura, estrategias de retroalimentación, autorregulación.

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1. INTRODUCTION

In an era characterized by the ease of access to information on almost any topic, writers – from students to professional writers – often do not start from scratch but integrate information from multiple sources into a new text that is preferably coherent, relevant and correct (Leijten et al., 2014). Therefore, written texts will currently always be, to some extent, influenced by external sources.

Because of this reality, managing sources well becomes a fundamental skill when writing for professional purposes. Integrating information from multiple

sources into a new coherent text is not an easy task: the immense load of written information is offered in different ways and in many languages, not always with reliable content, and may approach the same topic from different perspectives, putting reading and writing skills to the test (Cumming et al., 2016; Leijten et al., 2017, 2019; van Weijen et al., 2019). The process of integration, which encompasses connecting ideas from different source texts, organizing and structuring them around a central theme of the target text constitutes the key to synthesis writing (Solé et al., 2013; Nelson Spivey, 1997). Therefore, to write a good text that coherently synthesizes concepts from multiple sources, writers must alternately assume both the role of reader and writer (Mateos et al., 2014). In addition, they must perform several mental operations, such as analyzing the source texts, comparing and contrasting them, judging them, planning the target text, and finally writing it (Popescu and Cohen, 2014). Many students find this very challenging, which is not surprising given the cognitively demanding nature of this task (Martínez et al., 2015; Mateos et al., 2008; Solé et al., 2013).

Consequently, good linguistic and cognitive skills are necessary to be able to select the most relevant information from multiple sources, integrate it ethically, and produce a coherent text suitable for the intended audience (Leijten et al., 2017, 2019). Source-based writing in a second and foreign language² increases cognitive complexity: the writer's lexical and grammatical knowledge is less developed in that language (Doolan and Fitzsimmons, 2016; Hinkel, 2003), which influences not only the reading and understanding of sources, but also the writing of the text.

Specifically, regarding the didactics of Spanish as a foreign language, the research literature points to the need to pay more attention to the transfer of skills between the L1 and the L2/FL, not only in general but also with respect to the structuring and pragmatics of written assignments (coherence, cohesion and adequacy). The review article by González Sánchez and Andión Herrero (2021) shows that in the currently overarching mainstream of communicativism, these aspects are undervalued in textbooks, regardless of the methodologies followed (task-based approach, action-based approach, eclecticism). Therefore, the authors see this as an important challenge within the field of Spanish as a foreign language.

This study aims to investigate how master students incorporate source texts in synthesis writing tasks in their L1 (Dutch), L2 (English) and FL (Spanish and

² Foreign languages (FL) are defined in the literature as a language that is neither the user's L1 nor the dominant language of the context (Allen, 2018; Reichelt et al., 2012). Note that in this proposal we consider English to be the participants' L2. Although it is not officially the dominant language of the context (as French is officially the L2 in Flanders), it is recognized as „omnipresent in public life: it is the number one foreign language in music, computer games, and television programs. Consequently, children are widely exposed to English long before they receive their first English class at school“ (Simon and Van Herreweghe, 2018).

French). After all, synthesis tasks are common in academic education, not only in the context of writing instruction but also more broadly, since they can contribute to the content-based learning process (writing to learn; Klein et al., 2014). We can therefore assume that master students are already very familiar with this kind of task, which increases the ecological validity of the study.

In the following sections, we will first give an overview of the relevant research on source-based writing. This will lead to the presentation of the research questions, the data and the methodology for this study, which is composed of a qualitative (case analysis) and quantitative (factor analysis) part. Finally, and building on these results, we will reflect in the discussion upon how to develop effective teaching strategies to promote source-based writing skills in a foreign language. More specifically we will focus on developing process feedback, based on recorded keystroke logging data, that promotes reflection and self-regulation.

2. SOURCE-BASED WRITING IN L1, L2 AND FL: STATE OF THE ART

Most of the research on writing from sources has so far focused on English (either as L1 or as L2; Cumming et al., 2016; Gebril and Plakans, 2016; Neumann et al., 2019), while research in other languages is limited. Specifically in Spanish and French (either as L1, L2 or FL) it has hardly been studied, with the exception, to our knowledge, of the works by Ruiz-Funes (e.g., 1999), Kuiken and Vedder (2008) and Rivard (2001)

In our research, we differentiate between Dutch (Belgian variant, i.e. Flemish), English, Spanish and French, precisely because the linguistic proficiency of these languages differs among our students. According to the literature, linguistic proficiency (L1 vs. L2/FL) influences the writing process. Schoonen et al. (2009) explain in their Inhibition Hypothesis that proficiency variables such as vocabulary fluency and grammatical correctness are cognitively very demanding and monopolize the attention that could possibly be paid to more global aspects of writing (e.g., content development, review) and as such possibly inhibit the writing process. However, it cannot be claimed that cognitive processing in L2 and FL is different. Ullman's (2001) bilingual version of the declarative/procedural model of mental lexicon and grammar suggests that L2 learners initially store complete syntactic structures in their declarative memory. As their L2 proficiency increases, they increasingly rely on rule-based, native-like procedures for grammatical processing in the L2. Since Flemish learners are more proficient in English than in Spanish and French, they are likely to exhibit differences with respect to the complexity of writing tasks and also differ in the cognitive processes that guide the language production.

