WRITING IN A THIRD LANGUAGE
A STUDY OF UPPER SECONDARY STUDENTS’ TEXTS,
WRITING PROCESSES AND METACOGNITION
Writing in a Third Language
A Study of Upper Secondary Students’ Texts, Writing Processes and Metacognition

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Abstract

Learning an additional foreign language (usually referred to as a third language, L3) after English (L2) in formal settings seems to remain relatively unsuccessful in the European context (European Commission 2012), despite the reported advantages of extensive language learning experiences. Against this background the present thesis explores the potential benefits of a teaching approach focused on writing strategies and metacognitive reflections for L3 writing.

The study investigates the influence of an intervention concerning the writing of argumentative texts in L3 German. Two classes of 15- and 16-year-olds from a Swedish upper secondary school participated. One class received writing instruction, the other one no special treatment. Texts were collected at three points in time. Additionally, seven students from the intervention class, the “focus students”, attended five individual writing sessions, in which their argumentative writing was recorded with keystroke logging and screen-recording software. After each writing session, individual stimulated-recall interviews were conducted.

The development of L3 writing throughout the course of the intervention was investigated from three different perspectives: writing products, writing processes and metacognitive knowledge. Text quality was studied on the basis of a selection of class texts, which were scored both analytically and holistically. The writing processes were examined by automated and manual analysis of the conducted log- and screen-recording files. Metacognitive knowledge was analysed based on transcripts of stimulated-recall interviews.

The findings show that only the texts of those students, who attended both the intervention and the individual writing sessions, including reflective interviews, improved in quality during the intervention. Further, these students slightly increased their writing fluency through higher text production rate and a shift from intense online-source use to more revisions. The investigation of metacognitive knowledge revealed a number of learner- and language-related variables, which seem to be decisive in understanding the interplay between learners’ attitudes, performance and strategic behaviour.

The results suggest that writing practice is crucial, but learning to write can be further enhanced by including writing strategy instruction and metacognitive reflections in the foreign language classroom.
1 Background

Writing in a foreign language is challenging. In order to write this PhD thesis, I moved to Sweden, where I began to learn my third language Swedish. After some time, I started to communicate in Swedish, both orally and in writing, with colleagues and friends. When experiencing the struggles connected with composing in Swedish, writing in both my mother tongue German (L1)¹ and in my L2 English seemed so easy (however, we all know that writing is not easy). The frustrating feeling of being unable to express myself in a way that represents my personality and my thoughts properly is probably well known to most language learners, may they be young or adult, novice or experienced.

In this Applied Linguistics thesis, I study Swedish-speaking upper-secondary school students, who are similarly to me learning a third language, in this case German. I investigate the influence of teaching writing and composition strategies on students’ L3 writing and their ability to reflect upon their writing. During a 12-week classroom intervention, students wrote a sequence of argumentative texts. Using a mixed methods approach, products, processes and metacognitive knowledge are investigated. Creswell (2013) argues that using mixed methods allows drawing more comprehensive pictures of social phenomena. In this study, the combination of foci, methods and data enables the various dimensions of the L3 writing challenge to be understood in more detail. I posit that the teaching of writing as a process and facilitating the use of writing strategies help students to better deal with the constraints involved in L3 writing. This will enable them to produce better texts, exert more control in composing, and reflect with greater awareness about themselves as writers and their writing.

When producing a written piece, no matter if an e-mail, an essay or a thesis, writers have to juggle multiple important aspects, which contribute to a good text. The topic, relevant ideas, readership, rhetoric goal, text organisation, style, grammar, word choice and coherence are only a few examples. Even though composing in L1 and L2² generally functions in the

¹ In this thesis, the common abbreviation Lx for the position of a language in a biography is adopted. L1 stands for ‘language one’, that is a student’s mother tongue. L2 is used for the second language learned (also first foreign language) and L3 represents the third language learned (also second foreign language). Even though it is acknowledged that many learners’ language background is more diverse and does not correspond to this strict linear sequence (see for example Hammarberg [2010] for a terminological discussion), it was chosen due to the given study context, in which this linearity largely applies.

² Studies often refer to the investigated foreign language as L2. As with the broad terms Second Language Acquisition and Foreign Language Learning, there are inconsistencies in the use of L2 for a second or any foreign language. The latter case might imply that an L2 in fact was an L3 or L4. Whether the investigated language is the second or an additional one might not always be of importance for the pursued research question. However, showing
same way (Krapels 1990; Silva 1993), the situation becomes more difficult for L2 and L3 writers as available linguistic resources may be limited. This main difference is reflected in both the writing process and the product. For example, when composing, L2 writers write less fluently (Chenoweth & Hayes 2001), they pause longer (Spelman Miller 2000a), they make more revisions on a local level, that is, concerning spelling and grammar (Faigley & Witte 1981; Kowal 2011; Lindgren et al. 2008; Stevenson et al. 2006; Zamel 1983) and they use fewer writing strategies (Jones & Tetroe 1987; Whalen & Ménard 1995). The focus on such local aspects of the text usually inhibits higher-order operations, which coordinate for example content, organisation and coherence of a text (Whalen & Ménard 1995). Not surprisingly, L2 texts are often of lower overall quality than L1 equivalents (Hirose 2003; Silva 1993; Tillema et al. 2012).

However, along with more instruction, more practice and growing language proficiency in the foreign language, writers usually improve their writing skills (Cumming 2001: 6). A larger number of available and easily retrievable linguistic resources usually leave more cognitive capacity for better writing management, including for example global planning, reader- and goal-oriented content, rhetoric structure or advanced revisions. At this point, most writers should have developed an idea about how writing works for them, such as how they organise the writing setting or where to find help. From a research perspective, it can be argued that they have gained some metacognitive knowledge about writing and are able to deploy writing strategies effectively. Research has shown that L2 writers generally show a broad range of L2 writing strategies for different purposes (see Manchón [2001] for an overview of related research) and that advanced strategy application is associated with better L2 text quality (Cumming et al. 1989; Jones & Tetroe 1987; Whalen & Ménard 1995). Many studies also link successful writing with the particular use of metacognitive strategies, such as planning, monitoring and evaluating to manage the writing process (Schoonen et al. 2009; Victori 1997). Further it has been argued that strategic knowledge from L1 can potentially be transferred to L2 (Cumming et al. 1989; Hirose & Sasaki 1994; Jones & Tetroe 1987; Pennington & So 1993; Whalen & Ménard 1995).

The process of learning an L2, and especially learning to write in the L2, is demanding. Particularly the observation that knowledge and skills from earlier experiences in L1 can be transferred to L2 appears to be a factor that could inform L2 instruction. Nowadays many people learn more than one foreign language in their lives, which means that the transfer mechanisms
from previously learned languages should be of great relevance for L3 pedagogy. In L3 research\(^3\) it is assumed that L3 learners are more experienced learners in the sense that they have already undergone the L2 learning process. Therefore, they tend to have a wider linguistic repertoire, have more experiences of cross-linguistic processes, have higher metalinguistic awareness, and have a broader range and more frequent use of learner strategies (Cenoz 2003; Gibson et al. 2001; Ransdell et al. 2006). Assuming a transfer of writing abilities and the above mentioned learner characteristics, an immediate hypothesis is that third and any further foreign language learning requires less effort and is more effective and more successful. Unfortunately, this hypothesis does not hold.

The first European Survey on Language Competence (European Commission 2012) tested L2 and L3 language skills of 15-year-olds in 16 EU-member states. The results revealed that L3 language skills are generally not satisfactory. The participating students from Sweden, the country in which the present study is conducted, achieved the best results in all tested skills in their L2 English. In contrast, the results in their L3\(^4\) were surprisingly poor, particularly for writing (European Commission 2012: 38–40). For example, almost half of the participating Swedish students did not reach level A1 (CEFR 2001)\(^5\) in L3 writing after two or more years of formal instruction.

Reconsidering what research says about the advantages of previous language learning, the strongly diverging results of this survey are puzzling in that the most successful L2 learners perform weakly in their L3. What might be the reasons that L3 learning seems to benefit little from successful L2 learning experiences?

In Sweden, students usually begin to learn L2 English at the age of seven and it is an obligatory subject throughout the nine years of compulsory schooling. Besides this formal instruction at school, English plays a special role in Swedish society. More than in other countries, like Germany or France, the language is present in many aspects of daily life, particularly through media. For example, TV programmes and movies in English are not dubbed, but provided with Swedish subtitles. In these respects the status of English is higher than other foreign languages.

L3 instruction in Sweden, most commonly in Spanish, German or French, starts in grade six at the earliest and can be continued in upper secondary

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\(^3\) L3 research is commonly also referred to as “third/tertiary language learning research” (Cenoz et al. 2001) or “research on multilingualism” (Aronin & Hufeisen 2009).

\(^4\) In this survey, the Swedish students’ skills in L3 Spanish were tested. In contrast, the present study focuses on L3 German. Even though a similar test in German might have led to slightly better results (for example due to typological similarities between German and Swedish), a generally unsatisfactory proficiency level can be assumed for Swedish students in all L3’s.

school, provided that enough students choose to do so and that a trained teacher is available. L3 German, the language the present study focuses on, has a relatively long teaching history in Sweden, even though it has lost some of its earlier popularity. Usually, the teaching tradition is described as having a strong focus on explicit instruction of grammar. Despite the increased availability of authentic material on the Internet, course books are the main teaching and learning materials. Outside the classroom, German hardly plays a role in students’ lives. Hence, immediate necessity and motivation to learn it in order to understand or communicate is not given and exposure to the language outside the classroom largely depends on the students’ own initiative.

The reasons why students may still lag behind in their L3 learning are diverse. In the case of L3 German in Sweden, the lack of exposure, motivation and perceived relevance of the language are likely to play a role. However, another point of departure in exploring the potential causes of the present situation is to investigate teaching methods. One assumption is that the traditional grammar focused L3 German instruction is not able to turn the theoretical advantages of L3 learners, such as their rich repertoire of linguistic resources, learning experiences and developed learning strategies, into practical use. Hufeisen and Marx (2007: 315) for example argue that L3 learners do not have advantages per se as they do not automatically make use of previous language learning experiences in new situations, but need to get help to become aware of transfer possibilities, useful techniques and language learning strategies by the teacher. This is in line with Haukås’ (2015) study, in which she compared the strategy use of L2 and L3 learners in compulsory and upper secondary school. The analysis of questionnaires revealed that the L3 learners, despite their increased experiences of learning foreign languages, reported using fewer strategies and applying them less frequently in L3 than in L2. From a more psycholinguistic perspective, but in a similar line of thought, also Schoonen et al. (2009) argue that metacognitive knowledge might not always be available for actual use due to multiple cognitive constraints.

In the Swedish national curriculum for modern languages, only a small number of passages can be interpreted as encouraging the utilisation of previous foreign language learning knowledge in further learning. This is manifested through the terms awareness (medvetenhet) and strategies (strategier), which students should develop in language classes. The introduction to the national curriculum for modern languages states:
In the description of level 3 for modern languages, which roughly corresponds to level B1 (CEFR 2001) and usually begins in upper secondary school, it is further stated what a student should be able to do:


These two quotes show that there is an acknowledgement of the role of language learning knowledge and students' ability to apply it. However, there is nothing explicit in the national curriculum about how to achieve this learning goal and how to make use of acquired knowledge and skills across subject and language borders. Thus the teachers can decide whether these aspects are included in their teaching. Thus, it is important to conduct classroom research investigating the influence of teaching approaches that stress the role of students' learning awareness and use of strategies in L3 learning. In this thesis, such an intervention study was carried out with a focus on writing. Usually, writing does not play the most prominent role in the L3 German classroom and exercises are often restricted to short descriptive texts, narratives or letters, in which students are expected to apply newly learned grammatical phenomena. However, apart from serving as a medium to test new language hypotheses and improve general language competence (Cumming 1990) and lexicon acquisition in particular (Harklau 2002), writing also develops and facilitates metacognitive awareness (Manchón & Roca de Larios 2007a) as it allows time for reflection and self-monitoring. Hence, writing in an L3 might be difficult, but it might also be the learning activity that offers the most potential for initiating metacognitive activities, making use of previous (L1 and L2) knowledge and strategies, enabling students to progress in the target language (Macaro 2001; Solmecke 1997).

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6 Tuition is expected to contribute to the development of students’ language awareness and knowledge about language learning inside and outside of the classroom. (Translation by Yvonne Knoespe)

7 In oral and written interaction the students are able to express themselves clearly and with some fluency and to a certain degree adapt to purpose, addressee and situation. Additionally students choose and use well functioning strategies, which solve problems in interactions in a constructive way. (Translation by Yvonne Knoespe)
1.1 Goal and research questions

The goal of this study is to investigate the influence of teaching composition and writing strategies on students’ L3 writing and their ability to reflect upon their writing. The proposition is that teaching writing as a process and facilitating the use of writing strategies help students to cope with the multiple constraints in the writing process. I expect that this improves text quality, writing fluency and metacognitive knowledge.

For this purpose, a study involving two classes of L3 learners of German in a Swedish upper secondary school was conducted. One class (N=26) received instruction, which specifically focused on metacognition in writing, the other class (N=17) received no specific writing instruction. Seven “focus students” from the class that received special instruction provided the main data for this thesis. These students wrote 33 texts in a keystroke logging and screen-recording environment, and participated in recall interviews. Three focus students’ interview transcripts were analysed regarding metacognitive knowledge in detail.

The study explores how a 12-week intervention in foreign language writing influences students’ writing, specifically text quality, writing processes and metacognitive knowledge. This analysis sequence allows for a coherent step-by-step description of the students’ L3 writing. Text quality is presented to shed light on the influence of the intervention on the writing product, a traditional classroom measure used to assess writing competence. Writing processes are the main focus of this thesis and they are presented second, as their development is better understood against the background of text quality results. Finally, metacognitive knowledge in three students’ reflections helps to evaluate the previous results by adding the learners’ perspective and to gain insights, which are not necessarily visible in product or process data. The following research questions are posed in relation to the 12-week classroom intervention focusing on teaching composing and writing strategies:

1. How is the quality of L3 German texts influenced?
2. How do the writing processes of the seven focus students develop?
3. How can the metacognitive knowledge of three of the focus students be described?

1.2 Organisation of the thesis

The thesis investigates L3 writing from three different perspectives: the product, the process and the metacognition perspective. As a starting point, a theoretical overview is provided, which locates the present study within the
second language acquisition (SLA)\(^8\) research area. Second, the method section is presented, which includes study design, context, participants, material and tools, procedure, an overview of the collected data and ethical considerations regarding this study. Thereafter, the thesis splits into three components, which represent three perspectives on writing: the writing product, the writing process and metacognition in writing. These form the main pillars of this thesis. For each pillar, there is a specific theoretical background, an analysis and a result section as well as a concluding discussion.

In the final chapter, the results of the three perspectives are reconsidered, discussed and integrated. Further, a number of pedagogical implications are suggested and finally, the thesis finishes with a discussion of limitations of this study, its scientific contributions and suggestions for future research. Table 1 gives an overview of the structure of this thesis.

This study contributes to research on writing in a foreign language, particularly in relation to language instruction that utilises awareness-raising approaches in general, and metacognition theory in particular. Further its aim is to inspire foreign language teachers, particularly those of L3’s, to make more use of metacognitive reflections and writing strategies when teaching writing.

**Table 1. Overview of the thesis.**

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<td>CHAPTER 5 WRITING PROCESS</td>
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<td>Theoretical background Analysis</td>
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<tr>
<td>Discussion</td>
<td>Discussion</td>
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\(8\) In the present study, SLA is used in a broad sense regarding any foreign language learnt after the mother tongue. No distinction is made between acquisition and learning (see Krashen 1982).
2 Theoretical overview

This study is located within the SLA research field. Learning as information processing and the role of explicit learning as well as awareness will be described as underlying theoretical key assumptions of this study. Further, the theories about metacognition in learning and learner strategies and their role in classroom and intervention research will be presented. Finally, writing strategy instruction research is overviewed.

2.1 A cognitive approach to SLA

Discussions about how students learn foreign languages and accordingly, how to teach them in the best and most effective way, have a long history. Since the 1950s, numerous language acquisition theories, foreign language teaching theories and concrete methods have been developed (see Cook 2008; Edmondson & House 2000 for useful overviews).

Cognitive perspectives conceptualise learning as a cognitive process, in which information is processed and new knowledge constructed. The L2 learner is seen as an actively involved participant, who learns by making conscious effort, by engaging in different kinds of mental activities and by using strategies (Hufeisen & Riemer 2010; Mitchell et al. 2013; Uhl Chamot & O’Malley 1994).

In general, cognitive approaches to SLA draw on cognitive psychology, whose subject matter is “main internal psychological processes [...] [for example] attention, perception, learning and memory, language, problem solving, reasoning and thinking” (Eysenck 2001: 1). Cognitive accounts of SLA investigate to what degree these different processes underlie the learning and use of an L2. Main concerns in cognitive SLA theory are cognitive key mechanisms and functions that are central to L2 learning, for example memory systems, explicit knowledge about language, skill acquisition or conscious attention to form (Mitchell et al. 2013).

2.1.1 Definition of terms

Before the theoretical underpinnings of this study are elaborated on, some fundamental terms require further explanation. These are the dichotomies of declarative versus procedural and explicit versus implicit knowledge and the concepts of working memory and attention.

Declarative knowledge and procedural knowledge

In cognitive approaches to SLA, the dichotomy between declarative and procedural knowledge is widely accepted (Gass & Selinker 2008; Mitchell et al. 2013; Ellis, R. 2008) and refers to two different types of knowledge. Gass and Selinker (2008: 242) state “declarative knowledge is concerned with
knowledge about something”. It implies the learning and storage of facts, which is usually explicit, conscious and transferable (Mitchell et al. 2013). With regards to language, declarative knowledge is also referred to as metalinguistic knowledge or metalinguistic awareness (see Jessner 2006).

On the other hand, procedural knowledge relates to knowledge about how to do something, that is, the “motor and cognitive skills that involve sequencing information” (Gass & Selinker 2008: 242). Procedural knowledge is implicit, relatively inaccessible and hardly transferable (Mitchell et al. 2013). The relationship between declarative and procedural knowledge has been described as a continuum, in the sense that declarative knowledge slowly evolves into procedural knowledge after sufficient practice (Ellis, R. 2008) (see skill-acquisition model in section 2.1.2).

**Explicit knowledge and implicit knowledge**

Closely related to the declarative-procedural knowledge dichotomy is the distinction between implicit and explicit knowledge. N. Ellis (1994: 1) defines implicit learning as the “acquisition of knowledge about the underlying structure of a complex stimulus environment by a process which takes place naturally, simply and without conscious operations”, while explicit learning refers to “a more conscious operation where the individual makes and tests hypotheses in a search for structure.” (p.1)

R. Ellis (2008) suggests that the explicit/implicit distinction describes the presence of consciousness, while the procedural/declarative distinction refers to the degree of control that learners may or may not have over explicit and implicit knowledge. Gass and Selinker (2008) propose that declarative knowledge can be seen as the basis of explicit knowledge whereas procedural knowledge underlies implicit knowledge. However, in their view, the main difference is the concept of awareness as an issue regarding the explicit versus implicit distinction. This corresponds to R. Ellis’ (2008) view and has also been suggested in DeKeyser (2003), Doughty (2003) and N. Ellis (2005). In order to be able to operationalise explicit and implicit knowledge, R. Ellis (2008: 418) suggests a range of characteristics, some of which are illustrated in Table 2.