Therefore, in this study we first aim to gain a better understanding of the un-

derlying cognitive processes that writers go through to deal with the integration of source information in their synthesis texts, whether in L1, L2 or FL. Several approaches of how writers interact with sources have been commented in the literature (McGinley, 1992; Davis Lenski and Johns, 1997). These studies show similar strategies for consulting sources: on the one hand, a linear or sequential approach, on the other hand, a recursive approach. With the first approach, the information from the source texts barely manages to be integrated into a new whole. This writing process can therefore be considered as mere knowledge telling (Bereiter and Scardamalia, 1987). In recursive processes, however, writers go beyond this level and successfully integrate information from sources into a new, coherent text. This is called a process of knowledge transforming or even knowledge elaboration (Kellogg, 2008). Clearly, writing quality is explained to a large extent by the type and timing of writing subprocesses. Understanding the relation between these processes and quality in L1, L2 and FL is crucial in order to yield the desired educational return. However, research so far is quite limited in scope since it has focused primarily on the writing products of source-based writing. As such, it remains unclear what effective and efficient source use interaction looks like.

A key element in this interaction process is the writing burst, which refers to uninterrupted text production (Leijten et al., 2019). Writing scholars are interested in bursts because they provide relevant information on several cognition-related aspects, such as fluency and proficiency. Chenoweth and Hayes (2001) observed in a comparative study with students that L1 bursts are a 60% longer, which is another indication of the cognitive complexity of writing in L2/FL. Bursts can be studied from several perspectives. In this study we will mostly focus on P-bursts, which are the periods of uninterrupted writing between two pauses. These pauses can be used to plan, to revise or to consult sources.

Furthermore, the specialized literature shows that students receive relatively little instruction on writing from sources, despite the obvious need (for a review, see Solé et al., 2013). Without instruction explicitly directed to this type of writing, spontaneous strategies tend to be limited to reading sources once to adopt quite directly this information in the texts themselves, a technique that is known as textual borrowing or *patchwriting* and that consists in copying from a source text and altering or deleting some words and syntactical structures (Cerdán and Vidal-Abarca, 2008; Davis Lenski and Johns, 1997; McGinley, 1992; Solé et al., 2013). This ethically questionable source use seems to be more likely in L2/FL writing than in L1 writing (Li and Pearson Casanave, 2012). It appears that students simply do not know how to adequately paraphrase source texts, both due to difficulties in reading the sources and writing the new text. Students might be lacking language proficiency and/or source use skill, resulting in inadequate source use of content, structure and language (van Weijen, Rijlaarsdam and van den Bergh, 2019).

Therefore, we can conclude that currently the teaching of writing from sources needs research-based strategies to be able to manage the writing process and thus improve the product. Although there is quite a lot of research on how to improve writing skills in students in general (López et al., 2018), for example, on self-regulation strategies and writing in particular genres (for an overview, see Fidalgo et al., 2018), none of these studies focus specifically on writing from sources and the use of sources, nor on the writing process itself. The pilot study by Ranalli et al. (2018) and the LIFT project (Vandermeulen et al., 2020) stand as the only exceptions. The former provides process feedback on students' own writing and the latter on source related behavior throughout that process.

3. RESEARCH QUESTIONS, METHODOLOGY AND DATA

In this paper we intend to move from case studies to exploratory quantitative research based on key indicators to understand the use of sources during the writing process. We propose a descriptive scheme that we will use as a basis for this exploratory research. In this scheme, we approach the writing process not only from the perspective of the writer's activity in the text itself (Figure 1; right), but also from the supporting activities outside it, that is, the "reading of sources" (Figure 1; left). In other words, we situate the process of writing the synthesis alongside the process of reading the sources. For this purpose, we distinguish between "initial reading time", i.e., how long the reading phase preceding writing lasts and how it is organized, and "reading time during writing" which refers to the interaction with the sources during writing. In "synthesis writing" we consider on the one hand the "active writing time" for the fluent production of the text and, on the other hand, the "pause time" for the planning of or the reflection on the text.

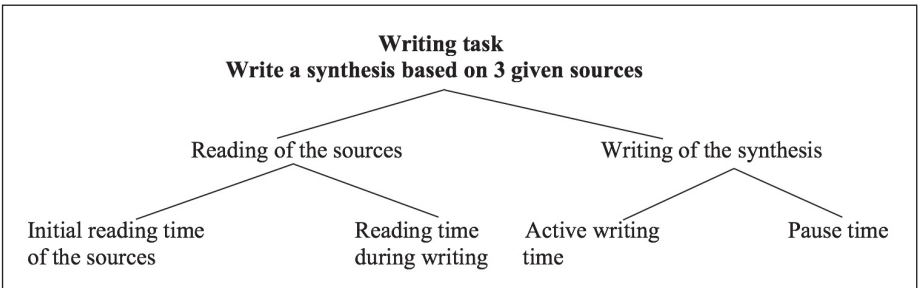


Figure 1. Distribution of activities during the writing of a synthesis based on sources.