While most cognitivists agree that there are at least these two kinds of knowledge representations and that procedural (or implicit) knowledge is what SLA generally is striving for, the particular role of declarative (or explicit) knowledge has been widely discussed (Bialystok 1978; DeKeyser 1998; Ellis, N. 1994; Ellis, R. 1994; Gass & Mackey 2006; Krashen 1982; MacWhinney 1997; Paradis 2009). The central question refers to whether there are connections and transfer processes between implicit and explicit knowledge or not (for the so-called non-interface position see Krashen 1982; for the opposing views and different kinds of interface positions see for example Bialystok 1978; De Keyser 1998; Ellis, R. 1994; MacWhinney 1997).
Table 2. Implicit and explicit knowledge (after Ellis, R. 2008: 418).

<table>
<thead>
<tr>
<th>Criterion</th>
<th>Implicit knowledge</th>
<th>Explicit knowledge</th>
</tr>
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<tbody>
<tr>
<td>Awareness</td>
<td>Learner is intuitively aware.</td>
<td>Learner is consciously aware.</td>
</tr>
<tr>
<td>Type of knowledge</td>
<td>Learner has procedural knowledge.</td>
<td>Learner has declarative knowledge.</td>
</tr>
<tr>
<td>Accessibility</td>
<td>Knowledge is accessible by means of automatic processing.</td>
<td>Knowledge is accessible only through controlled processing.</td>
</tr>
<tr>
<td>Use of L2 knowledge</td>
<td>Knowledge is typically accessed when a learner is performing fluently.</td>
<td>Knowledge is typically accessed when a learner experiences a planning difficulty.</td>
</tr>
</tbody>
</table>

However, among the majority of more recent SLA theories there is a general consensus about the relative effectiveness of explicit learning and teaching and the beneficial role of explicit knowledge in SLA (DeKeyser 2003; Doughty 1991; Ellis, R. 2008; Long 1991; for a research synthesis see Norris & Ortega 2000). Given that explicit knowledge is beneficial, the concept of awareness\(^9\) receives a central role in learning and instruction.

**Working memory and attention**

One fundamental assumption in cognitive SLA approaches is the existence of different memory systems: a working memory and a long-term memory (Baddeley 1999). Mitchell et al. (2013: 131) write that memory as a whole is “central to learning, for establishing, storing, representing and accessing representation during online processing”. Long-term memory is where information as a product from processing is stored over long periods of time, from which relevant information is retrieved in order to solve tasks and where the re-structuring of knowledge takes place. The capacity of long-term memory is seen as unlimited (Ellis, R. 2008; Shah & Miyake 1999).

Working memory holds an important role in SLA research because it is a process-oriented construct and essential in providing “temporary storage and manipulation of the information necessary for such complex cognitive tasks as language comprehension, learning, and reasoning” (Baddeley 1992:

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\(^9\) In this study, the terms *awareness* and *consciousness* will be used synonymously. Following Svalberg (2007), awareness can be seen as the result of a process of consciousness-raising (Sharwood Smith 1981).
Baddeley’s model of working memory (see for example Baddeley [1992] or Baddeley & Hitch [1974]) consists of two components: the first component is the short-term memory, where information is encoded, held and rehearsed for a short time. It is further divided into two “slave systems”, the so-called phonological memory, which stores and processes auditory and verbal information, and the visuo-spatial sketchpad, which processes and stores visual and spatial information. The second component is the central executive (Baddeley 2007), which executes the two main mechanisms regulation and control, and is required to carry out complex tasks (Baddeley 2003: 835), such as reasoning, selecting, inhibiting or activating (Kellogg 1996).

Working memory is a central term in SLA, because, as Williams (2012) argues, it is exclusively related to those learning processes, which involve intentional control and are explicit. Highly automated processes, on the other hand, do not draw on working memory (MacArthur & Graham 2016). In explicit learning and instruction, learners are required to “retain metalinguistic information in memory whilst simultaneously producing and comprehending language” (Williams 2012: 436). Often, working memory is used interchangeably with the notion of attention (Baddeley 1993), as for example Robinson (2003: 633), who argues that working memory corresponds to contents, which are within focal attention. These comprise information intake and processing, control and decision-making (allocation of attention to competing task demands), automatisation, response execution and monitoring. Others have argued that attentional processes related to working and short-term memory are equal or result in what has been called consciousness or awareness (Atkinson & Schiffrin 1971; Robinson 2003).

In information-processing SLA research (see section 2.1.2), bi-directional processes between long-term memory and working memory are assumed. Working memory and particularly the knowledge storage in short-term memory is considered as the “gateway” to long-term memory through rehearsal and organisation. Further, working memory is seen as the part of long-term memory, which is currently activated depending on the cognitive task at hand (Miyake & Shah 1999). Another assumption is that the capacity of working memory, that is attentional resources, is limited, which has implications for the language comprehension and production in tasks that require controlled processing. The more complex and less automated the task, the more demands, also referred to as cognitive load (Sweller 1988), are put on working memory. Hence, in the execution of a complex, controlled and explicit language-learning task, for example foreign language

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10 Schmidt (1990) also argued that focal attention corresponds to what he called noticing.
writing (see chapter 5), different writing constraints, such as language form and text content, may compete for attentional resources (Skehan 1998).

2.1.2 Learning as information processing and acquisition of skills
Within the cognitive paradigm, SLA is generally seen as a cognitive skill, that is, the performance of mental procedures (Anderson 1980). Information-processing theories (see Anderson 1983, 1993; Altarriba & Basnight-Brown 2009; McLaughlin & Heredia 1996; Shiffrin & Schneider 1977) have been used to explain how information is stored in memory, how new information is acquired and what the role of explicit knowledge and awareness in this process might be (O’Malley & Chamot 1990). In particular skill-acquisition theory (Anderson 1983) models how learners acquire skills in a gradual transition from controlled processes (or explicit knowledge) to automatic processes (implicit knowledge) over time, stressing the role of extensive practice (R. Ellis 2008). This three-step development is shown in Table 3.

Three main stages describe this transition from controlled to automatized processing (Shiffrin & Schneider 1977, 1984). First, learners establish explicit knowledge in form of abstract concepts and concrete examples, for example in foreign language classrooms with the help of teachers and teaching material. This knowledge enables learners to describe how to communicate in the foreign language, but does not allow skilled performance. This knowledge is temporarily stored in working memory. Maintaining and using them requires attentional control and a high level of working memory capacity. Hence, controlled processing is usually slow and arduous (Shiffrin & Schneider 1984).

In the second stage of this model, knowledge is being put into action and repeatedly practised, which usually reduces the amount of errors. Further, the established declarative knowledge from the earlier presentation stage might still be accessible, but the learner begins to perform in a more proceduralised way, and hence fluently. Finally, after sufficient practice, proceduralised knowledge can become automatised, which means that it does not require effort and attentional control (Mitchell et al. 2013). Controlled processes are generally fast, parallel and relatively effortless (Shiffrin & Schneider 1984). However, the learner is usually no longer able to articulate the rules and knowledge behind the procedure, which leads to the processes being no longer under control and difficult to modify or suppress (O’Malley & Chamot 1990).

A number of features of this model are of particular importance for the present study. First, information-processing theories assign explicit knowledge a decisive role in SLA. Second, a large part of L2 knowledge starts from being declarative (at least in formal learning contexts), before it
becomes proceduralised over time and after extensive practice. Third, knowledge types differ in the degree of transferability. While declarative knowledge is easier to transfer to other contexts, language skills and tasks, automatised knowledge, in contrast, is context and skill-specific (Mitchell et al. 2013). Fourth, even though fully proceduralised knowledge might not be transferable between different skills, it might be analysed in an awareness-raising process and be accessible in the declarative system. Thus, the declarative system can, to a certain degree, assist in transferring already proceduralised knowledge by analysing it consciously and using it for other contexts.

O’Malley and Chamot (1990), in their review of Anderson’s model of cognitive skill learning (1983), incorporated strategic processing as part of learning. For them, strategies are just another kind of skill to be learned; hence they undergo the same development from controlled to automatised processes. Consequently, strategies, that is activities to facilitate the learning process, can be instructed explicitly to assist other types of cognitive skills (for example text comprehension or production) and may become proceduralised after repetitive practice. However, once stored as procedural knowledge, they may not be transferred to other contexts. In this case, assistance in the analysis of this proceduralised strategy knowledge as a part of SLA instruction is needed, for example through conscious reflection, in
order to make it accessible for other tasks and learning more effectively. This procedure is the core principle of the strategy-based teaching approach, which has been adopted in this thesis and will be described in further detail in section 2.2.3.

**Pedagogical implication of information-processing – explicitness and awareness**

From a pedagogical point of view, information-processing models are useful theoretical frameworks for SLA teaching methods that involve explicit instruction as a key feature. *Language awareness*, as one strand in SLA research, has evolved as a rather broad term for applied SLA concepts stressing the role of awareness or consciousness as a crucial aspect of development of foreign language proficiency (C. Schmidt, 2010).

Most awareness research cites R. Schmidt (1990), who used the term consciousness and considered it to facilitate a number of aspects in learning. R. Schmidt distinguished between consciousness as awareness, intention and knowledge. Consciousness as awareness is explained as a threefold construct consisting of perception, noticing and understanding. While pure perception may not necessarily be conscious, noticing and understanding are processes, which are facilitative in explicit instruction. Mitchell et al. (2013: 146) describe noticing as “the processes of bringing some stimulus to focal attention”\(^\text{11}\). Understanding refers to the analysis and comparison of what has been noticed. R. Schmidt (1990) argues that thinking, problem solving and metacognition belong to this level of consciousness. Thus, consciousness as awareness, particularly on the level of noticing and understanding, are crucial to language learning processes, even though R. Schmidt (1990) himself did not consider them as absolutely necessary for learning, only as beneficial.

In the last two decades, language awareness has become a prominent SLA research field and been defined as “explicit knowledge about language, and conscious perception and sensitivity in language learning, language teaching and language use.” (Svalberg 2007: 288) This definition illustrates the broadness of the field. James and Garrett (1991) introduced a division of language awareness into five domains. They distinguished between the affective, the social, the power, the cognitive and the performance domain. The main focus of language awareness research has been on the cognitive

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\(^{11}\) In this context, attention is another commonly used term in SLA, which has been studied extensively on its own. It is generally described as a regulating process that leads to awareness through for example selecting information, focusing, inhibiting distractions, activating concepts, coordinating participation (Robinson et al. 2012). However, there are different conceptualisations of attention and its role for learning (see also Tomlin & Villa 1994; Robinson 1995).
domain, which refers to awareness about entities, categories, patterns and rules of language (Schmidt, C. 2010), that are basically grammar and lexicon. This domain of language awareness has found its application in instruction concepts like the so-called “focus-on-form” approach (Long 1991: 41) or “input enhancement” (Robinson et al. 2012: 258; Sharwood Smith 1993).

However, more and more researchers (for example Borg 1994; Tönshoff 1997) stress the importance of what James and Garrett (1991) called the performance domain, which is the awareness-raising process of making implicit processes explicit. This domain might as well be called language learning awareness and is one of the key elements in several overlapping applied SLA research fields, for example self-regulation (Dörnyei & Skehan 2003), metacognition (Hartman 2001; Tarricone 2011; Weinert & Kluwe 1987), language learner strategies (Cohen & Macaro 2007; Macaro 2001; O’Malley & Chamot 1990; Oxford 1990; Wenden 1991) and learner autonomy (Benson 2011). In recent years, also research in multilingual learning (Aronin & Hufeisen 2009; Cenoz & Genesee 1998; Cenoz & Gorter 2011; Ó Laoire 2006) and third language learning (Cenoz, Hufeisen & Jessner 2000; DeAngelis 2007; Hufeisen & Lindemann 1998) has stressed the notion of awareness as a decisive characteristic of multilingual learners due to their richer foreign language learning experiences (see for example Cenoz & Gorter 2011; Hufeisen 2000; Mißler 1999).

In the present study, the focus is on foreign language learning in relation to metacognitive strategies. Thus, metacognition in learning and language learner strategies serve as theoretical and pedagogical foundations. In both concepts, language learning awareness plays a crucial role in that it enables students to reflect upon themselves as learners and upon their learning, to allocate attentional resources when solving problems (or tasks) and to manage their learning processes. Metacognition is generally divided into two components: metacognitive knowledge and regulation (see for example Flavell 1979; Schraw 1998; Wenden 1998). Both are seen as crucial in successful language learning. Various researchers (for example O’Malley & Chamot 1990; Oxford 2011; Wenden 1991) have established the connection between metacognition in language learning and learner strategies. It is particularly the metacognitive regulation component that is considered to be identical, or at least overlapping, with what strategy research called metacognitive strategies (O’Malley & Chamot 1990). However, in this study the bigger concept of metacognition is worked with in the first place, because the inherent knowledge component is seen as crucial and was, among other aspects, investigated in this study.
Metacognition in language learning

Metacognition refers to internal representations of cognition (Hacker 1998; Paris & Winograd 1990) and has its roots in memory research and psycholinguistics. The concept entered learning theory (see for example Artzt & Armour-Thomas [2001] for learning mathematics or Tanner [2012] for learning biology) and particularly language learning theory since the 1990s (Hacker et al. 2008; Hartman 2001; Tarricone 2011; Wenden 1991). The role of metacognition has generally been described as a positive learning factor, for example in order to gain academic success (Zimmerman & Bandura 1994), for the development of learner autonomy (Victori & Lockhart 1995), for the development of learner strategies and self-regulated learning (Wenden 2001) and for the quality and effectiveness of learning (Hartmann 2001; Paris & Winograd 1990; Schraw 1998; Wenden 1998). While these benefits seem to have found a wide acceptance among researchers and practitioners, the definition of what metacognition actually involves is still a topic for discussion.

Flavell (1979: 906) defined it initially as “knowledge and cognition about cognitive phenomena”. Others have specified these cognitive phenomena as thoughts about our emotions, memories, thoughts, activities (Nelson & Narens 1994), thoughts about one’s own and other people’s thoughts (Victori & Lockhart 1995; Wenden 1998) or just thoughts about thoughts (Anderson 2008). Metacognitive learners have been described as being able to develop ideas about learning processes, to develop strategies and to solve problems (Anderson 2002; Anstey 1988); further they are self-regulated, that is they plan, organise, monitor, regulate and evaluate (Zimmerman 1986). Gourgey (2001: 18) suggests that “metacognition enables one to use knowledge strategically to perform most efficiently.”

One main problem about the concept of metacognition is to distinguish it clearly from cognition (Brown 1987; Veenman et al. 2006; Weinert & Kluwe 1987) as both processes can neither be observed nor is it possible to directly link visible behaviour to their occurrences. Nelson and Narens (1990) proposed a model in order to illustrate the distinction between cognition and metacognition, which is presented in Figure 1.

In this model, there is no reference to external reality, but all levels are of psychological nature. The object level refers to cognitive processing, while the meta-level refers to metacognitive processing, which also includes a representation of cognitive processes. Between these two levels there is a permanent flow of information, which is subsumed under the terms control and monitoring. Monitoring implies that the metacognitive representation of the object level is continually updated, while control processes refer to the initiation of changing, continuing or finishing processes on the object level. Both information flows are simultaneously active and direct the object level in an appropriate, meaningful and effective way (Kuhn 2000). For example,
while cognitive processes are required to execute a specific learning task and to reach a learning goal (for example memorising a grammatical rule), metacognitive processes can be helpful in monitoring the execution and judging how successful the cognitive processing has been (for example observing whether the particular memorising was helpful in the particular context) (Hacker 1998; Schraw 1998).

Cognition and metacognition are interdependent and interwoven, which makes it methodologically difficult to investigate them. Common notions to distinguish the two concepts are consciousness and purposefulness (Hacker 1998; Nelson 1996; Paris & Winograd 1990; Wenden 1998). However, others have expressed the concern that repetitive and routinised use of metacognitive activities can become automatic (Flavell & Wellman 1977) and that a number of observation and evaluation processes can “run in the background” and only become conscious in particular key moments (Veenman et al. 2006: 6). Thus, students may not be aware of the fact that they use metacognitive processes in their learning, as these processes have become routinised.

As such, this does not seem to be problematic, however, the automatisation represents a problem when metacognitive processes are not transferred or modified in new situations, learning tasks or languages. This problem is in fact in line with assumptions expressed in the information-processing model described in section 2.1.2. There it was argued that proceduralised knowledge might have to be made conscious and analysed in order for the learner to instrumentalise it as explicit knowledge and transfer it to other contexts. This conclusion holds for metacognition as well. Metacognitive processing, such as planning or reviewing, may become transferred from an automatised to controlled and conscious use, in order to make it applicable in different contexts, where it has not yet been included in task-solving activities.
In section 2.2.1, the widely accepted distinction between metacognitive knowledge and regulation is presented. Often, this distinction is seen to be in accordance with the declarative and procedural knowledge dichotomy (Hacker 1998; Kluwe 1982; Kuhn 2000; Paris & Winograd 1990; Schraw 1998). However, in this study it is assumed that declarative and procedural knowledge is better described as theoretical end points of a continuum, on which metacognitive knowledge tends to be more declarative while metacognitive regulation tends to be procedural. The possibilities of transfer were described in section 2.1.1.

2.2.1 Metacognitive knowledge
Metacognitive knowledge refers to a person’s knowledge about cognitive processes. Flavell (1979) introduced the classification in metacognitive task, person and strategy knowledge, which is widely accepted. Task knowledge refers to the goal, character and challenge of a specific task, how it contributes to learning and what skills are required to accomplish it (Wenden 1998). Metacognitive person knowledge refers to knowledge about one’s own character traits, one’s own learning processes and cognitive competence as well as one’s own knowledge (Weinert & Kluwe 1987). Further it refers to what the learner assumes to be true regarding the influence of internal variables on learning effectiveness and success, for example age or motivation (Wenden 1998). Metacognitive strategy knowledge refers to general knowledge about the nature of strategies and specific knowledge regarding their use and effectiveness. Different researchers have set different foci on each of these three components (see Paris & Winograd [1990] for person knowledge, Kuhn & Pearsall [1998] for task knowledge and Wenden [1998] for strategy knowledge), however, all three are strongly connected and meaningful for metacognitive processes and learning success. Brown (1987) raised the concern that learners' metacognitive knowledge is highly subjective and does not necessarily mirror the truth. For this reason, Paris & Winograd (1990) suggest a need to reflect and discuss metacognitive knowledge in order to detect and correct misleading assumptions.

2.2.2 Metacognitive regulation/strategies
Metacognitive regulation refers to different process-oriented aspects of metacognition, such as planning, strategies, monitoring and revision (Brown 1987; Paris & Winograd 1990). Different terms have been used in the literature, such as cognitive self-management (Paris & Winograd 1990), metacognitive strategies and self-regulation (Brown 1987; Wenden 1998), regulation of cognition (Schraw 1998), metacognitive skill and experience (Hacker 1998) or monitoring and control (Tobias & Everson 2000). Metacognitive control is particularly important for learning, as it enables
learners to draw conclusions from previous experiences and adapt to new situations and contexts.

Metacognitive regulation is the component of metacognition that corresponds to what has been labelled “metacognitive strategies” in the research area of learner strategies (O’Malley & Chamot 1990; Oxford 1990; Macaro 2001). As research in learner strategies with regard to foreign language learning has a longer tradition than metacognition, a short outline of the findings from this area will be presented with a focus on metacognitive strategies.

Learner strategies

Language learner strategy research has its theoretical foundations in cognitive psychology (Bimmel 2010) and started to evolve in the 1970s. Early studies on learner strategies were rather descriptive and via self-report, interviews and questionnaires identified what “good language learners” did in order to recommend good practice for learning (Rubin 1975; Stern 1975). Later work focused on interventional programmes to teach students the identified strategies and improve their performance (for example Naiman et al. 1978). Interest in this field reached a peak in the 1990s, when a number of comprehensive books were published, introducing specific strategy classifications (O’Malley & Chamot 1990; Oxford 1990; Wenden 1991). Oxford (2011) gives an overview of a number of SLA fields that have been associated with strategy research, for example self-regulation and autonomy (Holec 1981; Dickinson 1987) metacognition theory (Flavell 1979), sociocultural theory (Vygotsky 1962; Donato & McCormick 1994) and information processing theory (Anderson 1983; O’Malley et al. 1987; O’Malley & Chamot 1990).

Strategies are used in order to construct, memorise, retrieve and control knowledge (Tönshoff 2003). Accordingly, Oxford (2011: 167) describes learner strategies as “the learner’s goal-directed actions for improving language proficiency or achievement, completing a task, or making learning more efficient, more effective, and easier.” Due to a number of influential disciplines, there is not one consistently used definition of strategies. Further, discussions regarding explicitness and consciousness correspond to the difficulties described for discussions regarding information processing models. Thus, it is assumed that strategies can be represented in the

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12 In the literature, both learner strategies and learning strategies are used. According to Macaro (2001), learning strategy is a sub-ordinated term of learner strategies, as it implies that the goal of the strategy use is learning, while learner strategy also implies activities, which might not have learning as the primary goal. Following Oxford’s (2011) definition, in this study learner strategy is used as a superordinate term acknowledging that learners might use strategies to complete a task.
learner's mind as declarative or procedural knowledge (see section 2.1.1), that is they may be conscious in initial stages of learning and become automatised over time (O’Malley & Chamot 1990). In addition, they have also been defined as mental activities, which might result in observable behaviour (Uhl Chamot 2004), which however has been discussed critically (see Macaro 2006).

A range of strategy categorisations was developed from descriptive studies. The two most commonly known ones distinguish between direct (memory, cognitive and compensation) and indirect (metacognitive, affective and social) strategies (Oxford 1990) and metacognitive, cognitive and social-affective strategies (O’Malley & Chamot 1990). Table 4 illustrates the classification according to O’Malley and Chamot (1990), which emerged from cognitive psychology research and has one of its foundations in Flavell’s (1979) notion of metacognition.

Cognitive strategies refer to mental processes, which directly concern the learning and/or use of the target language and are intended to facilitate information processing and knowledge construction processes. Cognitive strategies are rather task- and skill-specific, for example hypothesis-testing in reading or memory strategies in vocabulary learning. Social and affective strategies comprise all strategies that involve interaction with another person, such as a peer, or the conscious management of affective states, such

<table>
<thead>
<tr>
<th>Classification</th>
<th>Strategies</th>
<th>Definition</th>
</tr>
</thead>
<tbody>
<tr>
<td>Metacognitive strategies</td>
<td>Selective attention</td>
<td>Focusing on special aspects of learning tasks.</td>
</tr>
<tr>
<td></td>
<td>Planning</td>
<td>Planning for the organisation of either written or spoken discourse.</td>
</tr>
<tr>
<td></td>
<td>Monitoring</td>
<td>Reviewing attention to a task, comprehension of information that should be remembered, or production while it is occurring.</td>
</tr>
<tr>
<td></td>
<td>Evaluation</td>
<td>Checking comprehension or production after completing a language task.</td>
</tr>
<tr>
<td>Cognitive strategies</td>
<td>Rehearsal</td>
<td>Repeating items to be remembered.</td>
</tr>
<tr>
<td></td>
<td>Organization</td>
<td>Grouping and classification of items.</td>
</tr>
<tr>
<td></td>
<td>Inferencing</td>
<td>Using information to guess, predict or complete.</td>
</tr>
<tr>
<td></td>
<td>Summarizing</td>
<td>Intermittently synthesizing what one has heard to ensure the information has been retained.</td>
</tr>
<tr>
<td></td>
<td>Deducing</td>
<td>Applying rules to the understanding of language.</td>
</tr>
<tr>
<td></td>
<td>Imagery</td>
<td>Using visual images to understand and remember new information.</td>
</tr>
<tr>
<td></td>
<td>Transfer</td>
<td>Using known information to facilitate a new learning task.</td>
</tr>
<tr>
<td></td>
<td>Elaboration</td>
<td>Linking and integrating new ideas with known information.</td>
</tr>
<tr>
<td>Social/affective strategies</td>
<td>Cooperation</td>
<td>Working with peers to solve problems, check notes, or get feedback.</td>
</tr>
<tr>
<td></td>
<td>Questioning for clarification</td>
<td>Eliciting from a teacher or peer additional explanation.</td>
</tr>
<tr>
<td></td>
<td>Self-talk</td>
<td>Using mental redirection of thinking.</td>
</tr>
</tbody>
</table>
as anxiety and nervousness. Of major importance for this study are metacognitive strategies, which organise and support learning and the use of cognitive strategies. According to O’Malley and Chamot (1990: 44) they are best described as “higher order executive skills that may entail planning for, monitoring, or evaluating the success of a learning activity”. Metacognitive strategies are transferable between skills and tasks and particularly characterised by their scaffolding function in organising complex SLA tasks and in focussing single execution steps (Oxford 1990).

As already mentioned earlier in this section, a clear-cut distinction between cognitive and metacognitive strategies is not easy to maintain due to their interwoven occurrence and matters of automatisation and (sub-) consciousness. Macaro (2001) attempts to account for this difficulty in suggesting a number of continua to describe strategies, in which the end points refer to general tendencies. As Table 5 shows, metacognitive strategies, for example, have the tendency to be consciously deployed, easier to articulate, evaluative and so forth.

Despite these categorial inconsistencies, the focus of this study will be on metacognitive strategies. As mentioned repeatedly, metacognitive processes seem to be of particular use in language instruction because they tend to be explicit, conscious, verbalisable and teachable. Further, they are more easily transferable to different tasks and can support students in their learning. Researchers have frequently reported that highly proficient students apply strategies at a higher frequency (see Oxford 1999 for an overview) and also argued that particularly the knowledge and use of metacognitive strategies are characteristics of successful language learners (O’Malley & Chamot 1990; Macaro 2001; Pawlak 2011; Tönshoff 2003). However, there are also contradictory findings (Chen 1990; Cohen 1998).

Table 5. Continua to describe strategies (Macaro 2001: 24).

<table>
<thead>
<tr>
<th>Cognitive</th>
<th>Metacognitive/social/affective</th>
</tr>
</thead>
<tbody>
<tr>
<td>subconscious</td>
<td>conscious</td>
</tr>
<tr>
<td>automated</td>
<td>controlled</td>
</tr>
<tr>
<td>difficult to articulate</td>
<td>easier to articulate</td>
</tr>
<tr>
<td>non-evaluative</td>
<td>evaluative</td>
</tr>
<tr>
<td>primary</td>
<td>support</td>
</tr>
<tr>
<td>natural</td>
<td>taught</td>
</tr>
</tbody>
</table>
2.2.3 Metacognition in foreign language teaching —
interventional approaches

A number of researchers consider the systematic and explicit instruction of metacognition as a possibility of enhanced learning (Flavell 1979; Paris & Winograd 1990). Both metacognitive knowledge and metacognitive strategies are crucial in this learning process, as they are interdependent. As early as 1979, Flavell noted that strategies could only be applied in a controlled manner if students have sufficient task, person and strategy knowledge at their disposal. Uhl Chamot and O’Malley (1994: 372) for example argue that “Metacognition [...] may be the major factor in determining effectiveness of individuals’ attempts to learn another language and [...] explicit metacognitive knowledge about task characteristics and appropriate strategies for task solution is a major determiner of language learning effectiveness.”

For example, solving a particular language task can only be monitored and regulated when learners can reflect on what they know about the task requirements and their previous experiences in solving this type of task. In turn, applying metacognitive strategies enables learners to build up richer structures of metacognitive knowledge, which may be used in other contexts. Wenden (1998) evaluates this ability to access metacognitive knowledge as a necessary precondition for effective strategy use. Most approaches to strategy instruction have aimed, at least implicitly, to develop the knowledge component as well (see MacArthur 2012 for an overview) and several studies have shown that for example metacognitive knowledge regarding writing, that is writing knowledge, is a key factor in the development of writing skills (Graham 2006b; Graham & Harris 2005; Kellogg 1987; McCutchen 1986, 2000; Sasaki & Hirose 1996; Schoonen & De Glopper 1996; Victori 1999).

Unlike metacognitive knowledge, the role of metacognitive strategies in learning has been stressed more widely due to the early practical orientation in strategy research. As Pawlak (2011) notes, from the beginning of strategy research interest, there has been a strong pedagogical focus in the field, which manifested itself in learner strategy intervention research and resulted in a number of strategy-based instruction models. Strategy interventions intend to change learners’ behaviour regarding strategy use in order to test its effects on language learning outcome (Macaro 2001; Uhl Chamot 2001).

The general procedure of a strategy-based instruction programme has been described in a number of models, for example the Cognitive Academic Language Learning Approach (Uhl Chamot & O’Malley 1994), Self-Regulated Strategy Development (Harris et al. 2008) or the Learner Strategies Training Cycle (Macaro 2001) (see also Cohen 1998; Harris & Graham 1996; O’Malley & Chamot 1990; Oxford 1990; Uhl Chamot et al. 1999).
Despite the stress on single aspects within the particular programme and slightly different terminology, there is general consensus about the main intervention steps and their order. These steps are:

- Initial identification of the learner strategies already applied by the learners
- Raising awareness regarding the purpose and value of particular learner strategies
- Demonstration and modeling by the teacher
- Offering sufficient opportunities to practise in a variety of tasks
- Reflection and self-evaluation

Additionally, researchers have offered advice regarding methodological and practical issues in learner strategy instruction. For example, strategies should be introduced explicitly and integrated into regular classroom instruction (Cohen 1998; Graham & Harris 2000; O’Malley & Chamot 1990; Uhl Chamot 2004, 2005). Further, the students’ mother tongue should not be excluded but considered a valuable aid in learner training (Grenfell & Harris 1999; Macaro 2001). Moreover, strategy instruction should be related to problems, which students encounter in their language learning practice and they should be able to recognise immediate success. Finally, metacognitive strategies should be prioritised initially and the planning and implementation of these should take learner variation into consideration (Pawlak 2011; Tönshoff 2003; Uhl Chamot et al. 1999).

Strategy interventions have been applied to different language competences and skills. There is an inconsistent picture of the overall success of strategy instruction, often due to a broad diversity of study designs, no account of various study-related information and lack of control group and/or delayed post-test. Nevertheless, the skills of reading and writing seem to be more amenable to strategy instruction than listening and speaking (Pawlak 2011), which is reflected in a higher number of studies in these fields. The largest amount of research has been conducted on reading comprehension (MacArthur 2012) (see for example McNamara [2007] for a general reading comprehension strategy review and Ikeda & Takeuchi [2003] and Oxford et al. [2004] for applications in SLA). The second largest amount of strategy-based instruction has been conducted on writing.

**Writing strategies and writing strategy instruction**

Within the framework of a cognitively oriented process-approach to writing, writing strategies are actions and procedures to control the management of the writing process, compensate for the limited capacity of cognitive resources and overcome problems (Manchón 2001). They are elsewhere referred to as composing behaviours (Raimes 1987), writing techniques and
procedures (Pennington & So 1993), or production processes (Whalen & Ménard 1995). The variety in terminology points to inconsistencies regarding how writing strategies are conceptualised and operationalised in different studies. In overviews, Manchón (2001) and Manchón et al. (2007) distinguish between broad and narrow writing strategy conceptualisations.

Broad conceptualisations equate writing strategies with practically any writing sub-process, that is planning (brainstorming, organising ideas, setting goals), writing (rehearsing, pausing, translating) and revising (re-reading, evaluating, editing) (Hayes & Flower 1980; Graham 2006b). Victori (1997) adopted such a macro perspective, but based her distinction on the threefold categorisation of metacognitive strategies: planning, monitoring and evaluation (see O’Malley & Chamot’s strategy categorisation in Table 4). Particularly this approach to writing has been taken by Hacker et al. (2009), who consider writing in itself as metacognition, that is “filtering” thoughts via writing them down (see chapter 6).

Narrow conceptualisations refer to strategies as more specific actions within the composing process (Manchón et al. 2007). These may be control mechanisms or problem-solving behaviour and refer to specific actions like backtracking (Wolfersberger 2003) or reformulation (R. Zimmerman 2000). The current study is oriented towards the broad concept of writing strategies and specifically uses the metacognition-inspired distinction of planning, monitoring and evaluation.

Writing strategy instruction refers to the teaching of more “sophisticated composing strategies” (Graham 2006a: 188) and aims for changing students’ composing behaviour through more effective ways to compose a text. MacArthur (2012) further highlights that these procedures are taught integrated with declarative knowledge, for example regarding the content area, writing genre, text structure, and potential audience. This stresses once more the role of metacognitive knowledge in strategy instruction. Three larger meta-analyses regarding the effect of writing instruction have been conducted (Hillocks 1986; Graham 2006a; Graham & Perin 2007). A general finding was that the focus of instruction explains variation in text quality and that particularly strategy instruction in writing has the largest effect sizes (compared to other instructional approaches such as collaborative writing, prewriting or sentence combining), which could also be maintained over time and generalised. However, most of the analysed studies were focused on students with learning difficulties or other struggling writers. In the following section, the focus will be narrowed down to writing instruction for foreign language writers.

*Writing strategy instruction in a foreign language*

Writing is often described as a process of problem-solving, which is perceived as difficult by students (Bereiter & Scardamalia 1987; Flower &
Hayes 1981, Hayes & Flower 1980). Compared to writing in one’s L1, composing in an L2 or additional languages puts an even heavier cognitive load on students. Even though the basic underlying processes of writing described in the cognitive process-models of writing might be similar in L1 and L2 (Hall 1990; Krapels 1990; Pennington & So 1993; Uzawa 1996), there are a number of factors that are distinct in L2 and in consequence make writing more complex and demanding.

In the first place, it can be assumed that limitations in linguistic resources cause writers to pay most attention to language form and lexical choices (Cumming 2001). Due to the limitations of cognitive capacities, less attention tends to be paid to other dimensions of writing, such as text organisation, generation of complex ideas or rhetorical features (Graham & Harris 2000; Kellogg 1996; Roca de Larios et al. 1999; Uzawa & Cumming 1989; Whalen & Ménard 1995). In order to account for such problems in L2 writing caused by limitations of working memory (see section 5.1.1 regarding the role of working memory in writing) Schoonen et al. (2009) proposed the Inhibition Hypothesis. In line with others (Jones & Tetroe 1987; Manchón et al. 2009; Schoonen et al. 2003; Whalen & Ménard 1995) they suggest that students’ common focus on formal aspects of a text puts such a heavy load on working memory, that the retrieval of metacognitive writing knowledge and writing experience from long-term memory is inhibited. Hence, students with a lower language proficiency are likely to spend most of their time formulating the text instead of distributing their attentional resources more evenly, utilising their metacognitive knowledge and carrying out metacognitive strategies such as planning, monitoring and revising (Ortega 2009).

Studies regarding strategies in foreign language writing are either descriptive or interventional, with the latter still underrepresented. Following the broad conceptualisation of writing strategies (Manchón 2001), descriptive work has investigated writers’ strategy use in managing L2 writing (for example Hirose & Sasaki 1994; Jones & Tetroe 1987; Kobayashi & Rinnert 1992; Manchón et al. 2000; Roca de Larios et al. 1999; Sasaki 2000; Sasaki & Hirose 1996; Sengupta 2000; Stevenson et al. 2006; Whalen & Ménard 1995; Zimmerman 2000). Further, focus has been on how L1 influences the deployment of several sub-processes in L2 writing (for example Cumming 1990; Jones & Tetroe 1987; Kobayashi & Rinnert 1992; Manchón & Roca de Larios 2007b; Sasaki & Hirose 1996; Whalen & Ménard 1995; Woltersberger 2003). Additionally, learner internal factors, such as L2 proficiency (Manchón & Roca de Larios 2007a; Sasaki 2000; Sasaki & Hirose 1996; Whalen & Ménard 1995) or writing competence (Sasaki 2000; Victoria 1997; Whalen & Ménard 1995) and learner external factors, such as task type (Ellis & Yuan 2004; Manchón et al. 2000, 2009), topic (Manchón et al. 2000) and time (Roca de Larios et al. 2008; Sasaki 2004) have been
investigated in relation to strategy use. Moreover, it has been studied how strategies are transferred across languages (Hirose & Sasaki 1994; Pennington & So 1993; Uzawa 1996; Woltersberger 2003).

Compared to descriptive studies, research on the influence of strategy instruction in foreign language writing is relatively scarce. A number of investigations are relevant for the present study and will be briefly described. Their instruction focus is either a cognitively oriented foreign language writing process approach or writing strategies in foreign language writing. Since there is a lack of research investigating specifically L3, the overview exclusively contains studies involving L2 (according to the given language background information in the studies).

The studies included were mainly carried out in university environments and researchers used either single-group or control-group-designs. The reported length of instruction ranged from 42 hours (Lee 2002) to one year (Sengupta 2000), however it should to be taken into consideration that in some cases, interventions might be short and intensive and others rather long, but with spread-out instructional units. Further, the type of data collected varies and is in most cases multiple. Except for Ching (2002), all researchers collected and analysed students’ texts, and the majority additionally conducted questionnaires (Ching 2002; Macaro 2001; Yasuda 2011), tests (Hirose & Sasaki 2000), interviews (Lee 2002; Sengupta 2000) or stimulated-recall interviews and video-recordings (Sasaki 2000, 2002, 2004) in order to investigate the influence of strategy instruction. The focus of the instruction was either on writing strategies in general (Macaro 2001), planning and/or revision (Sasaki 2000; Sengupta 2000) or on specific strategies, such as self-monitoring (Creswell 2000), self-regulation (Ching 2002) reader-orientation (Sengupta 2000), genre awareness (Hirose & Sasaki 2000; Yasuda 2011), coherence (Lee 2002) or translation from L1 to L2 (Cohen & Brooks-Carson 2001). In order to evaluate the effect of instructional programmes, success was operationalised as the effect or influence on text quality (Cohen & Brooks-Carson 2001; Hirose & Sasaki 2000), either in terms of grammatical accuracy (Macaro 2001) or global features such as organisation and coherence (Lee 2002). Sasaki further investigated writing fluency in her three consecutive studies (2000, 2002, 2004). Others looked at the development of general language and learning competence (Creswell 2000; Yasuda 2011), the deployment of strategies (Creswell 2000; Sasaki 2000, 2002) or learner-internal factors (Ching 2002; Macaro 2001; Sengupta 2000).

Creswell (2000) conducted a study with seven Italian adult learners of English who were given a four-week writing programme focusing on self-monitoring. In this study, self-monitoring was taught through writing annotations while producing a text, in which the participants’ own problems in composing should be detected and verbalised. Creswell collected four texts
(including annotations) by each learner and inductively analysed the types of annotations written. In the presentation of his results, he only refers to the post-instruction state and shows that one third of students’ annotations referred to higher-order concerns of composing (content, organisation and translation) and the rest belonged to linguistic concerns. Creswell judges this as a success considering the time constraints of the task given. Further, he showed that the students were able to explicitly describe their intentions through annotations and that this strategy encouraged them to extend their productive language resources.

In his study with six classes of 14- and 15-year-old English learners of French, Macaro (2001) investigated the influence of five months of instruction on metacognitive writing strategies in three treatment classes. In the post-test, the treatment groups scored significantly better in grammatical accuracy. In additional questionnaires, they also reported to rely less on the teacher, to be more selective in their use of the dictionary, and to be more careful about their written work.

Cohen and Brooks-Carson (2001) explored the effects of the L1 on the quality of essays written in French by 39 English- and Spanish-speaking university students. Students were instructed to either write directly in French or to write the essay first in their L1, then translate it into French. The results revealed that essays written directly in L2 were of higher quality than those, which had been translated.