This leads to the following research questions:

How do students consult external sources when writing synthesis texts in their L1, L2 and FL?

To what extent is there a relationship between the way sources are used and the quality of the synthesis text in L1, L2 and FL?

From the answers to the above questions, rises the following: what writing strategies can we recommend regarding the use of sources in L1, L2, and FL?

We explore these questions from a mixed quali-quantitative approach. To show the complexity that characterizes the use of source texts, we first present a case study of two students of Spanish as a foreign language. We then link it to the results of a factor analysis that points out which variables are descriptive indicators of how master students deal with sources during the writing process in L1 and L2/FL. Based on both analyses, we formulate ideas for feedback strategies aimed at improving the writing process.

The dataset consists of writing assignments written by the 2015-2016, 2016-2017 and 2017-2018 cohorts of the master's degree in Multilingual Professional Communication at the University of Antwerp (Leijten et al., 2017, 2019). In total, 209 students, all of them native Dutch (L1) speakers, aged between 21 and 27 (average age: 22 years and 11 months), participated in the experiment. In this master's program most subjects are taught in Dutch and one or two non-native languages, e.g. English (L2) and/or French (FL) and/or Spanish (FL). Synthesis writing is an important component of all of these subjects and is actively trained during the academic year.

The experiment took place both at the beginning and at the end of the academic year in order to be able to assess the possible progress between these two moments. The students were each given a similar task: to write in 40 minutes a 200-250 word text based on three digital sources on a given topic related to European Union (EU) activities (renewable energies, climate change, humanitarian aid and animal rights). The texts had to be published in a special issue of a high school newspaper, which reports on EU activities and the week's activities. Therefore, it had to be attractive to high school seniors (age: 17-18 years), but also informative: readers had to be able to understand the new text without having any prior information or without having read the sources. The participants were informed that the teachers were publishing in several languages (Dutch, English, French and Spanish), in order to highlight the multilingualism in the EU. For that purpose, each student wrote two texts, one in L1 (Dutch, N=209) and one in L2 (English, N=91) or FL (French, N=70, Spanish, N=48). Each dealt with a different topic, based on three given digital sources. The topic, the language and the order in which the writing tasks were to be performed were counterbalanced in each session. Students were free to consult the Internet for more information on the topic and to use online tools such as dictionaries, specialized databases and translation

programs. The sources were created specifically for this experiment. They were divided into three genres: a report, a newspaper article and a web text. The reports were based on existing EU reports available online in the three languages, slightly modified for this experiment. The texts of the other genres were based on model texts. These sources present different textual characteristics, e.g., in terms of content density, register and sentence complexity (see Table I).

Table I. Description of the main features of the source texts.

Report	Newspaper article	Web text
More specific information	Relevant information on top	More general information
Formal tone	Journalist style	Plain language
Average 20 words/sentence	Average 15 words/sentence	Average 9 words/sentence

In total, 48 source texts were composed: three genres for each of the four topics in each of the four languages. In each language we ensured that, within each genre, the sources on the four topics were of similar difficulty in terms of average text length, average number of words per sentence and average word frequency. Differences in text length and structure were due to the morphological and syntactic characteristics of each language.

The goal of this experimental design was to create a realistic task that was both familiar and stimulating for the students. The diversity of topics and textual genres corresponds to the variety of sources the writers have to deal with. The difference in profile between the student writers and the target audience was deliberately chosen to increase the complexity of the task (Leijten et al., 2017, 2019; Vangehuchten et al., 2018). It allowed us to test whether the students, who were assumed to have advanced reading and writing skills, were able to write a new coherent text for a younger target audience.

All data were recorded with the keystroke logging program *Inputlog*. This program records and timestamps all keystrokes, mouse movements, and Windows activities (Leijten and van Waes, 2013; inputlog.net). Compared to think-aloud protocols, the advantage of using keystroke logging software is that it allows to observe the writing process in a way that does not disturb the writer. Thinking aloud protocols, of course, allow to get access to what the writer is thinking during the task, but it is obvious that verbalising activities and thoughts during reading and writing will interfere with the process.

The texts were evaluated using Comproved (<https://comproved.com/>), a software developed specifically for benchmarking competencies in a holistic manner (Van Gasse et al., 2019). All texts written by the students were contrasted by showing two texts (Text A and Text B) to qualified assessors and offering the op-

tion to choose one of them as the “best elaboration of the task” according to the given instructions. We preferred this way of assessing because research shows that assessors assess the quality of texts more reliably when they can compare two texts than when they have to assign a score to an isolated text (Pollitt, 2012). In total, ten experienced assessors, all of whom were involved in the master’s program, assessed the anonymized texts independently of one another. The order in which the texts were presented to the assessors was completely randomized. The average Intra Class Correlation showed for all languages good to high reliability ($>.70$).

4. ANALYSIS

In order to answer the research questions, the analysis consists of a case study (qualitative part) and a factor analysis (quantitative part). For the case study, we selected two cases with contrasting text qualities. The analysis and comparison of these cases offer the opportunity to examine how keystroke logging data enable us to trace the course and dynamics of interaction with sources on an individual level during more and less successful writing processes. For the quantitative analysis, we focus on the entire dataset and use a factor analysis to describe the variance in source use.