The effects of instruction in metaknowledge and journal writing on the argumentative writing competence of 83 Japanese university students of English were the research interests in Hirose and Sasaki’s (2000) study. Over a 12-week course, one group received instruction in metaknowledge regarding argumentative writing only, the other group was instructed in both metaknowledge regarding the text type argumentation and journal writing. Both groups received a pre- and post-metaknowledge test and wrote a pre- and post-text. The compositions were rated with an analytical rating scheme including the dimensions content, organisation, language use, vocabulary and mechanics. The results showed that group one gained significantly more metaknowledge, but did not increase text quality. Group two also showed significantly more metaknowledge and improved writing mechanics, which is spelling, capitalisation, punctuation, paragraphing and handwriting. However, in a between-group comparison, the two groups did not show any significant difference in the post-text scores, which led Hirose and Sasaki to the conclusion that neither of the two instruction types can be claimed to have a greater effect on writing.

Sasaki (2000) investigated the writing processes of 8 Japanese English novice writers when composing argumentative texts. She analysed multiple data sources, such as texts, videotaped pausing behaviour and stimulated recall. She showed that after six months of writing instruction, focused on
writing process strategies such as planning and revising, students in fact decreased the amount of used strategies but also changed their repertoire to more expert strategies such as “re-reading” and “global planning”. However, the instruction had neither a positive effect on writing fluency nor a significant effect on text quality.

In a later study, Sasaki (2002) compared 34 Japanese learners’ processes (12 experts and 22 novices) in writing argumentative texts in English. The novices received two semesters of process writing (planning and revising in particular) and paragraph-writing instruction. Pre- and post-tests were conducted, collecting texts, video-recordings and stimulated recall protocols. The results revealed that after instruction, the novices had longer pre-writing planning phases, reached a better overall text quality, were partly able to change their strategy use towards more expert strategies (for example more global planning). In contrast, the novices’ writing fluency did not improve, presumably due to maintained L1–L2 translation pauses. Overall, the novices did not reach the experts’ writing competence levels regarding text quality, process characteristics, advanced strategy application or writing style.

In a further study with a similar design, Sasaki (2004) conducted one of the few longitudinal investigations in this research field and followed 11 out of the 22 novice Japanese learners of English from her 2002-study for an entire period of 3.5 years. Sasaki found that over a longer period of time, general language proficiency and text quality improved, but much less during the time period after the instruction phase, and writing fluency improved only slowly over time. She concluded that progress in writing competence required consistent practice and that fluency could not be influenced within short-term instruction periods, but needed more time to develop. Regarding writing strategies and writing styles, Sasaki’s results were mixed. However, she showed that patterns of use for different strategies may require different time spans to be changed, and that this may also be dependent on writer-internal and -external factors.

Lee (2002) looked at the influence of 42-hour writing instruction on the composition of 16 Chinese university students of English. The content of this instruction was coherence, operationalised through six distinct features. She collected 10 draft essays from each student, think-aloud protocols during draft revision periods, questionnaires and interviews. In her findings, Lee suggested that coherence teaching improved text coherence and students’ awareness of the discourse level of texts in the revision process.

Sengupta (2000) conducted a study with three classes of Chinese learners of English in secondary school and focused on the effects of a one-year revision strategy instruction on the quality of learners’ texts and their perception of writing and revision. In a control-group-design with pre- and post-writing task, including holistic scoring of texts and conducting
questionnaires and interviews, Sengupta found that the treatment group improved their text quality more than the non-treatment group and that the students had begun to think more globally and more reader-oriented when writing.

Ching (2002) did a study with a mixed group of 29 engineer students writing essays in English. The focus of her research concerned the question whether strategy and self-regulation instruction would help students to plan and revise their texts and improve their self-efficacy, self-determination and attribution (that is whether students are influenced by internal or external factors in the evaluation of the cause of success or failure in a task [Ching 2002: 263]). In a single-group design, Ching mainly collected and analysed pre- and post-questionnaires about self-regulation and writing processes. Her results suggest that the instruction provided had equipped students with more knowledge about planning and revising and improved self-efficacy and self-determination, but had no effect on attribution.

Yasuda (2011) looked at the development of genre awareness, linguistic knowledge and writing competence in e-mail writing of 70 Japanese undergraduate novice learners of English. The writers were given a 15-week writing course and Yasuda collected survey, interview and text data at three different points in time. The results showed an increase in students’ genre and audience awareness, as well as an increased understanding of how to utilise linguistic knowledge in the given genre-based task. Additionally, the writers seemed to be able to improve their writing competence in terms of task fulfilment, cohesion and organisation, grammatical control, fluency and language sophistication, but not in terms of lexical diversity.

In contrast to the previous ones, Kobayashi and Rinnert (2001) did not conduct an interventional study as such, but looked at the relationship between students’ discourse level revising skills, particularly coherence, and the amount of writing instruction they had received. They worked with 53 Japanese university students writing in English. These were divided into three groups: group one received no writing instruction, group two received one year of course-based English writing instruction and group three received formal university level writing instruction. All participants were asked to revise manipulated texts with coherence problems. The results showed that group two revised significantly more than group one, and group three revised significantly more than group two. Generally, the students were more often able to detect a coherence problem than to detect and correct it. Further, the results suggested that with increased writing instruction students are able to deploy a more varied set of correction strategies. The authors suggest that L2 writers can learn to overcome essay coherence problems through instruction combined with writing and revising experience.
This selective review shows that foreign language writing strategy interventions seem to have the potential to positively influence writers and writing on different levels, but that the results are mixed. The majority of the studies focused either on text quality, on strategy deployment or learner-internal factors. Only Sasaki (2000, 20002, 2004) included the effects of strategy instruction on the actual writing process. She measured fluency through total number of produced words and mean number of produced words per minute and came to the conclusion that fluency might not be improved within a short period of time.

The present study is a contribution to the previous body of research in foreign language writing strategy instruction, particularly by offering a three-fold perspective on writing and a focus on L3. The initial assumption, based on previous research, is that the explicit engagement with cognitive processes of writing and writing strategies can help students to understand the complexities of writing as a cognitive task, exert more control over it and consequently improve text quality, write more fluently and develop more metacognitive writing knowledge. The design of the present study, which was carried out in order to test these assumptions, will be described in chapter 3.
3 Method

This thesis follows a mixed-method-approach, in which quantitative and qualitative research elements are combined\(^\text{13}\). In this chapter, an overview of the methods used is given. In the following sections, the study’s design, the context, the participants, the materials, the teaching procedure, the data, and ethical considerations are presented in detail. The various analysis procedures, however, are overviewed and discussed in chapters 4, 5 and 6.

3.1 Study design

The study was carried out in the natural environment of German classes at an upper secondary school and is thus located in the research field of classroom research (see for example Allwright & Bailey 1991; Dörnyei 2007; Mackey & Gass 2005).

Two German classes were taught during an intervention period of 12 weeks. One class was instructed in argumentative writing in L3 German (intervention class; henceforth IC) while the other class was taught according to the ordinary schedule (non-intervention class; henceforth NIC). The decision, which class should receive the intervention, was based on the number of students in each class. The bigger class was instructed, as there were more chances to find focus student candidates (see below).

The students’ writing is investigated from three different perspectives, which form the main pillars of this thesis: the perspectives of writing products, of writing processes and of metacognitive knowledge. Each pillar draws on different kinds of data and requires the use of different methods and analysis tools. The width of such an approach can be best accessed by making pragmatic choices regarding the use of qualitative and quantitative methods (Coe 2012; Creswell 2013). The three pillars represent a stepwise zooming-in from a wider and external to a more narrow and internal view on writing, that is, from the writing products over writing processes to metacognitive reflections. In this way, a comprehensive picture of L3 writing can be drawn.

The point of departure for investigating writing from these three perspectives is the potential influence of teaching writing and composition strategies. For the first pillar, the study of the writing products (see chapter 4), texts were collected in both classes at three points in time: before the intervention started, in the middle of it and after it had finished (see Figure 2

\(^{13}\) According to Dörnyei (2007) quantitative research generally refers to data collection methods, which result in numbers, are analysed by statistical methods and strive for objectivity. Qualitative research comprises the collection of open, non-numerical data, which are analysed in a non-statistical way. Subjective, contextual knowledge instead of objectivity is the target here.
Writing strategy instruction

<table>
<thead>
<tr>
<th></th>
<th>March 2014</th>
<th>June 2014</th>
<th>January 2015</th>
</tr>
</thead>
<tbody>
<tr>
<td>IC &amp; NIC</td>
<td>Text C1</td>
<td>Text C2</td>
<td>Text C3</td>
</tr>
<tr>
<td>Focus</td>
<td>Text G1</td>
<td>Text G2</td>
<td>Text G3</td>
</tr>
<tr>
<td>students</td>
<td></td>
<td>Text E</td>
<td>Text G4</td>
</tr>
</tbody>
</table>

**Figure 2. Overview of the sequence of data collection.**

for sessions and texts C1, C2, C3, C indicating class. These texts were analysed to investigate whether the writing strategy instruction had an influence on the quality of the students’ texts.

For the second pillar, the study of the writing processes (see chapter 5), the focus was narrowed down to a group of students in order to provide a rich description of L3 composing processes. Seven students from the intervention class (focus students) wrote five more texts each14 (see Figure 2 for sessions and texts G1, G2, G3, G4, E, G indicating German and E indicating English). These texts were written in individual sessions using keystroke logging and screen recording software15. Each of the first three texts was written at approximately the same time as the ones written in class. In addition, one text in English was written shortly after the intervention. The English writing session was included in the study design to judge the development of L3 German against the background of L2 English similar to the previously mentioned European Survey on Language Competence (European Commission 2012) (see chapter 1). Finally, a delayed post-test in German (G4) was written seven months later.

For the third pillar, the study of metacognition in writing (see chapter 6), the focus of the study was narrowed down even further. After completing their texts in the single sessions, the seven focus students reflected on their writing in stimulated-recall interviews, based on the previously produced screen recording. A qualitative in-depth analysis regarding metacognitive knowledge was carried out for three of seven focus students, whose compositions and reflections captured a variety of L3 writing approaches.

To contextualise and frame the current study, pre- and post-intervention questionnaires were conducted in both classes. These will not be used to answer any of the research questions, but they will provide contextual information and contribute to the interpretation of the results.

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14 When informed about the study, the students were told that their participation as focus students would comprise the additional workload of three writing sessions. The English and delayed German text writing sessions had not been planned from the beginning. Thus the participants were asked at a later point, if they were willing to take part in two additional sessions. Six participants agreed.

15 Note, however, that texts as products were also the result of these single sessions. They will be used to answer research question one.
As apparent from the description of the three pillars, a comparative approach will be combined with a single-group design. Text quality will be analysed in a comparative fashion including the IC and NIC texts, written under two different conditions, and the focus students’ texts. Even though this study does not follow a strict quasi-experimental design (see for example Dörnyei 2007 or Mackey & Gass 2005 for further discussion) and the number of participants is limited, it is assumed that these results can be used to draw some preliminary conclusions about the impact of the intervention on the text quality. However, due to the limitations mentioned, the degree of generalisations from the generated results and the external validity might be low16. In addition to this comparative approach in assessing text quality, a case study approach will be taken by investigating the writing processes of the seven focus students and metacognitive reflections of three of them in more detail. These two pillars represent rich descriptions of the characteristics of L3 learners and their writing development.

In order to study the complexity of second language learning, Mackey and Gass (2005) point to the benefits of classroom-based studies, involving multiple approaches, methods and techniques. By including different perspectives and designs, this thesis aims to take into account the multifaceted character of writing. In line with Stake (1995) it is argued that small-scale studies, as the present one, have the potential to confirm, question or specify already existing assumptions. For this reason, this study can contribute to the discussion about the specifics of writing in a third language and potential benefits of teaching composing and writing strategies.

3.2 Context of the study

Before the specific study context will be focused on, it is necessary to provide a general description of the L3 learning situation in Sweden. This is important in order to both relate the study’s results to potential contextual variables and to judge to what degree they might or might not be comparable to other L3 learning contexts.

As mentioned in chapter 1, English plays a special role in the Swedish educational system. For example, like the subjects Swedish and Mathematics, English is normally taught from grade one all through primary and secondary education. Thus, it is obligatory during the entire schooling period. Further, while all other foreign languages follow one syllabus for modern languages, there is a separate one for English, which stresses its
specific position. English also plays an important role in Swedish society as it has a high status and from early on, children are exposed to it to a considerable degree in their daily lives. Therefore, the acquisition of English in Sweden cannot be considered as a typical foreign language learning situation, because it takes place in formal as well as informal settings, there is generally a high language exposure, and English language skills are, to a certain degree, necessary for everyday life.

Learning a third language, on the other hand, can be described as more typical foreign language learning. It is restricted to the classroom, students start learning one of them at a later point in compulsory school and there is hardly any exposure outside the formal educational context. Hence, there is no necessity to learn them in relation to the management of daily routines. As a consequence, it can be argued that Swedish students’ first experience of learning a foreign language in the traditional sense is when they learn their L3’s. This would make the conditions more comparable to L3 learning in bilingual settings. However, the difference is that both languages are treated as foreign languages in educational settings, which easily leads to misleading assumptions and comparisons regarding L2 and L3 learning by the students. This, in turn, is likely to have a negative impact on decisive factors such as students’ attitude, motivation and self-perception when learning L3’s.

The present study was conducted in an upper secondary school in a medium-sized Swedish town. The participants had spent nine years at different compulsory schools in the surrounding area of that town and changed to this specific secondary school a few months before the study started. Every student has had three or four years of German instruction by the beginning of upper secondary education. At that stage, students’ skills are expected to be approximately at level A2 (CEFR 2001). However, the students’ proficiency level in this study varied largely. At the beginning of the tenth grade, students have a choice of a number of specific study programmes, which they follow all through the three-year upper secondary education. German instruction takes place across these programmes. Hence, the classes are attended by students with very different interests and accordingly, educational focal points. The German lessons took place twice a week for 75 minutes each and with the same teacher. The teacher was a Swedish mother tongue speaker and present in the classroom in most sessions during the intervention.

The students’ answers in the pre-intervention questionnaire (see also section 3.4.1) illustrate the major differences between L2 and L3 mentioned earlier. The majority judged their skills in English between average and very good, in German from not that good to average. Approximately half of the students reported to like learning German and that they would also like to learn more. The students were also asked where they would make use of their foreign languages. For English, a number of different occasions were
Method

listed: primarily at school, but also at home and with the family, when going abroad, on the Internet, when reading books, when watching TV and playing computer games, when listening to music or even when talking to friends. German was almost exclusively used at school. Regarding their motivation to learn German, the two most frequently given answers were that students would gain extra credit points at school, which would increase the chances to be admitted to tertiary education, and that they would like to be able to talk to native speakers of German. Understanding German culture, literature, art and movies, using German at potential future work places or earning reputation by being able to speak German were not main rationales to engage into learning this language. These answers indicate that the L3 learning situation in Sweden is difficult and special in the sense that the L2 English takes a very strong position in students’ lives, which in turn has an impact on several aspects in their L3 learning.

Besides language and learner related aspects, it is relevant for this study that the school, in which the project took place, provides every student with a laptop and permanent Internet access in school. The students are allowed to use the Internet and take the opportunity to consult various kinds of language-related online sources when working on classroom learning assignments like in foreign language classes.

Finally, it is of importance for the comprehensive understanding of the study setting that I carried out the specific writing instruction. Therefore, my own person became part of the study context and the interpretation of the study’s data cannot be distinguished from my own background (Creswell 2009). The subjectivity, which comes along with this, needs to be discussed in order to help the reader to understand descriptions and results of this work (see for example Dörnyei 2007).

I am from Germany, where I lived until the beginning of my PhD studies. German is my mother tongue and I have a degree in German as a foreign/second language with a focus on teaching and learning. My contact to the students during classroom observations and teaching lasted for several weeks and our relationship can be described as trustful and friendly after a short time. Creswell (2013) suggests that it is crucial to avoid establishing a hierarchical power relation between researcher and students. From the beginning of the project it was my aim to work against such a development, for example by discussing our common experiences in learning a foreign language and feelings of insecurity or even anxiety, which often come along with this learning process. These reflections became a routine all through the

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17 In this study, online sources refer to any language-related website which provides tools or information considered useful by the language learner, for example online dictionaries, translation tools, grammar websites, foreign texts or forums.
project. It was my goal to reduce the distance between the students and myself in order to be able to work with them on their language competence with the least possible inhibitions from an early point on. The fact that I was only about 12 years older than the students perhaps facilitated these attempts. The relationship to the participating teacher was friendly and cooperative throughout the whole study.

3.3 Participants
Two German classes participated in the study. There were 26 students in the intervention class and 17 students in the non-intervention class. The majority of students were L1 Swedish speakers. Three students stated having more than one language as their L1 (Swedish/Finnish, Swedish/Sami, Swedish/Finnish/Kurdish). For all students, the first foreign language learned in a formal school environment was English.

When entering upper secondary school, the students took a diagnostic test in German\(^\text{18}\). This test consists of a number of grammar exercises and vocabulary tasks, as well as a short writing and reading comprehension task. In this test, the highest possible score was 85 points (100 %). The mean score of the intervention class was at 50.6 points (61.1 %; SD 16.9) ranging from 12.5 to 85.0 points. The mean score of the non-intervention class was 46.8 points (56.8 %; SD 13.5) ranging from 23.5 to 73.0 points. These results suggest that the intervention and the non-intervention class were at approximately the same proficiency level. When comparing the scores across exercises for both classes, no value indicated a particular strength or weakness within any of the tested categories.

At the beginning of the teaching period in the intervention class, all students were offered the opportunity to write additional texts outside class. They were told that this was a chance to improve their language proficiency, as they would get feedback on their writing processes and products. They were also informed that this was part of the data collection and that they could withdraw their participation any time. Seven students, four female and three male ones, volunteered to take part in these sessions and their pseudonyms are Hilda, Ida, Mia, Sara, Henry, Per and Tom. The result from the diagnostic test for the focus students as a group was 65.6 (77.2 %; SD 14.1) and the range was between 43.0 and 85.0 points. Thus, the results suggest that the focus students’ proficiency level was slightly higher than the

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\(^{18}\) This non-standardised test is aimed to indicate if it is advisable for the respective student to continue L3 German at secondary school. If the language proficiency is not sufficient according to the teacher, the student is offered other alternatives, for example starting another foreign language. It is the student’s own decision whether to continue the L3 or choose another language. The focus students were all advised to continue L3 German.
average of the two German classes. From the seven focus students, Henry, Hilda and Mia were the ones chosen as case studies in section 5.3.2 and chapter 6. Figure 3 gives an overview of the study participants. Besides the linguistic proficiency assessed in the diagnostic test, some indications about previous experiences of learning and writing in German, English and Swedish were gained from the questionnaire data (see also section 3.4.1 below).

Students indicated to have most writing experiences in Swedish, followed by English and least in German. Accordingly, the students expressed insecurity regarding language production in German in general, but particularly in writing texts and applying writing strategies. When asked what text types they had written before, the results for both classes suggest that particularly for German, descriptive text types, like letters or short narratives, had been practised, while argumentative texts had never or seldom been written. However, all genres had been practised more in English and much more in Swedish. The students in both classes also stated that they had less knowledge about the characteristics of certain text types, such as argumentative texts, in German than in the other two languages. It can be assumed that previous writing experiences of the two classes in German were comparable insofar as students consistently stated that argumentations had not been dealt with in German instruction, but that they were acquainted with the genre through other languages. This was the main reason for choosing the text type argumentation in this study (see also section 4.1.1 regarding the choice of text type).
3.4 Material and tools
In order to collect the data for this study, different types of materials were used. These are described in this chapter.

3.4.1 Student questionnaires
All students received a questionnaire before the intervention started and one after it had finished (see Appendix A). They were anonymous, but coded and written in Swedish. In the first questionnaire, personal information was obtained, for example sex, age, residence, number of years of learning German, where the students had learned languages, where they used languages and a ranking of their assumed competence in different languages. The themes in the two questionnaires covered the topics autonomous learning, foreign language learning, learning German and writing in different languages. The questionnaire distributed after the intervention differed for the intervention and the non-intervention class. In the intervention class, questions regarding the students’ opinion about the intervention were added. Further, for both classes some questions from the original questionnaire about autonomous learning were left out.

The majority of the 25 questions in each questionnaire were multiple-item-rating\textsuperscript{19} questions (Cohen et al. 2011). Seven questions were formulated openly. They always referred to a previous closed question, which assured that the students had some orientation about what the questions aimed for. The weakness of questionnaires, especially with closed questions, is the fragmented picture, which they draw from the participants and therefore, reduce the complexity of their opinions (Mackey & Gass 2005). In addition, it is not controllable to what degree the participants understand the questions correctly and reply to them honestly (Dörnyei 2003).

3.4.2 Writing topics
Texts as products will be used to answer the first research question relating to the development of text quality under the influence of composition and strategy instruction. All texts in the IC and the NIC class were written in German and the topics were:

Text C1: “Handys und Computer sollten in der Schule verboten sein, weil sie die Schüler vom Lernen ablenken.” ("Mobile phones and computers should be forbidden at school, because they distract students from learning.")

\textsuperscript{19} Multiple refers to the use of different items in order to describe the same construct. The aim is to avoid guiding answers through a certain word choice and therefore, control more for the consistency of answers. The scores of different items are subsumed in one overall score (Dörnyei 2003).
Text C2: “Tschüss Hotel Mama! Mit 18 sind ‘Kinder’ erwachsen und sollten aus dem Elternhaus ausziehen und selbstständig werden.” (”Bye-bye Hotel Mum! At the age of 18 ‘kids’ have become grown-ups, should move out and become independent.”)

Text C3: “Das Internet – die beste Sache seit Erfindung des Fernsehens?” (”The Internet - the best thing since the invention of television.”)

The focus students wrote four additional texts in German (G1, G2, G3, G4) and one in English (E). The topics of these texts were:

Text G1: “Jugendliche über 16 Jahre sind alt genug, um Alkohol kaufen zu dürfen.” (”Teenagers above 16 years are old enough to buy alcohol.”)

Text G2: “Fleisch ist ungesund. Deswegen sollte es in Kindergärten und Schulen nur vegetarische Speisen geben.” (”Meat is unhealthy. For this reason, nursery schools and schools should only serve vegetarian meals.”)

Text G3: “Fitnessstudios, Diäten, Schönheitsoperationen, Tattoos, etc. — der eigene Körper und ‘gutes’ Aussehen sind in der heutigen Gesellschaft wichtiger als Charakter und Intelligenz.” (”Gyms, diets, plastic surgery, tattoos, etc. - in today's society the own body and 'good looks' are more important than personality and intelligence.”)

Text G4: “Soziale Netzwerke (wie Facebook, Twitter, Instagram, Tumblr, etc.) sind für Jugendliche gefährlich.” (”The internet – the best thing since the invention of the television.”)

Text E: “The Internet - the best thing since the invention of the television.”

3.4.3 Keystroke logging software
The texts written by the focus students are not only available as final products, but their writing processes were also recorded by keystroke logging software. The generated data will serve to answer research question two, that is how students’ writing processes develop under the influence of writing instruction. Keystroke logging software is an observational method in writing research (Sullivan & Lindgren 2006a). It allows researchers to record the computer-assisted writing process while a text is being composed. It has been established as a method in writing research in order to investigate the composing of writers in different contexts, for example journalist practices (Perrin 2003), professional writers (Leijten et al. 2014), writers with reading and writing difficulties (Wengelin 2007) or foreign language writers (Thorson 2000; Spelman Miller 2005) from a cognitive, linguistic, textual, strategy or native versus foreign language perspective. The main focus is on how a text evolves over time rather than what the final product looks like, which has traditionally been the focus of writing research (Leijten & Van Waes 2013; Spelman Miller & Sullivan 2006).

Using keystroke logging software enables the participants to write in the ordinary word processing program, while the logging tool is active in the background. The software logs all keystrokes, mouse movements and pauses,

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20 This task was originally in English. The same topic was given for text C3, but in German.
thus enabling researchers to reconstruct how the text evolves. The basic assumption using keystroke logging software is that studying writing fluency, for example through measures of pauses (Spelman Miller 2000a) or revisions (Lindgren et al. 2008; Lindgren & Sullivan 2006; Thorson 2000), can reveal aspects of cognitive processes active while writing (Leijten & Van Waes 2013).

In this study, the keystroke logging software Inputlog (Leijten & Van Waes 2013) was used. For each writing session, it generates a so-called logfile, in which all information about the writing session is stored and every activity is identified with a position and a time stamp, for example keystrokes, mouse movements and window switches. Different kinds of in-built analyses can be run on this logfile, such as the general analysis, summary analysis, pause analysis, revision analysis or source analysis. The generated results can then be transferred to other calculation or statistical programs for further analysis. For this study, all the above mentioned analyses were used to obtain the required information. Further, a so-called process-graph, which can be generated by Inputlog and offers a visual representation of the writing process, is used in parts. The specific choices and analysis procedures will be explained in detail in section 5.2.

While the advantages of this method are clearly its unobtrusiveness and the reliable generation of large amounts of data, the challenge of using the software is to build a connection between generated results and cognition and hereby, reconstruct the complexity of the writing process (Leijten & Van Waes 2013). Introspective methods, such as think-aloud protocols (Cumming 1990) or stimulated recall (Lindgren & Sullivan 2003; Sasaki 2000), are considered as useful complement to keystroke logging software in order to obtain direct information from the writers (Spelman Miller & Sullivan 2006).

3.4.4 Screen recording software
Screen recording software is often used as a complement to keystroke logging software (for example Xu & Ding 2014) and provides another source of information about learners’ engagement with their texts (Seror 2013). Thus, it has the potential to capture “visible phenomena that might otherwise have gone unnoticed in digital writing” (Geisler & Slattery 2007: 187). Screen recording software runs in the background and generates video-based files of users’ activities.

In this study, screen recording was also chosen as a complementary data collection method besides Inputlog21. It served in the investigation of the

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21 In this study, the software Camtasia Studio, developed by TechSmith© Cooperation, was used, as it allows an easy and convenient handling.
writing process, as the recordings were analysed regarding the students' search behaviour and strategies in online sources. In that way, the interplay between text and writing, search queries, generated search results and students' strategies were reconstructed, which would not have been possible with an analysis of the Inputlog files only. In addition, the generated files served as stimulus for recall-interviews.

3.5 Procedure
At the beginning of my presence in the intervention and the non-intervention classes, I was introduced by the teacher, who informed the students that I am a PhD student originally from Germany and that I was interested in their German classes and therefore, would be attending them regularly. Before my own teaching in the classes began, I attended the lessons once a week and conducted “participants-as-observer” observations (Johnson & Christensen 2012: 209) for about two months. These visits allowed me both to observe the activities in the classroom, and to participate in these activities where appropriate and wanted by the teacher. For this study it seemed crucial to be able to judge the learning and teaching situation and to allow the students to get used to the presence of another person. By this relatively long observing phase I hoped to reduce observer effects and/or Hawthorne-effects (see for example Mackey & Gass 2005; Wragg 1999) as much as possible. After a few weeks, it was my impression that my presence in the classroom had nearly become a routine and I either sat at the back of the classroom or helped students with their exercises and tasks. After these observations, the teaching period in both classes started.

3.5.1 Teaching in the intervention class
The intervention comprised 10 lessons, which started out in March 2014 and ended in June 2014. As previously mentioned, the students had two 75-minute German lessons per week, of which one was dedicated to the intervention.

In general, the students accepted me well as a temporary teacher. The language used during the lessons was flexible. I asked the students to try to express as much as they could in German, but they were free to switch to English or Swedish when necessary. I also told them that my Swedish was only very basic and that I could listen and understand much better than I could talk. Due to the fact that the students’ German was not advanced enough to understand complex explanations about writing processes, writing strategies and similar issues, I gave these explanations in English. The teaching material was however in German. This seemingly complicated classroom language policy quickly turned out to be quite convenient for the given purpose, even though there were a few students, who always preferred
Table 6. Overview of the intervention.

<table>
<thead>
<tr>
<th>Main theme</th>
<th>Contents</th>
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</table>
| **Introduction**  | • organisation, content and goals of the intervention  
|                   | • reflections about experiences in foreign language writing  
|                   | • discussion about writing as a (demanding) process which consists of different (sub-)activities  
|                   | • getting to know writing strategies                                                                                                                                 |
| **Text C1**       | “Mobile phones and computers should be forbidden at school, because they distract students from learning.” |
| **Text type & genre** | • comparison of text types, activation of previous knowledge  
|                   | • intensive work with purpose, structure and linguistic markers of argumentative texts |
| **Planning**      | • exploration of different types of planning: brainstorming, mind map, outline  
|                   | • exercises  
|                   | • discussion about how the planning types worked for the students |
| **Repetition**    | • repetition of previous lessons  
|                   | • exercises with focus on outlining argumentative texts |
| **Formulation**   | • discussion about the formulation phase in writing (fluency and interruptions)  
|                   | • introduction of and discussion about different compensation strategies: “move-on”, simplifying, online language resources (including a discussion about their reliability)  
|                   | • exercises |
| **Revision**      | • discussion about the importance of the revision phase in writing  
|                   | • students’ revision of their own texts and texts by classmates  
|                   | • the importance of knowing one’s own “language problem areas” |
| **Repetition**    | • summary and repetition of the intervention contents  
|                   | • focus on linguistic markers of argumentative texts, writing an outline and simplifying sentences |
| **Text C2**       | “Bye-bye Hotel Mum! At the age of 18 ‘kids’ have become grown-ups, should move out and become independent.” |
| **Text C3**       | “The Internet - the best thing since the invention of television.” |

To express their thoughts in their L1. In the lessons, in which the students wrote texts C1, C2 and C3, approximately one hour was spent on the writing task. In Table 6, an overview of all lessons in the intervention class is presented (see Appendix B for a detailed description of each lesson). The general structure of the intervention was inspired by suggestions and strategy training programmes described in the literature (see section 2.2.3).

3.5.2 Teaching in the non-intervention class

The lessons in the non-intervention class took place during the same time period as the lessons in the intervention class. Here I also participated once a week in the German lessons. The difference was that the class teacher
continued to give lessons according to her plan and I supported her in different aspects. Thematically, these lessons were focused on the introduction and application of new grammar and vocabulary. For example, during my presence in this class, the students worked with different kinds of verbs and pronouns, tenses and cases. At the beginning of the lessons, these grammatical aspects were repeated, explained explicitly by the teacher and applied by the students in exercises, such as short writing tasks or cloze texts. Additionally, the teacher included both reading and listening comprehension exercises, for example in relation to introducing German culture and comparing it to Sweden. I helped the students when they worked on their exercises, gave feedback on their texts and explained grammar issues. This class wrote texts C1, C2 and C3 at approximately the same points in time as the intervention class. The students were also allowed to write for one hour, were instructed that they could use paper and pen to plan their texts and that they should pay attention to the keyword “Discuss” in the task description. Feedback on these texts was given regarding grammar and spelling.

3.5.3 Working with the focus students
In addition to the lessons in class, I met six focus students five times and one focus student three times. These single writing sessions followed the same principle throughout the whole study. The participants could suggest when to meet, which in most cases was after their school day had finished. A separate room was booked for two hours, which were exclusively spent on the writing task and the interview. I was the only person present and no further instruction in writing was given to the students.

The students were initially given a comprehensive explanation about the procedure of the individual sessions. This is in line with Dörnyei’s (2007) suggestions. They were told that the whole writing session on the computer was recorded with specific software and would result in a short movie, which we would watch and talk about afterwards. The topics of the argumentative texts, which the interviews were based on, were given to the students right before they started writing. They were provided with pen and paper and could make a written plan for their texts if they wanted to. The time frame was, similar to the classes, roughly defined as one hour, but the students were told that they could decide when their text was finished. I was present throughout the whole session and the students could ask questions when they needed information or help. Additionally, they were provided with Internet access and they were aware of that. I asked them to write the text in the way they used to do it during a German lesson.

Directly after finishing the writing task, a stimulated-recall interview started. Stimulated recall is an introspective method, which uses specific stimuli to help the participants remember and verbalise what they have been
thinking while carrying out an activity (Mackey & Gass 2005). In this study, the previously recorded screen recording was used. All interviews were audio-recorded, which the students had agreed on. I had explained to the participants that while watching these recordings, I was especially interested in what they had thought about during writing, what experiences they had made and how they tried to solve the writing task.

This procedure was exhausting for the students, especially after their school days. Nevertheless it was important to conduct the interviews directly after the writing session due to the limited capacity of short-term memory. If the time distance gets too long and information needs to be retrieved from the long-term memory, the risk increases that the activity is only partially remembered and participants try to fill gaps with what they think they are expected to say. Thus, with a growing time distance between accomplishing the tasks, the reliability of the method decreases (Mackey & Gass 2005).

The recordings were not replayed in original pace but approximately 20% faster. This allowed for pausing the recording to discuss points of interest. Initially the students reacted shyly to this unknown task and the answers were short. After getting used to the procedure, the students’ confidence and communicativeness improved. They were encouraged to express everything that came to their minds and, as Dörnyei (2007) suggests, free in their language choice. Generally the questions were formulated in an open way in order not to lead the students’ answers into a specific direction or to influence them by a specific choice of words (Dörnyei 2007; Gass & Mackey 2000). Examples of questions are “Can you remember what you thought here?” or “Here you take a break, can you remember why?” Even though the general aim is to better understand participants’ cognitive processes and resulting activities, it is impossible to draw a complete picture of their cognitive processes by this method since a number of them are unconscious or too complex to be verbalised (Cohen 1998).

### 3.6 Data

In this study, a mixed method approach was used and different types of data were collected in order to answer the three posed research questions. This section provides an overview of the complete data set and presents the selection criteria, which led to the final choice of data to be analysed. Table 7 gives an overview of the data collected in the intervention and non-intervention class. Altogether 112 texts were written. The criteria for the choice of texts to analyse were that the writers were not focus students and

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22 In writing tasks G1, G2 and G3, all students spoke Swedish, in writing tasks E and G4, all students spoke English. I used English during the interviews.
that texts C1 and C3 were available from the same student. This resulted in 26 texts – two each from five IC students and eight NIC students. They were compared with each other, and also with the 33 texts written by the focus students (see Table 8). Taken together, these 59 texts will serve to answer research question one: How is the quality of L3 German texts influenced in relation to the 12-week classroom intervention focusing on teaching composing and writing strategies?

The 33 logfiles and screen recording files were analysed in order to investigate the focus students’ writing processes and answer research question two: How do the writing processes of the seven focus students develop in relation to the 12-week classroom intervention focusing on teaching composing and writing strategies?

Finally, out of the seven focus students, three were selected for a detailed analysis of metacognitive reflections. The selection was based on the analyses of students’ writing processes. The criteria were that one student’s writing process development should represent the group trend, one student’s writing process should remain relatively stable throughout the intervention and one student’s writing process should display changes throughout the intervention. This selection resulted in 13 interview transcripts from three students (five from two students, three from one student), which were analysed in order to answer research question three: How can the metacognitive knowledge of three of the focus students be described in relation to the 12-week classroom intervention focusing on teaching composing and writing strategies?

Table 8. Data from the seven focus students.

<table>
<thead>
<tr>
<th></th>
<th>texts</th>
<th>logfiles</th>
<th>screen recordings</th>
<th>recall-interview recordings</th>
</tr>
</thead>
<tbody>
<tr>
<td>Text G1</td>
<td>7</td>
<td>7</td>
<td>7</td>
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<tr>
<td>Text G2</td>
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<td>Text G3</td>
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<tr>
<td>Text G4</td>
<td>6</td>
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<tr>
<td>Text E</td>
<td>6</td>
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<tr>
<td>Σ</td>
<td>33</td>
<td>33</td>
<td>33</td>
<td>33</td>
</tr>
</tbody>
</table>
3.7 Ethical considerations

Ethical issues in Applied Linguistics are rather subtle (Johnson & Christensen 2012). When working with mixed methods, such as questionnaires, keystroke logs and interviews, sensitive participant information can be revealed.

If research involves human beings, it is advisable or even mandatory in Sweden to write an application for ethical approval (which is verified by the regional ethics board). For this study, ethical approval was obtained from the regional ethics committee Umeå (14 May 2013, nr. 2013-166-310). The committee had no objections to the data collection methods, but a number of suggestions, which were followed.

As is common and also required by law, the students were informed about the project in oral and written form. They had the chance to ask questions about the study and they were not promised any reward for their participation. Further, the students were assured voluntariness and the permanent right to withdraw from participation in the study. Their anonymity was assured by using pseudonyms and removal of sensitive information in the data presented. A written consent form in Swedish (see Appendix C) was handed out, which was signed by all students.

It has been discussed in the literature if too comprehensive informing might influence students’ answers and behaviours and therefore affect the validity of the research results (Dörnyei 2007; Mackey & Gass 2005). In the present study, informing the participants explicitly about the goals of the project, that is the improvement of their writing skills in L3 German, did not contradict the research goal to investigate the influence of writing instruction.

An ethical issue inherent in the research design is that one of the participating classes does not receive writing instruction (Creswell 2009; Dörnyei 2007). In this study, the non-intervention class did not receive teaching in writing and the students were not offered to spend additional time on writing outside class. Therefore, the potential positive effects of the intervention were not made available to them. One possibility to approach this problem is to replicate the study with the class, which did not get writing instruction, at a later point. However, this option could not be taken into consideration, as the data analysis and a replication were not within the given time frame of this PhD project. A second option to counteract such an inherent dilemma of the study design is to support the non-intervention class in another way (Creswell 2009). Thus, I was also present once a week as a second teacher in the non-intervention class. As a mother tongue speaker of German I could contribute to these classes, for example in oral communication tasks and various grammar exercises.
A further relevant ethical question concerns the possibility of negative consequences of the treatment for the intervention class. Even though the goal was to positively influence writing skills, there was no guarantee that this would be the result. Due to the specific focus on one skill, the teacher could not follow her teaching plan to the same extent as usual, which means that there was a risk of neglecting other skills. From this circumstance, another negative development could have been expected, that is that through the repetitive activity of writing, the students might lose their interest and motivation in writing in a foreign language instead of fostering it.

Using only one out the two weekly German lessons for the teaching of writing was meant to minimise these potential risks as far as possible. Furthermore, throughout the whole project, there was a close cooperation with the teacher and lesson contents could be arranged in cooperation with her. The students also gathered content knowledge for the intervention in different classroom arrangements, which made them practise other skills implicitly.

In the same way as the students, also the teacher was informed about this project and signed a written consent form (see Appendix D).
4 Quality of argumentative texts in L3 German

Texts are often the results of lengthy writing processes. In this thesis, these final products will be focused in the first step. There are two main reasons for this. First, providing text quality results facilitates judging and discussing writing processes more comprehensively. As several writing process studies suggest, including text quality has the potential to add another “indicator of the effectiveness of the process” to be investigated (Roca de Larios et al. 2001: 528; see also Rijlaarsdam & Van den Bergh 1996). Second, this study was conducted in an authentic school setting, in which the text as final product is mostly prioritised over the process. Therefore, the quality of the texts produced in this study may be of particular interest for readers with a teacher perspective.