4.1. Case study (qualitative analysis)

For the analysis of both cases, we start from the process graph that provides a visual representation of the entire writing process. We analyze the cases by using descriptive statistics on production and source-related behavior (based on various analyses offered in *Inputlog: Summary Analysis, Fluency Analysis, Pause Analysis and Source Analysis*).

We selected two women writers –whom we will call Emma and Lisa– who performed a similar source-based writing task but produced texts of different quality. More specifically, Emma scored in the lowest quartile of all texts, while Lisa’s score appeared in the highest quartile. The visualizations (Figure 2) show that their approach to the writing process differs quite substantially. Emma (left) takes about 5 minutes to read the given sources, which is called initial reading time. She writes a few sentences and then continues reading/searching. She uses more sources throughout the writing process (time in top orange line), and switches more frequently between the synthesis (main document) and the sources. Furthermore, the graph shows that she copy/pastes quite a bit from the given sources: the steep solid blue and green lines show increased document lengths (4 times), and also that she hardly interacts with the text produced so far on a global level, because the dotted green line (character position in the text) stays close to the solid

green line (document length). When the green solid and dotted line coincide, she is writing at the point of utterance in the end of the document.

Lisa (right) takes a bit more uninterrupted time to read the sources in the beginning of the writing process. Consequently, she writes her text quite fluently in a steady pace and halfway the writing session she interacts with the text produced so far, which is shown by the movements of her cursor position (dotted green line), which are going back and forth in the document. The quantitative data on their production and source use behavior confirm this (Table II).

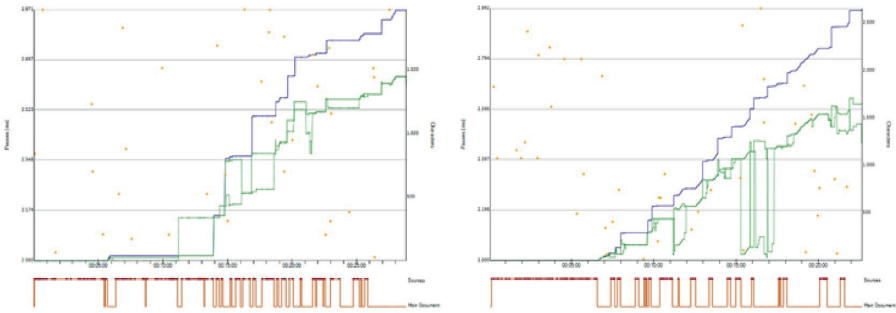


Figure 2. Graphic of the process of two student writers: Emma (left) and Lisa (right).

Both students were given 40 minutes to work on the task. Lisa, the author of the better-quality text, spent less time on the task (about 23 minutes) than Emma did (almost 29 minutes).

When analyzing the overall writing process, we noticed that Emma had an average of 14 keystrokes per minute compared to 36 keystrokes per minute for Lisa. In relation to fluency, we also considered the proportion of time dedicated to pauses: Emma devoted almost half of the process time to them (0.458), while Lisa only devoted a quarter of her time to pauses (0.245). Moreover, Emma’s pauses are more frequent (108 pauses throughout the entire process) and for longer (mean duration of pauses is 7.332 seconds) than Lisa’s (83 pauses with a mean duration of 4.017 seconds). The data for P-bursts, the period of active writing between two pauses, also reflect differences in duration and production: shorter during Emma’s writing process, 9.944 seconds, compared to 13.074 seconds for Lisa, and 2.752 characters produced by Emma during a P-burst compared to 11.663 for Lisa.

In order to accurately record the writing patterns and their evolution, each writing process was divided into three equal parts or intervals: beginning (interval 1), middle (interval 2) and end (interval 3). Regarding writing fluency, we observed a greater variation in Lisa throughout the three intervals: while in the

first interval she produced only 9 keystrokes per minute, she wrote quite fluently in the second (50 characters per minute) and in the third interval (49 keystrokes per minute). Emma’s fluency shows less variation, being low in all three intervals. Also, when comparing the variation in pausing behavior in the three intervals, differences are found between the two. Lisa’s writing process is characterized by variation in pauses: she pauses a lot (40) at the beginning of the writing process, a few in the middle (17) and at the end of the process (26) the frequency rises again, but considerably less than in the initial interval. Again, Emma shows little variation throughout the three intervals and presents regularity in the number of pauses in each interval: 39 pauses in interval 1, 33 in interval 2 and 36 in interval 3. The average pause time of Emma is above 6 in each interval (6-9 seconds), while Emma’s is less than 5 (3-5 seconds).

To analyze and compare the patterns of source use during the writing process of these two cases, we took into consideration the time spent on the sources, the alternations between the different sources, and the alternations between the sources and the synthesis text.

Table II. Data related to the production and source consultation of Emma and Lisa’s writing process.

	Emma (low quality text)	Lisa (high quality text)
Process time	00:28:50	00:22:39
Fluency in keystrokes per minute (kpm)	14	36
Fluency int1 (kpm)	7	9
Fluency int2 (kpm)	13	50
Fluency int3 (kpm)	21	49
Pause time (proportion)	45.8	24.5
Number of pauses	108	83
Average time of pauses	7.332	4.017
Average time of P bursts	9.944	13.074
Average of characters during P bursts	2.752	11.663
Number of pauses int1	39	40
Number of pauses int2	33	17
Number of pauses int3	36	26
Average time of pauses int1	9.4	4.8
Average time of pauses int2	6.1	3.4
Average time of pauses int3	6.2	3.2

Continuation Table II.

Time in sources int1 (proportion)	83.9	85.3
Time in sources int2 (proportion)	6.0	3.1
Time in sources int3 (proportion)	2.3	1.5
Switches between sources int1	0.747	0.137
Switches between sources int2	0.214	1.093
Switches between sources int3	0.320	0
Switches sources-synthesis int1	0.427	0.273
Switches sources-synthesis int2	1.601	3.006
Switches sources-synthesis int3	1.503	1.388
Time in dictionaries	18	nihil
Switches dictionary-synthesis	15	nihil

First, we looked at the proportion of time that the writers devoted respectively to the synthesis text and to the sources provided, which were three different texts: article, web text, report. Although both writers devoted in the first interval the highest and in the last interval the lowest proportion of time to the sources, there are considerable differences in their use of the sources. Indeed, in both cases the beginning of the writing process is characterized by a large amount of time on sources: Emma 84% of the time in the first interval and Lisa 85%. However, in the middle of the writing process, Lisa spent only 31% of her time consulting sources, compared to 60% in Emma’s case. Also, at the end of the writing process we note a large discrepancy in time spent on sources between the two writers (0.258 for Emma, 0.147 for Lisa). Lisa appears more focused on the production of her own synthesis text during the second and third intervals of the writing process with a higher proportion of time spent on synthesis than Emma does.

Second, the recording data regarding alternations between sources show a different pattern for Emma and Lisa. Emma moved significantly more between sources in the first interval (0.747 switches per minute), whereas Lisa switched significantly more from one source to another in the second interval (1.093 switches per minute).

Third, we gathered that the switching between sources and the synthesis text being written took place predominantly in the middle of the writing process for both writers. However, Lisa switched almost twice as much as Emma (3,006 switches per minute versus 1,601 switches per minute).

Since the writers could use additional sources, we checked their queries of language-related sources. Emma looked up words in an online dictionary in all three intervals, specifically she spent 3.1% of her time in the first interval checking an online dictionary, 8.6% in interval 2, and 6.3% in interval 3. She used the

dictionary both while reading (7 interruptions in interval 2, 4 in interval 3) and while writing her synthesis text (2 interruptions in interval 1, 7 in interval 2, and 6 in interval 3). In contrast, the data show that Lisa did not make any such queries. The latter indicates what we can also see in the graph: Emma is struggling with the task throughout the writing session and relies heavily on the sources (given and other) throughout the session, while Lisa mainly uses the sources in the first part of her writing and then focuses on her own writing.

4.2. Factorial study (quantitative analysis)

One of the central objectives of this research is to provide a diversified view of the use of sources and their interaction with the synthesis text. For this purpose, we wish to determine the existence of an underlying structure in the large number of variables that can be used as indicators of source use during writing. Thus, it is important to reduce the large collection of variables to a controllable and manageable set that will allow us to explain in the best possible way the variation in source use. This leads us to analyze data at the text level rather than at the person level. Factor analysis or principal component analysis (PCA) is a suitable tool for this. By applying this analysis step by step and iteratively, we systematically assess the factorability of the selected variables, checking to what extent they are correlated. In this respect, we point out that only process variables related to the consultation of sources are considered (see Leijten and van Waes, 2013).

Leijten et al. (2017) determined three important factors to describe source use in L1 in relation to output quality: initial source reading time, source interaction, and variance in source use. These three factors are responsible for 75% of the variance in the data. In analyzing their impact on product quality, good texts were associated with relatively long initial reading time, relatively low source switching, and, during the writing process, a relatively high number of source consultations. Data explored by Leijten et al. (2019) showed similar results for L2. A surprising finding was that, although language proficiency factors play a less important role in L1 than in L2, source-based writing also poses a problem for most learners in L1. These results suggest that challenges in source-based writing stem not only from linguistic factors, particularly in L2 and FL, but also from other factors such as the writer's working memory capacity.

The exploratory studies by Leijten et al. (2017, 2019) focused mainly on L1 and L2, although data were also collected on FL (Spanish and French). The current analysis of these data clearly shows differences in source use between L1, L2 and FL writers. As can be seen in Table III, on the right are writing processes related to the writing activity itself, i.e., writing and pausing during writing, and on the left, supporting activities such as reading external sources are reflected.

Table III. Division of the activities in percentages during the source-based writing in L1, L2 and FL.

Language	Reading of the sources		Writing of the synthesis	
	Initial reading time of the sources	Reading time during writing	Writing time	Pause time
Dutch (N texts=209)	12,34	22,64	47,70	17,32
English (N texts=91)	11,21	26,27	44,75	17,77
French (N texts=70)	13,42	30,45	20,06	36,07
Spanish (N texts=48)	14,99	34,45	19,05	31,51

The data in Figure 3 show that in source-based writing in FL relatively more time is spent reading sources than in L1 and L2, mainly during the text writing process. In addition, writers spend more time pausing while writing in FL than in L1 and L2.