First, a theoretical overview of text quality in foreign language writing is given, followed by a description of the analysis procedure. Finally, the results are presented and discussed.

4.1 Defining and measuring text quality

Besides writing process research and socio-cultural approaches regarding the writers themselves and their contexts, the investigation of writing products is another way to gain knowledge about how writing is learned (Cumming 2001; Hyland 2011; Polio 2008; Roca de Larios et al. 2002). Perhaps more often than the other two elements of the writing activity, processes and socio-cultural aspects, research on writing products is considered a thorny issue as quality markers need to be defined. Quality markers are in turn considered to be indicators of learners’ underlying writing ability (Olinghouse et al. 2012; Weigle 2002). Hence, there is a risk that if one aspect, for example grammatical accuracy, is the only criterion for rating text quality, the implication is that grammatical knowledge is equivalent to writing ability. If text content and organisation/coherence are the distinguishing criteria between good and poor texts, then it might be concluded that the application of genre and rhetoric knowledge is the decisive factor of writing skill.

Indeed, most people would agree that several factors are involved in defining text quality. However, these issues need to be defined when choosing and explaining rating procedures as well as when drawing conclusions about writing ability from rated texts (see section 4.2 for details about text rating procedures). In order to discuss the perspective, from which the quality of texts was judged, the broad distinction between (1) texts as objects and (2) texts as discourse (Hyland 2011) is usually referred to,
alternatively the (1) micro and (2) macro perspective on texts (Cumming 2001).

A core assumption of the first approach is that “texts are autonomous objects which can be analysed and described independently of particular contexts, writers, or readers” (Hyland 2011: 21). Hence, texts are formations, built together by a number of formal properties, such as words, clauses and sentences, and they are arranged according to grammatical rules. Accordingly, writing ability would imply being able to compose grammatically correct and syntactically complex texts. These properties make it apparently easy to specify what a good text is, measure these aspects (for example by counting the number of words, the number of sub-ordinated clauses or the number of spelling or grammar mistakes) and draw conclusions about a writer’s performance or development over time.

However, choosing accuracy and complexity as the only indicators of good writing is questionable, as formally correct texts are not necessarily good ones (Hyland 1996). From the perspective of texts as discourse, written pieces are judged within a given communicative situations. That means that a text is being produced within a certain rhetorical context, with an intended readership and with a communicative goal. In educational settings, giving students an imaginary context, in which the writing is situated, often simulates these communicative contexts. This approach has also been called the genre approach (Swales 1990), which categorises different classes of communicative events (such as texts) according to the features that they share (for example their purpose). Within this framework, linguistic choices are looked upon as means to certain ends, that is, expressing and organising thoughts for an intended readership and in order to reach a particular communicative goal. Assessing texts within this paradigm takes into consideration how content, organisation, coherence and reader-orientation of a text fit the given communicative context (Cumming 2001; Hyland 2011).

Most researchers and teachers would probably agree that a holistic view on texts, which implies both formal and discourse aspects of a text, offers the most appropriate reflection of students’ overall writing ability. Holistic text rating scales are the most common way to assess overall writing ability (see for example Van Weijen et al. 2008) (see section 4.2 for a discussion of holistic rating scales). Alternatively, a number of individual measures are chosen, which reflect a comprehensive view of text quality. Sasaki (2000) for example derived the composite scores of her study with L2 writers by assigning sub-scores for content, organisation, vocabulary, language use and mechanics.

Nonetheless, research is not always aimed at investigating overall writing skill, but specific aspects of it. This is particularly important in L2 writing, because there is often a discrepancy between L2 knowledge and all other knowledge resources related to writing a specific text. For example, adult L2
learners, having gained intellectual maturity and developed advanced writing skills in their L1, might not be able to transform their thoughts into linguistic forms in L2 due to limited linguistic resources. Further it might be of importance for instructional purposes to distinguish between text quality dimensions in order to find out what dimension is most prone to improvements under the influence of certain instruction. Insofar it seems justified to rate texts according to different text dimensions, for example grammatical accuracy, syntactic complexity, text organisation and content. Analytical rating procedures are most commonly used to assess such isolated text dimensions (see section 4.2).

4.1.1 Perspectives on L2 text quality
Regarding L2 writing, Polio (2008: 92) specifies eight different categories, according to which a majority of texts are rated: overall quality, linguistic accuracy, syntactic complexity, lexical features, content, mechanics, coherence/discourse features, fluency (in terms of ease of reading), and revisions (for example by comparing different drafts of a text). All of these categories can potentially be correlated to different independent variables, such as length of exposure to a specific language (Sasaki 2004), instruction (Sengupta 2000; Shaw & Liu 1998), or writing experience (Sasaki 2000). Moreover, different study designs have been chosen to present text quality of writers. Some studies contrast texts of L1 and L2 writers (Hinkel 2003; Kormos 2011), compare texts of writers in their L1 and L2 (Hirose 2003; Pennington & So 1993; Stevenson et al. 2006; Tillema et al. 2012; Van Weijen et al. 2008), texts of novice and/or advanced L2 writers (Raimes 1985; Sasaki 2000, 2002) or texts of L2 writers from a developmental perspective (for example text quality before and after an instructional programme) (Berg 1999; Lee 2002; Sasaki 2004).

Research has identified a number of general L2 text characteristics both on micro and macro level. In his review, Silva (1993) came to the conclusion, that when compared with their L1 counterparts, L2 texts are of lower quality due to a higher number of errors, lower lexical variation and less complex syntactic structures; they are in general terms “simpler in nature” (Silva 1993: 668). Cumming (2001), taking the perspective of L2 development, reports that with growing language proficiency, writers are able to improve accuracy, complexity and lexical variation in their texts.

In the investigation of L2 writing, most often learners are asked to write either narratives (Ellis & Yuan 2004; Pennington & So 1993; Raimes 1985) or argumentations (Lindgren et al. 2008; Sasaki 2002; Tillema et al. 2012). It has been argued that differences between these two text types are of importance, as the cognitive demands during writing and consequently the writing processes differ (Bereiter & Scardamalia 1987; Weigle 2002). The
Weigle (2002) argues that argumentative texts are the most difficult ones for writers, as they require the writers to generate original ideas. Most often, the writing theme is a controversial issue and writers are supposed to convince the assumed readership of their own view on the theme. In doing so, knowledge needs to be generated and transformed into arguments and potential counter-arguments, which in a logical and coherent way will lead to the intended communicative goal. Hence, writers have to create the string of an overall argument and consider a number of different textual aspects, such as the relevant information, audience expectations, and logical patterns of argument organisation (Grabe & Kaplan 1996). Despite their obvious difficulty, expository or argumentative texts are more frequently used in L2 writing studies involving text quality as a measure (Silva 1993), for example when comparing L1 and L2 rhetoric (Hirose 2003; Kubota 1998) or in relation to L2 proficiency and L1 writing ability (Sasaki & Hirose 1996), L2 meta-knowledge (Hirose & Sasaki 2000), L1 use during L2 writing (Van Weijen et al. 2008), types of revisions made during writing (Stevenson et al. 2006) and underlying writing processes (Tillema 2012).

In the present study the focus is on argumentative text writing. The main reason for this decision relates back to contextual information obtained from differences between texts with linear structure, such as narratives, and hierarchically organised texts, such as argumentations, are presented in an overview by Weigle (2002; referring to Vähäpääsi [1982]). An adapted version is shown in Table 9.

<table>
<thead>
<tr>
<th>Intention</th>
<th>Audience</th>
<th>REPORTORIAL DISCOURSE</th>
<th>EXPLORATORY DISCOURSE</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. To learn</td>
<td>Self</td>
<td>Notes, resume, summarise, outline, paraphrasing</td>
<td>Metaphors, analogies</td>
</tr>
<tr>
<td>2. To convey</td>
<td>Self/Others</td>
<td>Personal story, diary or letter</td>
<td>Personal, reflective essays</td>
</tr>
<tr>
<td>emotions</td>
<td></td>
<td>News, instructions, announcement, biography, science report/experiment</td>
<td>Expository writing (academic essay, book review, commentary)</td>
</tr>
<tr>
<td>3. To inform</td>
<td>Others</td>
<td></td>
<td></td>
</tr>
<tr>
<td>4. To convince/persuade</td>
<td>Others</td>
<td>Letter of application, advice, personal views and opinions</td>
<td>Argumentative/Persuasive writing</td>
</tr>
</tbody>
</table>

Table 9. Model of writing discourse (after Weigle [2002: 8], originally in Vähäpääsi [1982]).
the questionnaires. The students in this study were inexperienced in writing argumentative texts in their L3 German, even though they knew the genre from other language classes. This circumstance was useful in ruling out the possibility of different pre-intervention experiences and also helped in understanding how much use students made of their knowledge from learning other languages. Further, argumentation is a genre, which has often been used in L2 writing studies and enables certain across-study comparisons. In addition, the choice of writing argumentative texts is motivated by the research question (see section 1.1), as it was of interest whether a high cognitive load while writing in an L3 can be reduced by metacognitive reflections and writing strategy instruction, a reduction that consequently leads to improvement of texts.

4.1.2 Writing instruction and L2 argumentative text quality

Of particular interest to the present study are those investigations that rated text quality of L2 argumentative texts from a developmental perspective under the influence of a particular instruction programme. Shaw and Liu (1998) for example compared essays of university students before and after a three-month full-time academic writing course. One group of students wrote descriptive texts, another group wrote persuasive texts. The authors mainly focused their analysis on how the students were able to fulfil the formal demands of written academic language. The results indicate that students’ written English changed in that it became less like speech and more like conventional academic English, for example by increasing the amount of passive constructions and decreasing the amount of spoken formula and attitude markers (Shaw & Liu 1998: 245). Further, the authors observed an increase in genre awareness relating to the two chosen text types.

Other relevant studies were carried out by researchers in the Japanese higher-education context. In all of them an instructional approach was chosen to research the development of different dimensions of text quality. In Hirose and Sasaki (2000), meta-knowledge was taught in L2 English writing classes at a Japanese university for three months. The students wrote pre- and post-course expository compositions. Even though students improved their meta-knowledge significantly, the results did not show any positive impact on the total score or any of the five tested sub-scores, that is, content, organisation, vocabulary, language use and mechanics (the same sub-scores were used in all following reported studies by Sasaki). The researchers speculate that the students were not able to apply their knowledge within the short time span of the study.

In another study, Sasaki (2000) provided novice writers with six months of process-writing instruction, including for example discourse patterns, paragraph writing as well as planning and revising. In the study, the students made some improvements in terms of vocabulary and language use.
However, the differences between the two conditions were not statistically significant. In a later replication study with a larger number of participants (Sasaki 2002), the overall comparison of results showed that the writers were able to improve their writing significantly based on the total scores and all sub-scores.

As a whole, these studies show that writing-process instruction has the potential to improve aspects of L2 text quality. However, the results indicate that sub-scores for formal text aspects appeared to be more prone to change. In writing process research it has been argued that L2 writers are constrained by capacity limitations of working memory in the allocation of attentional resources. Often a focus on the formal aspects of a text is developed, as L2 learners do not yet have the ability to retrieve vocabulary and formulate language automatically. This form focus is at the expense of the content and discourse features of the text, which means that learners do not consider text organisation, rhetorical structures or writing goal as much as they might do in their L1 (see chapter 5 for the process perspective of writing). Hence, when students attempt to improve their compositions during an instructional programme, they might invest most of their effort in formal text aspects, which might in turn lead to a partial disregard of content and discourse features. It is particularly the development of these two text dimensions that the current project puts focus on in both the instructional programme and the text quality analysis.

4.2 Text rating procedure in the current study
In most text quality studies, either an analytic or a holistic rating procedure is chosen, depending on the “construct being measured” (Weigle 2002: 72). The advantages and disadvantages of both procedures have been discussed comprehensively (Rijlaarsdam et al. 2012; Van Steendam et al. 2012; Weigle 2002).

In this study, there are two sets of texts, which were both analysed holistically and analytically. The first set is of main interest for the present study and consists of all 33 texts written by the seven focus students. The second set of texts comprises texts written by intervention class and non-intervention class students, which met the selection requirements (see section 3.6). This resulted in 26 texts by five IC and eight NIC students, who wrote two texts each. In Table 10, a summary provides an overview of the text sets.

The analytic rating procedure departs from the assumption that different dimensions of text quality can be isolated from one another, for example grammar, rhetoric or organisation. A rating can therefore be specifically focused on one or more dimensions of interest. Different traits need to be defined in order to describe a particular dimension in further detail. In case
Table 10. Applied rating procedures on the two sets of texts.

<table>
<thead>
<tr>
<th>Text Description</th>
<th>Analytical text rating</th>
<th>Holistic text rating</th>
</tr>
</thead>
<tbody>
<tr>
<td>33 texts written by the 7 focus students in single sessions</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>26 texts written by 13 students (5 intervention and 8 non-intervention) in class</td>
<td>X</td>
<td>X</td>
</tr>
</tbody>
</table>

of text organisation, such a trait could be the presence of an introduction and a conclusion or the degree of coherence. For each trait, a number of scores can be given depending on how well the requirements are met. Finally, all scores for the different traits are subsumed under one main score and represent the quality of a text regarding the specifically chosen text dimension (Rijlaarsdam et al. 2012).

Two issues have to be considered when using this method. Firstly, it is a controversial question whether an analytical rating procedure, which focuses on content and organisation of argumentative texts, should be applied on texts of writers, who were not instructed in those aspects, as it seems self-evident that their texts would achieve a lower rating than the texts of the instructed students. However, when testing instructional practices and their potential impact on students’ performance, it remains the most suitable procedure in order to make claims about the instruction’s efficiency. Secondly, applying an analytical rating procedure often implies neglecting a number of other text features, which in turn presupposes a rather narrow perspective on text quality. For example, a text of poor quality according to an analytical rating scheme might in fact be of average or good quality, when more text dimensions are taken into consideration.

In this study, the analytical rating procedure focusing on content and organisation of argumentative texts (see Appendix E) was chosen because these aspects had been the focus of instruction. However, it cannot be excluded that other text quality aspects changed during the period of instruction. For example, in order to understand whether other writing domains have suffered or benefitted from the particular instruction, it would have been worthwhile to investigate grammatical accuracy or sentence complexity, too. However, the high within-class-variability of linguistic proficiency (see section 3.3) might have made conclusions about these aspects rather difficult. Therefore the analytical rating was focused on content and organisation, and additionally a holistic rating procedure was applied, which may reflect a potential development of overall text quality.

Holistic text rating does not isolate different text dimensions, but subsumes them in one main score, which is considered to represent the overall text quality (Van den Bergh et al. 2012; Weigle 2002). Usually, the more aspects are subsumed in this score, the more generalisable are the
results regarding overall writing competence. However, the present study only looks at a small number of texts and generalisability is not primarily strived for. Instead, it is a matter of interest whether analytical and holistic ratings show a similar trend or not, that is if improvements in text content and organisation entail an improvement of overall text quality.

In order to observe the development of the writers’ texts over time, attempts were made to reduce possible rater, rating and task effects (Rijlaarsdam et al. 2012) for both rating procedures. Rater and rating effects refer to instability and variability within and among the raters and the employed rating procedure. In this study, two raters were chosen for each rating procedure (four raters altogether), which is in line with suggestions by Schoonen (2005) and Gebril (2009), who consider a minimal number of two raters as required to gain a valid text analysis.

In the analytical rating, one of the raters was a highly proficient near-native speaker of German with many years of teaching experience while the other one was a native speaker of German with little teaching experience. In order to mediate potential rater effects, the rating scale (a modified version based on Van Weijen [2009] and Olinghouse et al. [2012], see Appendix E) was discussed together with the raters before the individual rating started. After comparing and discussing the given scores, the rater agreement was at 94.14%. In the holistic rating, both raters were German mother tongue speakers, one with many years of teaching experience, one without any teaching experience. They were provided with an instruction sheet and a rating scale, which included benchmark texts (Blok 1986; Schoonen 2005; Tillema et al. 2012). These benchmarks were used for both focus student and class texts (see Appendix F). After comparing and discussing the scores, these raters reached an agreement of 65.38%. This rather low agreement might be due to the generally less structured rating procedure without defined traits, even though benchmark texts are considered to counteract these effects. There were no indications about under which condition the texts were written, that is, in the beginning or towards the end of the intervention. In both rating procedures, calculating the mean of both raters' ratings derived the final scores, in case they deviated from each other.

Besides effects caused by the raters and rating procedures, also the chosen task may influence the text quality score. Task effects refer to the problem of generalising scoring results from single tasks in specific genre to overall writing proficiency. It has been argued that more than one text in preferably more than one genre is needed to describe a learner’s general writing proficiency (Olinghouse et al. 2012; Van den Bergh et al. 2012; Van Weijen 2009). However, these conclusions assume a wide conceptualisation of writing. In this study, writing proficiency is conceptualised in a narrow sense (Rijlaarsdam et al. 2012) as exclusively argumentative texts were collected and conclusions to be drawn about writing skill will only refer to
argumentative text writing skill. Rijlaarsdam et al. (2012) problematise that narrow conceptualisations of writing in fact create a generalisation dilemma — if one cannot generalise across text genres, then one cannot generalise across writing topics either. Hence, theoretically hardly any generalisations about writers’ writing skills are possible. Even though topic knowledge is acknowledged as an important variable, in this thesis it is assumed that, despite inherent difficulties, it is possible to draw a number of conclusions about argumentative writing proficiency, if several texts about different topics are collected.

4.3 Results
The writing sessions and the respective texts within the actual intervention instruction period are referred to as G1–G3, while G4 refers to the delayed post-session seven months after the intervention. G1, G2, G3 and G4 are analysed from a developmental perspective, but G4 needs to be judged in the context of the mentioned time delay. The English writing session (E) took place shortly after G3. In the figures, the German sessions will be grouped together to show the development in this language, and E will be located furthest on the right side. An illustration in the top right-hand corner of all figures containing information about all writing sessions reminds of the actual sequence of the writing sessions in time (see Figure 4 as an example). In the next section, the results of the text rating procedures will be described and discussed.

First, the focus students’ results in the single sessions G1–G4 and E are presented from an analytical and holistic rating perspective. These values represent the development within the focus student group, which received both the intervention instruction and the extra writing exercise in the single sessions. Second, the results of the analytical and the holistic text quality rating from the intervention and the non-intervention class are presented.

Figure 4. Example of figure layout in all following result chapters.
4.3.1 Text quality of focus students’ texts

An overview of the writing products in terms of final text lengths in number of words in relation to writing time is given in Table 11, before the actual scores of the rating procedure are presented. As the students did not have a strict time or word limit, these values are not relevant for text quality per se. They are rather intended to give an impression of how long students wrote in general and how many words they produced until they considered their texts to be finished. Further, Table 11 gives a first impression of the variability among the students. This impression will be confirmed and strengthened in the following chapters.

The mean values in Table 11 show that within the first three writing sessions, which were of similar length, the students wrote longer texts in G2 than in G1 and decreased the number of words again in G3. In the delayed post-session G4, both the length of the writing session and of the text increased considerably. Furthermore, when given a comparable task in L2 English, the mean value shows that the students were able to produce more text in less time.

Figure 5 shows the mean values for students’ scores from the analytical rating. The maximum score for argumentative text structure and content was at 23 points. Figure 5 further depicts that in the initial writing session G1, the students’ mean text quality rating was at 13.3 points, which was the lowest point throughout the intervention. In the subsequent writing session G2, the produced texts received a higher scoring of 17.6 points, while in G3, this development reversed and dropped to 14.3 points. In the delayed post-session G4, again an increase in scoring up to 18.1 is noted, which is the highest score among all German writing sessions. In addition, it is shown that the final score for German exceeds the English one. As far as the development of writing German argumentative texts is considered, G3 represents a relative setback in the overall text quality progression.