What writers do after the initial reading of sources also differs between L1 and L2, on the one hand, and FL, on the other. It is clear from Figure 3 that, compared to the baseline L1, writers in L2, but especially in FL, need much more time to consult the given sources and other sources (e.g., dictionaries), while the time they spend on writing the text is relatively less. These indicators show that the use of sources differs between writing in L1/L2 and FL, probably due to a lower linguistic competence, and more specifically less developed reading skills in FL, which place an additional burden on the working memory.

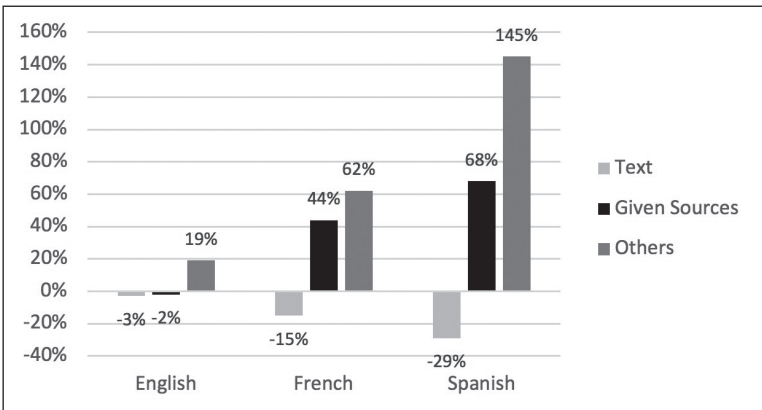


Figure 3. Distribution of the time devoted to writing vs. source consultation in L2 and FL with L1 as baseline.

In addition, exploration of the data shows that in writing from FL sources (Spanish and French) more time is spent on reading and reflecting on the formulations than on the actual writing (Figure 4). No significant difference was observed between L1 and L2 ($F(4, 415)=1.071$; $p=.371$; $\eta^2= .010$), but the difference between L1/L2 versus FL was revealed to be significant ($F(8, 904)=11.881$; $p<.001$.; $\eta^2= .095$).

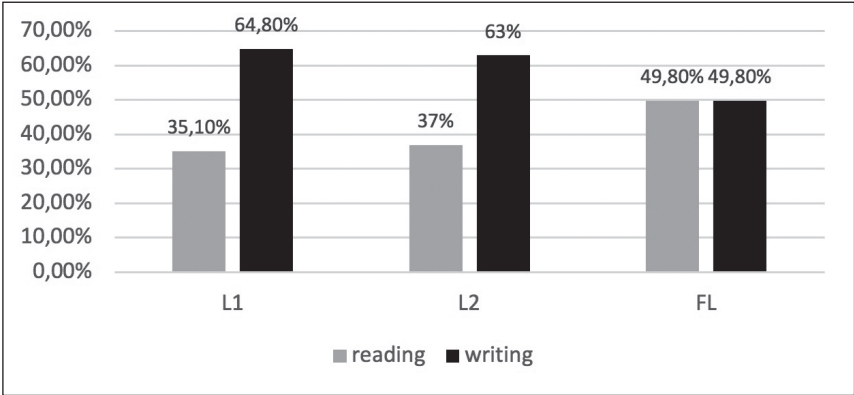


Figure 4. Distribution of the reading and writing time in L1, L2 and FL.

Finally, in both L1 and L2 and FL it was observed that the treatment of source use remained stable over the course of an academic year. Thus, the approach used in October did not differ significantly from that carried out in April and both were similarly characterized by an interaction of the three components mentioned above: initial reading time, interaction with sources and variation in the use of sources. In addition, between both measurement times the product quality was also stable for L1, L2 and FL. We analysed the holistic quality of a subset of the tasks via comparative judgement. Texts were ranked per language. The repeated measures of the General Linear Model on the Z-scores by language showed that there were no differences in the mean quality of the texts in the various languages at the two measurement moments (Table IV). The mean Z-score of the Dutch texts at measurement time 1 was -0.07 ($SD = 1.07$) and six months later, at measurement time 2, 0.11 ($SD = 0.90$). Text quality thus turned out to be very similar at both measurement times ($F(1, 67) = 2.204$, $p = .142$, $\eta^2 = .032$). The same is true for English, as the mean Z-score of the English texts at the first measurement time was -0.21 ($SD = 0.80$) and at the second measurement time 0.21 ($SD = 0.98$), with a positive trend in quality scores that turned out not to be significant: $F(1, 34) = 3.728$, $p = .062$, $\eta^2 = .099$ (Table IV). No improvement was measured in

French and Spanish either ($F(1, 23) = .377, p = .545, \eta p2 = .016, (F(1, 9) = .000, p = 1.000, \eta p2 = 1.000)$)).

Table IV. Mean quality (Z-scores) per test moment in L1, L2 and FL (SD).

	Moment 1 (October)	Moment 2 (April)	Significance
Dutch (N = 68)	-.07 (1.1)	.11 (.9)	.142
L2: English (N = 35)	-.21 (.80)	.22 (.98)	.062
French (N = 24)	.07 (1.09)	-.07 (.91)	.545
Spanish (N=10)	.00 (1.00)	.00 (1.00)	1.000

5. DISCUSSION

First of all, an important result of this study is that source use turns out to be a very complex competency that not all students have acquired, even at the end of one year of mastery. This study found no improvement between the two measurement points, separated by six months, in terms of effective source use and its relationship to product quality. However, during the one-year master’s programme in Professional Communication, the participants in this study received extensive instruction and training to acquire the specific skills necessary for writing from sources, both in their mother tongue (Dutch) and in L2 and FL. They were taught to use their high-level mastery of general writing skills (acquired during their undergraduate studies in [applied] linguistics) in various professional or academic writing assignments. Tigchelaar and Polio (2017) did not observe any progress in their study either: their semester-long English as a second language academic writing development course failed to turn their subjects into “autonomous writers, able to self-monitor linguistic errors and edit their own work.” Clearly, these results argue for the integration of specific strategies in teaching writing from sources in L1, L2, and FL (McGinley, 1992; Davis, 2013).

Furthermore, the results of the case study and the factor analysis confirm the importance of individual differences and the consequent need for process feedback capable of adjusting the writing process while it is in progress and thus appealing to the writer’s self-regulatory potential. Indeed, the factor analysis revealed for all languages that students with a very high score not only spent relatively more time on reading the sources at the beginning of their writing process, but also during that initial reading time switched less between sources. We also see that during the writing process students with a very high score used the sources differently: they did not consult more sources, relatively speaking, but they did switch more often between those sources. This can also be seen at the beginning of the writing pro-

cess of Emma and Lisa in the case study for Spanish (FL). Lisa, who wrote a high-scoring text, spends considerably less time on sources than Emma, who wrote a weaker text. However, she spends a relatively large amount of time at the beginning of the task to get acquainted with the sources and she also switches more often between them. Limpo and Alves (2017, p. 97) also found a divergent effect in their study of personal characteristics, i.e., goal attainment and self-efficacy, when modeling the relationship between writing strategies and writing performance. These results highlight the importance of taking writers’ individual characteristics into account when studying the effect of writing (sub)processes or writing strategies on writing quality. Therefore, we consider that adding personal characteristics as mediating variables to the modeling procedure is crucial in follow-up research, as different writing attitudes and profiles might benefit from different source use strategies at different stages of writers’ writing processes in L1, L2, and FL.

In this respect, recent research (Ranalli et al., 2018; Vandermeulen et al., 2020) shows that process-oriented feedback in source-based writing results in better quality texts. The intervention study developed by Vandermeulen et al. (2020) on process feedback through a new feature in *Inputlog* showed positive results on product quality. Based on an XML log file, the function called “report” automatically generates a pdf file that addresses different perspectives of the writing process: pauses, revision, source usage and fluency, presented in a quantitative and visual form. Short introductory texts explain this information. *Inputlog* provides a default feedback report, which users can customize (Figure 5).

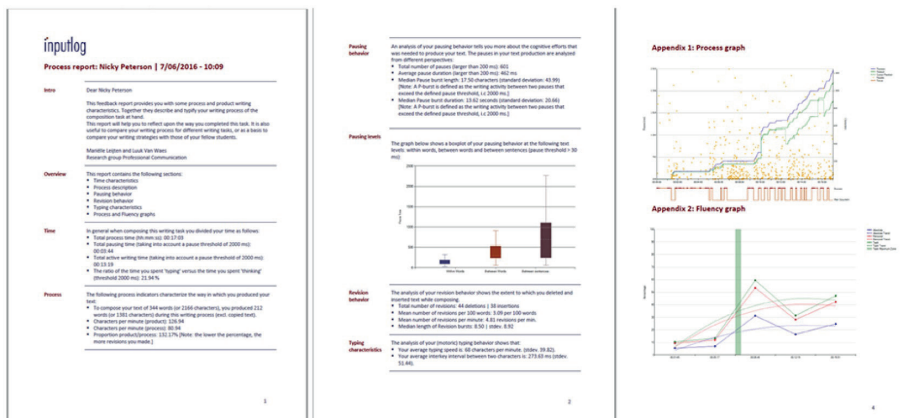


Figure 5. Example of a feedback reported generated with *Inputlog*.

In process feedback, the focus is no longer solely on the evaluation of the product, but on the learning process itself. In this formative learning context,

process feedback supports students in taking control of their learning (Nicol and MacFarlane-Dick, 2006). The main goal of feedback is to enable students to close the gap between current and target performance level. To do so, students must be able to monitor their learning during the production itself (Sadler, 1989), which implies that feedback should be aimed at promoting self-regulated learning (Graham and Harris, 2018). In other words, by empowering students to understand the learning goal, judge their learning process, and choose strategies, feedback supports them in closing the gap between the current and intended level.