Table 11. Participants’ writing times (minutes) and final text lengths (words).

<table>
<thead>
<tr>
<th></th>
<th>G1</th>
<th>G2</th>
<th>G3</th>
<th>G4</th>
<th>E</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>min</td>
<td>w</td>
<td>min</td>
<td>w</td>
<td>min</td>
</tr>
<tr>
<td>Hilda</td>
<td>62</td>
<td>333</td>
<td>65</td>
<td>349</td>
<td>71</td>
</tr>
<tr>
<td>Henry</td>
<td>45</td>
<td>160</td>
<td>47</td>
<td>265</td>
<td>34</td>
</tr>
<tr>
<td>Ida</td>
<td>47</td>
<td>207</td>
<td>57</td>
<td>215</td>
<td>48</td>
</tr>
<tr>
<td>Mia</td>
<td>61</td>
<td>228</td>
<td>67</td>
<td>316</td>
<td>63</td>
</tr>
<tr>
<td>Per</td>
<td>58</td>
<td>133</td>
<td>43</td>
<td>138</td>
<td>43</td>
</tr>
<tr>
<td>Sara</td>
<td>46</td>
<td>258</td>
<td>51</td>
<td>308</td>
<td>71</td>
</tr>
<tr>
<td>Tom</td>
<td>47</td>
<td>179</td>
<td>51</td>
<td>196</td>
<td>47</td>
</tr>
<tr>
<td>Mean</td>
<td>52</td>
<td>214</td>
<td>56</td>
<td>255</td>
<td>54</td>
</tr>
</tbody>
</table>
In addition to these mean values, the scores in Table 12 depict the individual developments. It is shown that the students’ individual developments are well represented by the mean values. With the exception of Mia, the trend of a progression until G4 with a relative setback in G3 can be shown for all participants, irrespective of the initial score variety in G1.

The results presented so far suggest that in the course of the intervention, the students’ texts were more in accordance with the task requirements. Even though there is a relative setback in the third writing session G3, the results suggest an improvement of the ability to write argumentative texts in German.

In addition to the assessment of the aspects included in the instruction through an analytical rating procedure, a holistic rating was applied. In Figure 6, the mean scores across sessions are summarised and Table 13 presents the individual results. On a given rating scale, 10 represented a text of average quality, 5 of low quality and 20 of good quality.

Table 12. Individual scores across all writing sessions according to an analytic rating procedure.

<table>
<thead>
<tr>
<th></th>
<th>G1</th>
<th>G2</th>
<th>G3</th>
<th>G4</th>
<th>E</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hilda</td>
<td>12.0</td>
<td>17.5</td>
<td>15.0</td>
<td>n.a.</td>
<td>n.a.</td>
</tr>
<tr>
<td>Henry</td>
<td>11.5</td>
<td>19.5</td>
<td>12.5</td>
<td>19.0</td>
<td>20.0</td>
</tr>
<tr>
<td>Ida</td>
<td>16.5</td>
<td>16.5</td>
<td>12.0</td>
<td>20.0</td>
<td>19.5</td>
</tr>
<tr>
<td>Mia</td>
<td>15.5</td>
<td>20.5</td>
<td>17.5</td>
<td>16.5</td>
<td>18.5</td>
</tr>
<tr>
<td>Per</td>
<td>8.5</td>
<td>14.0</td>
<td>10.5</td>
<td>13.0</td>
<td>12.5</td>
</tr>
<tr>
<td>Sara</td>
<td>18.5</td>
<td>21.5</td>
<td>21.0</td>
<td>22.0</td>
<td>20.5</td>
</tr>
<tr>
<td>Tom</td>
<td>10.5</td>
<td>13.5</td>
<td>11.5</td>
<td>18.0</td>
<td>16.0</td>
</tr>
<tr>
<td><strong>Mean</strong></td>
<td><strong>13.3</strong></td>
<td><strong>17.6</strong></td>
<td><strong>14.9</strong></td>
<td><strong>18.1</strong></td>
<td><strong>17.8</strong></td>
</tr>
<tr>
<td>SD</td>
<td>3.6</td>
<td>3.1</td>
<td>3.8</td>
<td>3.1</td>
<td>3.1</td>
</tr>
<tr>
<td>COV</td>
<td>27.1%</td>
<td>17.7%</td>
<td>26.5%</td>
<td>17.1%</td>
<td>17.1%</td>
</tr>
</tbody>
</table>
The mean scores according to the holistic rating of texts written across all writing sessions in Figure 6 show a trend similar to that of the analytical rating shown in Figure 5. There is an increase of quality from G1 to G2, G3 represents a relative setback and in G4, the quality increases again, but only slightly compared to G2. The main difference between the two rating procedures is that from a holistic perspective, the English texts were rated higher in relation to the German texts. This result suggests that the German texts reached a quality comparable to the English text regarding argumentative text organisation and content, but the English texts remained superior regarding other text aspects, such as general elaboration, lexical

Table 13. Individual scores across all writing sessions according to a holistic rating procedure.

<table>
<thead>
<tr>
<th></th>
<th>G1</th>
<th>G2</th>
<th>G3</th>
<th>G4</th>
<th>E</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hilda</td>
<td>10.0</td>
<td>14.0</td>
<td>10.0</td>
<td>n.a.</td>
<td>n.a.</td>
</tr>
<tr>
<td>Henry</td>
<td>8.0</td>
<td>20.0</td>
<td>10.0</td>
<td>14.0</td>
<td>22.0</td>
</tr>
<tr>
<td>Ida</td>
<td>11.0</td>
<td>15.0</td>
<td>7.0</td>
<td>17.0</td>
<td>20.0</td>
</tr>
<tr>
<td>Mia</td>
<td>10.0</td>
<td>17.0</td>
<td>14.0</td>
<td>18.0</td>
<td>18.0</td>
</tr>
<tr>
<td>Per</td>
<td>5.0</td>
<td>8.5</td>
<td>2.0</td>
<td>3.5</td>
<td>17.0</td>
</tr>
<tr>
<td>Sara</td>
<td>20.0</td>
<td>20.0</td>
<td>18.5</td>
<td>30.0</td>
<td>30.0</td>
</tr>
<tr>
<td>Tom</td>
<td>5.0</td>
<td>10.0</td>
<td>9.0</td>
<td>11.0</td>
<td>20.0</td>
</tr>
</tbody>
</table>

<p>| | | | | | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Mean</td>
<td>9.9</td>
<td>14.9</td>
<td>10.1</td>
<td>15.6</td>
<td>21.2</td>
</tr>
<tr>
<td>SD</td>
<td>5.1</td>
<td>4.5</td>
<td>5.2</td>
<td>8.8</td>
<td>4.7</td>
</tr>
<tr>
<td>COV</td>
<td>51.5 %</td>
<td>30.2 %</td>
<td>51.6 %</td>
<td>56.3 %</td>
<td>22.0 %</td>
</tr>
</tbody>
</table>

73
variation, linguistic correctness or rhetorical devices. Limitations to this conclusion are discussed in section 4.4.

In order to illustrate how quality development according to both rating procedures was reflected in the students’ texts, Henry’s examples are shown and commented. On the one hand, his development is representative of the groups’ trend, and on the other hand, the fluctuations between his texts are slightly more visible than for other students, which clearly shows the quality differences. First, Henry’s texts G1 and G2 are presented, and later G3, G4 and E.

Text G1: “Jugendliche über 16 Jahre sind alt genug, um Alkohol kaufen zu dürfen.” (”Teenagers above 16 years are old enough to buy alcohol.”)
Wenn man t8 jahre alt ist, ist man immer noch jung und vielleicht reif aber man hat mehr kontrolle über sich. Jetzt wann ich schreibe diese text habe ich meine Meinung ändern. Man muss über zwanzig sein für Alkoholeinkauf. Ich sage diese weil Jugendliche (18jahre) als Alkohol kaufen können, können manchmal so viel für zum beispiel eine Party kaufen. da ist es wenn es gefährlich werden. Ich glaube dass Menschen über Zwanzig wissen wieviel sie trinken können und auf diese Weise kaufen sie weniger. (160 words; 11.5 points analytic quality, 8.0 points holistic quality)

Text G2: “Fleisch ist ungesund. Deswegen sollte es in Kindergärten und Schulen nur vegetarische Speisen geben.” (”Meat is unhealthy. For this reason, nursery schools and schools should only serve vegetarian meals.”)
"Fleisch ist ungesund. Deswegen sollte es in Kindergärten und Schulen nur Vegetarische Speisen geben" ist ein kontroverses Thema und jetzt will ich das diskutiere.
Mein erstes Argument ist dass man nicht so viel Fleisch braucht aber Menschen hier in die Welt essen zuviel, das ist nicht gut für die Umwelt oder die Person. Die Kindern sollen lernen dass es viele gute Vegetarische Speisen sind. Die Forscher haben gesagt dass der Risk für cancer wenn man zuviel Fleisch essen steigern. Vielleicht ist das nicht recht, aber man weißt nicht und es ist besser ob man vorsichtig ist. Ein Gegenargument ist dass Fleisch auch gut ist. Es gibt viel Protein in Fleisch und die meistens denken dass es sehr gut schmeckt. Ja, das stimmt aber die Schulrestaurang servieren Fleisch fast jeden tag. Viel Menschen sagen dass wenn man nicht Fleisch essen bekommt man Vitaminmangel. Das ist falsch, es gibt viele Vegetarische Speisen mit genauso viel Vitamin und Protein als in Fleisch. Was glaube ich? ich finde Fleisch sehr gut aber wir mussen auf lange sicht denken, der Fleischproduktion in die Welt muss einschränken. sonst mussen wir die Konsequenzen abholen. Der

---

All examples are presented in their original version including mistakes and errors.
Fleischproduktion steht für 1/4 von die CO₂ emission in die Welt. Das ist ein großes Problem und machen wir nichts jetzt, sieht es nicht gut aus.

Also, mein Rückenschluss ist dass man weniger Fleisch in die Schulen/Kindergärten servieren soll weil es die Umwelt beeinflusst. Ob die Kindern essen Fleisch Jeden tag kann es schlecht Konsequenzen für die Gesundheit auf lange sicht haben. Doch soll man nicht nur Vegetarischen Speisen geben weil Fleisch manchmal immer noch gut ist. (265 words; 19.5 points analytic quality, 20.0 points holistic quality)

A comparison of texts G1 and G2 reveals that in the second session, Henry was able to discuss a given topic in a more structured way. In text G1, he starts by uttering his opinion stating that teenagers are not mature enough to buy alcoholic drinks at the age of 16. Both paragraphs in the text are based on this argument. In paragraph two he states that he is changing his mind while writing and thinks that the age limit should be increased from 18 to 20 years. This text does not represent a discussion of different topic-related aspects, but a general opinion, which additionally changes in the text writing process. Further it contains few characteristics of an argumentative text.

Text G2, on the contrary, comprises a number of features of an argumentation. The writer includes a short introduction, divides the middle paragraph in argument and counterargument and mentions limitations of these. He summarises his conclusion after a short discussion and finally states his own opinion.

In contrast to this improvement, Henry’s G3 text received a much lower rating. This resembles what could be observed for the entire group.

Text G3: “Fitnessstudios, Diäten, Schönheitsoperationen, Tattoos, etc. — der eigene Körper und ‘gutes’ Aussehen sind in der heutigen Gesellschaft wichtiger als Charakter und Intelligenz.” ("Gyms, diets, plastic surgery, tattoos, etc. — in today’s society the own body and ‘good looks’ are more important than personality and intelligence.")

In this text, Henry starts out with two rhetorical questions and his personal opinion. He continues describing an exemplary TV show, which, in his opinion, prioritises appearance over talent. Departing from this example, he generalises to other aspects in society, where he sees similar trends. He then switches abruptly to the topic love and finishes his text by expressing his view on the role of appearance in relation to loving a person. This third text basically contains examples of why Henry agrees with the given thesis. He switches rapidly from one example to another, but neither elaborates on an argument nor presents a counterargument. He succeeds in making his opinions clear, but from an argumentative perspective, the text lacks a number of crucial elements and is therefore rated lower than G2.

G4, the delayed post-text, written seven months after G3, represents another change in Henry’s text quality development. Regarding the score, it is comparable to session G2.

Text G4: “Soziale Netzwerke (wie Facebook, Twitter, Instagram, Tumblr, etc.) sind für Jugendliche gefährlich.” (“Social networks [like Facebook, Twitter, Instagram, Tumblr, etc.] are dangerous for teenagers.”


Fürs erste, kann ich für mich selbst sehen dass viele von meine Freunde weniger sprechen wenn wir umgehen, weil sie mit ihrem Handys am z.B Facebook oder Instagram sitzen. Das ist die erste probleme, man wird in der Cyber-Welt verschlucken und socializert sich weniger mit andere leute im echten Leben. Dieses Faktor spielt ein wichtiger Rolle wie gut man die Soziale Kompetenz in der Jugendlichen jahren entwickelt.

Zweitens, Die Sociale Kompetenz ist nicht die einzige Fähigkeit dass schlechter geworden. Wenn wir sind in der Schule notiere ich wie viele Schüler und Schülerinnen weniger arbeiten und am die Handys und Soziale Netzwerke liegen anstatt. Wenn man sich weniger für die Aufgabe in der Schule kümmert bekommt man schlechter Resultate und dass beeinflusst die Zukunft man werden bekommt. Bis jetzt können wir sehen dass die Soziale netzwerke die Sociale Fähigkeiten und die Disciplin beeinflusst.

Drittens, Gewöhnlicherweise sagt man dass Die Soziale Netzwerke ist gut weil man die Möglichkeit mit viele Personen kontakt haben bekommt und man bleibt bewusst um was in die welt passiert hat, entweder unter die Freunde oder in andere Länder weit weg. Ja, natürlich ist stimmt das aber es ist übermäßig, nach ein Zeit spielt das Echten leben kein roll. Likes, followers und “Online-Freunde” sind die Wichtigste und ein Bestehungbedürfnis wächst, man will mehr likes und onlineFreunds haben weil man denkt dass es ein Statusdenkmal ist. Entseichern Jugendliche mit nur einige Likes am die Photos sie Zeigten oder einige onlineFreunds denken dass sie Schlechter dann die “beliebt” Jugendliche da sind. Es beeinflusst Jugendliche mehr weil Erwachsene reif sind und verstehen dass es kein Roll spielt.

Zusammenfassend hoffe ich dass sie mich verstehen, Jugendliche sind leicht beeinflusst und deshalb können die Soziale Netwerke sie Rücken. (323 words; 19.0 points analytic quality, 14.0 points holistic quality)
The G4 text was rated much higher than the previous one, as it shows more characteristics of an argumentative text. Henry begins his text with a general introduction to the topic, presents the writer's point of view and explicitly refers to the following discussion. Linguistic markers introduce the three arguments that follow. At first, he discusses two aspects that support the given thesis. In the third paragraph, he mentions a counterargument, but immediately describes the limitations of this argument. Insofar, all three paragraphs support Henry's own opinion given in the introduction. In a short final paragraph, he sums up the text and again states his point of view. Unlike in G3 he succeeds in writing a coherent text, which contains a clearly identifiable introduction, arguments and a conclusion. The choice of the arguments is in line with the thesis that he supports and the reader can follow his argumentative string.

Finally, Henry's English text is presented. According to the analytical rating procedure, the values for Henry's English text were slightly higher than the values for G4, whereas the group's mean value in English was slightly lower than the value for G4. However, the differences between German and English writing decreased and their quality converged towards a comparable level. Regarding a holistic rating, the English texts were rated higher in general.

Text E: “The internet – the best thing since the invention of the television.”
Internet is a tool that has helped humanity to develop its technology a lot faster than what was expected 10-20 years ago. Many people claim that this phenomenon is the very best invention since the television, and that's a very good rating. Is this really the case? Can we rely on the internet as a stable ground for our global trading/issue solving/bounding in the future? I would like to write about this topic today.

A first thought from me, that's something positive about internet is that we can create strong bonds with other people or countries without having to meet them in real life. Think about life without internet? We would almost know nothing about the situation in other places in the world. Thanks to the internet, we get the chance to help one another, even though we're not physically close. Furthermore the internet (if you have a computer) has all of the applications a modern television has, plus many more. In this scenario, you can’t say that the internet alone is better than a tv, since you need a computer to fulfill its purposes, obviously. A last and also, in my opinion, very strong argument is that you can buy everything from your home today, groceries, cellphones, clothes, you name it. The Internet offers so many different kinds of services, that you can almost live your entire life without feeling the need to go outside.

While writing the last two sentences of the upper column in this text, I named two things that can be very good to use in arguments while speaking about the bad sides of the internet; The selling opportunities and never having to go outside. Since selling over the internet has become very comfortable, criminal organisations take these shortcuts into making money too. Today I'm sure that the majority of the internet using population knows some of these possible risks; Getting scammed online, your bank account getting hacked or, for example, getting your identity stolen. These are three of many criminal activities over the web, that's why it's very important to be
careful while surfing. Everything isn’t great. The “never having to go outside” problem is worth discussing too, even though it’s similar to the problems you can receive by watching too much tv, I would say that internet addiction is alot worse. Many people lose their need to interact with others, they lose their social skills and social behaviour just because they isolate themselves from the real society, they become a cyberfreak, it’s almost like their personality only exists online. Speaking about personalities online, my chain of thought leads me to social media. Now this has grown to a big trend over the last years and it carries many consequences. One of them is becoming addicted, transferring your life into facebook instead of reality, like what I told you about just a moment ago. Another issue is being bullied on the web, this is happening all the time. Insecure people are getting bullied or used in various ways, maybe because they posted an “ugly” profile picture or because they try to share their opinion on a certain subject. I can sit here all day and write about all of the reasons why people are being mentally abused on the web, but that’s not the point, you understand it. The reason I write about it is that it happens all the time and it totally breaks individuals down.

To finish it off, how do I feel about the Internet? It’s definitely the best invention since the television if you only look to the fantastic things a human can achieve by using it. Unfortunately, bad people tend to use it for bad reasons and therefore, all the horrible acts and deeds that takes place over the web every day, brings darkness over all the positive, helping activities there. (641 words; 20.0 points analytic quality; 22.0 points holistic quality)

Henry’s English text is much more elaborated than his German texts. The introduction, the selected arguments and counterarguments as well as the conclusion are expressed in more detail and the transitions between the parts appear smoothly. He further includes stylistic devices (such as rhetoric questions and examples), addresses the reader more often and succeeds in presenting his line of thoughts to the reader. However, the basic components of the text type argumentation are seemingly not more advanced than in his German texts G2 and G4, which led to a similar score for all three texts.

4.3.2 Text quality of intervention and non-intervention class texts

So far, the results of the text quality analyses were shown for the focus students from a within-group perspective. In this section, texts by the students (IC1–IC5 and NIC1–NIC8), who only attended classes, are presented. In Table 14, the analytical rating scores of five IC students’ texts and eight NIC students’ texts in sessions C1 and C3 are presented. The mean values for the initial writing session C1 show that the score for the pre-intervention text differs only by 0.1 point, hence can be interpreted as similar in both classes. The results for the third writing session C3 show a slightly higher score for the IC with 12.4 points compared to 11.3 points in the NIC. In fact, this difference does not indicate a big difference between the two groups, especially considering the fact that the analytical rating procedure focuses on those text features, which were explicitly taught during the intervention. Accordingly, in a between-group comparison, the intervention
Table 14. Scores of class texts in sessions C1 and C3 after analytical rating (possible maximum of 23 points).