Process feedback should stimulate reflection and goal setting (Carless and Boud, 2018). There are several principles for effective process feedback:

- Provide students with concrete, understandable and objective information about their personal profile (Nicol and MacFarlane-Dick, 2006);

- Encourage them to reflect on their own writing so that they are able to self-regulate their learning (Graham & Harris, 2018). It is not enough to provide students with feedback on their level and desired level; students must actively engage with it (Bandura, 2016; Carless and Boud, 2018; Nicol et al., 2014). Positive results are obtained with several empirically based tools that provide automated and individualized feedback to support students during the writing process. Tools such as AcaWriter (Knight et al., 2020), Computer-Supported Argumentative Writer (Benetos and Bétrancourt, 2020) and Research Writing Tutor (Cotos et al., 2020) present foundation features that trigger students' self-regulation when writing or revising their text. Apart from these tools, reflection can also be stimulated by tutor questions or by a quiz. In addition, by facilitating peer discussion in class, students compare their writing process with that of their peers based on variables derived from their recorded data. Looking for similarities and differences can help students formulate goals as they are actively inspired and challenged to think about various approaches to writing.

- Provide students with feedback based on exemplars, such as the referencing processes of the highest scoring texts. This option offers the advantage of selecting exemplars that represent the writing processes of the top-scoring students, thus clarifying what might lead to good quality and providing strategies to bring the current level and the target level closer together. Observational learning is a proven pedagogical tool for learning to write (Braaksma et al., 2002; Fidalgo et al., 2015). Exemplars –within the students' zone of proximal development (Vygotsky, 1986)– provide students with constructive guidance and promote feedback with the goal of closing the gap between their current and target performance. Awareness of the dimensions of the process is created and a pro-feedback or feedforward experience occurs. In a small intervention study with 67 Dutch students (Van-dermeulen et al., 2020), participants adopted a more balanced reading-writing approach after processing feedback based on *Inputlog*-generated report and comparison with exemplars.

– Strategy-focused writing instruction aims to help students adopt strategies to achieve their goal and explicitly demonstrates some to facilitate various activities that take place during the writing process, such as planning, writing a first draft, and revising the text (De La Paz & Graham, 2002; Fidalgo et al., 2015). Doolan and Fitzsimmons-Doolan (2016) propose a sequential way of teaching source-based writing, as they argue that a shortcoming of much summary instruction is that it focuses exclusively on summarizing as the end goal. They propose including summarizing and paraphrasing techniques in larger writing tasks, such as essays, for which the combination of independent and integrated writing is necessary.

Finally, it should be noted that the topic of this research, the use of sources in writing synthesis texts, forced us to choose an integrated writing task that evidently requires a prior understanding of the source text before creating the new text. As Cumming (2013) points out in a review article on integrated writing tasks, the problem with these tasks is that the quality of writing is influenced not only by factors related to the writing process (consultation and processing of sources, planning and revision activities, among others), but also by factors involved in the comprehension of the source material (reading comprehension, prior knowledge of the source material, etc.). Clearly, students with a poor understanding of the source material will present problems in writing their synthesis. We note that a possible additional strategy could be to teach students to efficiently use online tools that promote text comprehension, i.e., the so-called direct use of the source for content, structure, etc. (Gebril and Plakans, 2013; Neumann et al., 2019).

6. CONCLUSION

The aim of this research was to find out how master's students consult and process external sources in their writing process in L1, L2 and FL. We noted that the proportion of time needed to read given and other sources increases from L1, to L2 to FL. Based on a case study of two very different writers in Spanish, on the one hand, and a factor analysis, on the other, we identified which variables could serve as indicators to describe and predict the use of sources in the writing process of a synthesis task. Three descriptive components emerged. First, the time writers spend reading sources in the planning phase of the writing process. Second, the interaction with sources: the number of sources consulted and the number of switches between them. Third, how the use of sources varies during different stages of the writing process. These three factors predict 75% of the variance in the data collected. Therefore, for further research on the use of sources we consider these variables to be a solid basis.

We also examined whether there is a relationship between the quality of the text and the treatment of the sources. Two of the three components turned out to

be of significant importance. Better quality writing products are related to a combination of relatively long and thorough reading of sources before starting to write the text and relatively more switching between sources while writing. This means that students with very high scores not only spend relatively more time reading sources at the beginning of their writing process, but also switch less between sources during that initial reading time. The case study is a very good example for this, indicating that writers better focus on the general content in the beginning, and leave word finding issues for later moments. Likewise, we observe that during the writing process students with a very high score use sources differently: they do not consult relatively more sources but switch between them more frequently. It should be noted that the data clearly reveal a difference between L1/L2 and FL, given that the average time spent on writing in FL is significantly lower compared to L1/L2, no doubt due to reading comprehension difficulties on the one hand and, on the other, to those of written production.

Consequently, the results allow us to argue in favor of some strategies specifically oriented to source-based writing in a foreign language and focused on providing feedback on the process. For L2/FL writing instruction we advise teachers to make students aware of the importance of the reading phase prior to writing as well as the main components during the development of writing itself. In short, instructors should focus on the importance of deliberate chunking of the writing sequence composed of initial reading, planning, pausing, revising, and using sources and develop their students' self-regulatory potential through the above strategies so that they are able to monitor and adjust their writing work according to their individual profile.

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