<table>
<thead>
<tr>
<th>Intervention class</th>
<th>C1</th>
<th>C3</th>
<th>Non-intervention class</th>
<th>C1</th>
<th>C3</th>
</tr>
</thead>
<tbody>
<tr>
<td>IC1</td>
<td>9.0</td>
<td>16.0</td>
<td>NIC1</td>
<td>10.0</td>
<td>11.0</td>
</tr>
<tr>
<td>IC2</td>
<td>7.0</td>
<td>4.0</td>
<td>NIC2</td>
<td>10.0</td>
<td>12.0</td>
</tr>
<tr>
<td>IC3</td>
<td>11.0</td>
<td>16.0</td>
<td>NIC3</td>
<td>9.0</td>
<td>9.0</td>
</tr>
<tr>
<td>IC4</td>
<td>13.0</td>
<td>9.0</td>
<td>NIC4</td>
<td>8.0</td>
<td>13.0</td>
</tr>
<tr>
<td>IC5</td>
<td>7.0</td>
<td>17.0</td>
<td>NIC5</td>
<td>10.0</td>
<td>11.0</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>NIC6</td>
<td>3.0</td>
<td>11.0</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>NIC7</td>
<td>10.0</td>
<td>9.0</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>NIC8</td>
<td>14.0</td>
<td>14.0</td>
</tr>
<tr>
<td><strong>Mean</strong></td>
<td><strong>9.4</strong></td>
<td><strong>12.4</strong></td>
<td><strong>Mean</strong></td>
<td><strong>9.3</strong></td>
<td><strong>11.3</strong></td>
</tr>
<tr>
<td>SD</td>
<td>2.6</td>
<td>5.7</td>
<td>SD</td>
<td>3.1</td>
<td>1.8</td>
</tr>
<tr>
<td>COV</td>
<td>27.7 %</td>
<td>45.8 %</td>
<td>COV</td>
<td>33.1 %</td>
<td>15.6 %</td>
</tr>
</tbody>
</table>

did not improve the texts of the IC to a considerable degree with regards to argumentative text features. However, one interesting observation is the standard deviation of the mean values of IC and NIC in session C3. On the one hand, three IC students have rather high scores, which also exceed the top scores in the NIC. On the other hand, two students received remarkably low scores. These rather clear differences again indicate a high within-group variability. This will be further discussed in section 4.4.

Table 15 summarises the results of the holistic rating of IC and NIC class texts for sessions C1 and C3. Like in the rating of the focus student texts, 10 represented a text of average quality, 5 of low quality and 20 of good quality on a given rating scale. It is shown that when a holistic rating procedure is

Table 15. Scores of class texts in sessions C1 and C3 after holistic rating (10 points represent average quality).

<table>
<thead>
<tr>
<th>Intervention class</th>
<th>C1</th>
<th>C3</th>
<th>Non-intervention class</th>
<th>C1</th>
<th>C3</th>
</tr>
</thead>
<tbody>
<tr>
<td>IC1</td>
<td>7.0</td>
<td>8.5</td>
<td>NIC1</td>
<td>6.0</td>
<td>10.0</td>
</tr>
<tr>
<td>IC2</td>
<td>6.0</td>
<td>7.5</td>
<td>NIC2</td>
<td>10.0</td>
<td>9.0</td>
</tr>
<tr>
<td>IC3</td>
<td>7.0</td>
<td>10.0</td>
<td>NIC3</td>
<td>4.5</td>
<td>8.0</td>
</tr>
<tr>
<td>IC4</td>
<td>14.0</td>
<td>8.5</td>
<td>NIC4</td>
<td>7.5</td>
<td>11.0</td>
</tr>
<tr>
<td>IC5</td>
<td>8.0</td>
<td>8.0</td>
<td>NIC5</td>
<td>7.0</td>
<td>7.5</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>NIC6</td>
<td>5.0</td>
<td>7.5</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>NIC7</td>
<td>12.5</td>
<td>13.0</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>NIC8</td>
<td>10.0</td>
<td>16.5</td>
</tr>
<tr>
<td><strong>Mean</strong></td>
<td><strong>8.4</strong></td>
<td><strong>8.5</strong></td>
<td><strong>Mean</strong></td>
<td><strong>7.8</strong></td>
<td><strong>10.3</strong></td>
</tr>
<tr>
<td>SD</td>
<td>3.2</td>
<td>0.9</td>
<td>SD</td>
<td>2.8</td>
<td>3.1</td>
</tr>
<tr>
<td>COV</td>
<td>38.2 %</td>
<td>11.0 %</td>
<td>COV</td>
<td>35.7 %</td>
<td>30.4 %</td>
</tr>
</tbody>
</table>
applied, the initial score in C1 was slightly higher in the IC (8.4 points) than in the NIC (7.8 points). At the end of the intervention, there was almost no change in mean scoring in IC, while the NIC showed an improvement to 10.3 points. Thus, a between-group comparison based on the holistic rating shows an improvement of the NIC, who did not take part in the intervention, but continued their regular schedule.

Finally, a comparison of the focus students’, the IC and NIC students’ text quality performance is of interest. Table 16 presents an overview of all generated mean scores. In the comparison of all analytical rating scores some differences become apparent. In the initial session, the focus students scored higher. This might be due to the already stated difference in language proficiency (see section 3.3) or to that fact that G1 was written shortly after C1 and therefore, represented the second text for the focus students. However, also in G3 the focus students scored slightly higher than the classes in C3. This suggests the tentative result that the focus students scored higher in their writings and show a stronger tendency to improve text quality when exclusively argumentative text features are measured.

For the holistic rating scores, the results are slightly different. In this rating, the focus students also scored slightly higher in the initial session than both IC and NIC, however, for the third sessions C3 and G3, focus students and NIC show similar results and outperform IC. It should be noticed that in sessions G2 and G4, the holistic scores for the focus students however were in fact higher than for IC and NIC, which is in line with the already mentioned observation that session G3 represented a particular outlier in the focus student sequence. Thus, it is clear that overall, the focus students showed better results in text quality than IC and NIC, which was more evident in an analytical rating than in a holistic rating.

Table 16. Generated mean scores of analytical (A) and holistic (H) rating for focus students, intervention class and non-intervention class.

<table>
<thead>
<tr>
<th></th>
<th>G1</th>
<th>G2</th>
<th>G3</th>
<th>G4</th>
</tr>
</thead>
<tbody>
<tr>
<td>Focus students</td>
<td>A 13.3, H 9.9</td>
<td>A 17.6, H 14.9</td>
<td>A 14.3, H 10.1</td>
<td>A 18.1, H 15.6</td>
</tr>
<tr>
<td>C1</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>IC</td>
<td>A 9.4, H 8.4</td>
<td>A 12.4, H 8.5</td>
<td></td>
<td></td>
</tr>
<tr>
<td>NIC</td>
<td>A 9.3, H 7.8</td>
<td></td>
<td>A 11.3, H 10.3</td>
<td></td>
</tr>
</tbody>
</table>
4.4 Discussion

In this chapter the quality of the students’ writing products has been presented. The results show that the focus students improved their text quality in the course of the intervention from session G1 to G4, even though there was a relative setback in G3. Between sessions G2 and G4, only a very small increase in scoring could be noted. However, considering the time delay of more than seven months between these two sessions and the fact that the students did not write any further argumentations in German after the instruction period, this can still be considered a positive trend. To a certain degree, this is in line with what Sasaki (2004) observed in her longitudinal study after a 3.5-year period. Her students had received writing instruction for two terms and after another 2.5 years Sasaki did a follow-up data collection and text rating. She concluded that the students had the highest scores directly after the instructional programme, but afterwards only slight improvements could be observed. In the current study, Henry’s examples demonstrated that he was still able to apply knowledge about argumentative writing in German in the delayed post-session in a similar way as in session G2. Due to this, it is my assumption that the text quality drop in G3, which was noticeable for the entire focus student group, does not reflect a regressive development. Instead I argue that there might be other circumstances causing this drop, which will be further discussed in chapter 7.

The observations described for text quality were reflected both in an analytical and a holistic rating procedure. This parallel development may be explained by the amount of pre-writing activities and an acquired routine in writing in the genre, which led to a cognitive release regarding global textual aspects like content and organisation. Consequently, more cognitive capacities might have opened up for other text quality levels. Thus, an increase in text quality regarding content and organisation presumably led to an increase in overall text quality as well. Another explanation for the similar development in both ratings might be the influence of a clearer text structure for the overall impression of a text. Even though the raters in the holistic procedure were instructed to rate the overall impression of the texts, an improvement in rhetorical structure might have had a strong impact on how the texts were assessed in general.

Taking into consideration the reported measures for the co-efficient of variation, the differences among the students were smaller in the analytical than in the holistic rating. This observation shows that all the students were able to improve their writing regarding rhetorical structure within a rather short time, but when other text characteristics are taken into consideration, the initial differences in language proficiency are continually reflected.

Both analytical and holistic text quality scores confirmed that students were able to write texts of higher quality in their L2 English. The results
showed that the students were able to progress in German towards their higher text quality in English. However, it was also apparent that the difference between the highest quality score in German in G4 and the score in English was much more evident in the holistic rating procedure than in the analytical one. One assumption is that when only argumentative text features were considered, the students’ writings skills in L2 and L3 converged much more easily. This might be due to the basic formal requirements of an argumentative text in a foreign language in the applied analytical rating scheme and the students’ ability to meet these after a rather short period of practice. On the contrary, when the texts were rated under consideration of all aspects, including for example also grammatical correctness, word choice and style, the differences between L2 and L3 did not dissolve as easily and the variation between the students’ texts remained visible. This insight is confirmed by the coefficient of variation of the mean values for German. With more practice and focus on argumentative writing, more students were able to write texts that reached higher analytic scores and therefore, showed less variation. When, however, the text as a whole was considered, they still deviated to a substantial degree.

As already indicated, another important factor regarding the analytic rating procedure is the applied rating form. The fact that the difference between German and English became less visible towards the final writing session might not only originate in the students’ improvement in German writing, but also be due to a possible lack of a more fine-grained rating scale with a higher number of traits, which might allow for more differentiation. Applying such a rating form with more nuances might possibly reveal more differences.

Further, a comparison was made between analytical and holistic text quality of IC and NIC students in sessions C1 and C3. According to both rating procedures, the groups started out from rather similar levels of text quality and no group had lower results in the post-intervention writing session (C3). When rated analytically, the post-intervention texts of the IC were slightly better than those of the NIC, but the mean scores for both classes do not suggest that the writing intervention had had an influence on the texts written by the IC students. However, the individual scores provoke some speculations. It became apparent that the IC students showed a clear within-group variation. There are various potential reasons for this observation. First, an important factor is learner-variability. Especially when testing on few occasions, uncontrollable learner-internal factors, such as tiredness or stress, might have influenced the scores and decreased the validity of the results. Second, the text scores might also reflect the reported variation in language proficiency. However, this observation is not consistent for the same students on both writing occasions. For example, while students IC1 and IC2 (see Table 14) start out with low scores in C1, they reach very
different scores in session C3. Hence, language proficiency cannot be the decisive factor in generating these scores. Third, it can be speculated that the instructional programme fitted well to the learning style and interest of some students, while others did not benefit to the same degree from it.

The holistic text quality scores show a different picture. Here the NIC students gained higher scores in C3 while the IC remained approximately on the same level. Due to the varying numbers of texts in these classes, it is difficult to compare them and to know how representative they are regarding the overall class achievement. However, one potential explanation for this result could be that the students in the NIC continued to work on different aspects of their German proficiency during the intervention period, for example certain grammatical aspects and vocabulary. An improvement in these areas might have a stronger impact on the overall impression of a text, which is reflected in the holistic rating, than a focus on the rhetorical features of the text type. The consequence of this would be that one main focus during an intervention could facilitate certain writing skills, while hindering others.

Apart from the between-classes comparison, it is relevant how the focus students scored in comparison with the classes. In general, the text quality of the texts written by the focus students improved more than the texts written by the other two groups. The differences were more evident in the analytical scores than in the holistic ones when G1/G3 are compared with C1/C3. In particular, the NIC actually scored slightly higher in the analytical rating in C3 than the focus group in G3. However, my assumption is that the overall performance of the focus group in all single sessions suggests a higher degree of improvement. In order to check this assumption, the results of the focus students’ writing in C1 and C3 were compared. These two texts were available for five out of the seven focus students. Here it was clear that in the analytical rating, the mean score in C1 was 11.0 points (SD 4.9) and in C3 14.8 points (SD 5.3), and in the holistic scoring the mean value for C1 was at 10.3 points (SD 5.9) and for C3 at 12.5 points (SD 7.5). These values also confirm that the focus students’ texts were of higher quality than both the IC and NIC ones across sessions and across rating procedures.

Thus it can be stated that only the focus students, who both attended the instruction in class and had additional individual writing practice with reflective interviews, were able to improve their argumentative writing in L3 German throughout the intervention. The intervention alone had, if at all, a minor influence on text quality. Hirose & Sasaki (2000) made a similar observation in their study, in which they reported that under the condition of instruction of metaknowledge and additional writing practice, the students were able to improve their writing more than when receiving metaknowledge instruction alone.
In this section, the results of the text analysis have been presented and discussed. Even though text analysis is one possibility to judge writing, it is “inherently restricted in its capacity to explain why people learn” (Cumming 2001: 4). Thus, writing must be seen from more perspectives. In chapter 5, the second pillar of this thesis, the writing processes will be the focus of interest.
5 Writing processes in argumentative writing in L3 German

In this chapter, the second approach to researching L3 writing is described. How a text is composed and what we can infer from this about the ongoing cognitive processes of writers is in focus. First, an overview of research related to writing process theory is given, including a discussion of underlying theoretical writing process models and research findings about the differences of writing processes in first and second/foreign languages. As in chapter 4, the theoretical overview will be followed by a description of the analysis and the results.

The majority of results are based on numerical writing process data. However, in the final part of the result section, an in-depth analysis of the participants' online search strategies in session G1 is presented. This section can be considered as complementary to the general writing process results, as it provides detailed information about the characteristics of online source use. The chapter will be concluded with a discussion of the findings.

5.1 A cognitive perspective on writing

Descriptions of writing from a cognitive perspective often contain the word complex. Writing is complex, because writers have to engage in a large number of mental activities when composing a text. They need to consider task requirements, writing topic and potential readers in their conceptualisation of the text being written. Further, they need to generate relevant ideas, organise them in a coherent way, translate them into linguistic forms (under consideration of for example lexis, orthography, syntax, grammar or punctuation) through some kind of writing medium and finally, continually re-read and evaluate the appropriateness of the text produced, both on a global and local level, and if necessary, delete, re-write and revise. Additionally, this process is influenced by both writer-internal and -external variables. Considering all of these aspects, it becomes apparent that learning to write is difficult for many learners and progress requires time and effort.

A number of writing process models have been developed since the 1980s (Bereiter & Scardamalia 1987; Flower & Hayes 1981; Hayes & Flower 1980; Hayes 1996, 2012; Kellogg 1996; Zimmerman & Risemberg 1997) in order to better understand the complexity of writing, to investigate it (or single aspects of it) and finally, to come to pedagogical conclusions (Alamargot & Chanquoy 2001). Hayes and Flower (1980) focused on the components of advanced writer's writing processes, Bereiter and Scardamalia (1987) investigated writing from a developmental perspective and distinguished
between beginner and experienced writers and Kellogg (1996) stressed the role of working memory for writing.

Despite different foci, the cognitive process models share a few assumptions. First, writing is a complex set of different cognitive activities, which are hierarchical and goal-driven. Second, a controlling device called monitor allocates the order of and transition between these activities in the writing process. Third, all activities and their allocation take place within the span of working memory, which means that they are constrained by its limited capacity (Alamargot & Chanquoy 2001).

The above-mentioned cognitive models have gained much popularity since the 1980s. However, their dominance has been questioned and social and cultural aspects of learning have become increasingly prominent in theory development, for example in socio-cognitive theories of learning and writing (e.g. Atkinson 2011; Cook 1991, Flower 1994). In this thesis, socially determined aspects such as the study context, text genre and classroom discussions and reflection indicate that cognitive and social spheres cannot be separated, especially in a naturalistic study environment. However, cognitive writing models serve as the basis for this study for two reasons. First, the instructional approach is oriented towards cognitive processes of writing and second, the main interests of this study are of cognitive nature. This does not mean that social and contextual aspects are neglected, only that they are not in the focus of the study. They are, however, used to help to interpret the results.

In Flower and Hayes’ (1981) model, writing is described as a problem-solving process that involves three elements: the task environment, the writer’s long-term memory and the writing process itself. The latter further consists of three basic sub-processes, planning, formulating and revising the text, which are under the control of a monitor component. Throughout the following years of research, these fundamental aspects remained, but along with several revisions, the model was expanded, for example: a highlighted role of working memory and motivation (Hayes 1996; Kellogg 1996), the acknowledgement of transcription affordances (Chenoweth & Hayes 2001) and a description of a more diverse task environment, including collaborators and writing technology (Hayes 2012). The latest model by Hayes (2012) is displayed in Figure 7 and will serve to describe the complexity and dynamics of the writing process. As it is shown, this model divides writing into three levels: the control, process and resource level. The control level refers to internal aspects of the writer, which are, at least to a certain degree, under conscious control. Thus, different learners can motivate themselves differently to engage in writing tasks. For example, a learner might be motivated to carry out a given writing task to receive a good grade. In order to achieve this, different goals need to be set
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Figure 7. The revised writing process model (Hayes 2012: 371).

according to given task schemata. If, for example, an argumentative text is the task at hand, then a learner, who is acquainted with the requirements of an argumentation, might set the goal to carry out all writing processes involved, that is planning, writing and revising. If that task is perceived as difficult or challenging, writing aids such as dictionaries might be consulted more frequently (Chenoweth & Hayes 2001). In that way, the control level refers to the writer’s own disposition in relation to the perceived task requirements and therefore strongly influences the process level.

The process level is further divided into internal writing processes and external task environment. As already mentioned, in earlier models the writing process was subdivided into the basic mental operations of planning, formulating and revising. Even though these main components are still considered as valid (Hayes 2012), in the latest model each of them is considered as a particular “application of writing”, which requires (1) a proposer, (2) a translator and (3) a transcriber. Accordingly, either when preparing a written plan, when formulating text or when carrying out revision, writers repeatedly make proposals (that is, generate ideas), they translate ideas into potential linguistic forms and they transcribe them considering orthographic rules. Particularly the latter is an important addition to the model from the point of foreign language writing, as the motoric component of transcription (Kellogg 1996) and spelling often place heavy cognitive burdens on foreign language writers (Chenoweth & Hayes
2001). The adaption of the model, indicating that similar processes seem to be carried out for different “specialized writing activities” (Hayes 2012: 376) (that is, planning, formulating and revising) emphasises the recursive character of writing, with one process leading into another (Barbier & Spinelli-Julien 2009). Additionally, the control component, generally known as monitor, has been removed and replaced by a so-called (4) evaluator, which orchestrates the “transition between these processes and subprocesses [...]”, potentially triggering and triggered by another” (Spelman Miller et al. 2008: 434).

The components of the task environment are positioned in close interaction with the writing processes. The social aspect of writing is acknowledged by including collaborators and critics, which together with task materials have an influence on the proposer. In an earlier model (Chenoweth & Hayes 2001), the role of dictionaries as well as style guides, computer interfaces and spell checkers were mentioned more explicitly, which is of particular importance for the present study. In addition, Hayes’ model takes into consideration the transcription process as one of the competing sub-processes, as transcription technology is included in the task environment. Further, as in earlier models, the text-written-so-far also plays a crucial role as a trigger for any potential consecutive writing activity such as re-planning or revising.

Finally, the model groups attention, long-term memory, working memory and reading on the resource level. Apart from reading, these aspects were already dealt with in section 2.1.1, where their central role in the execution of complex cognitive tasks under conscious control was described. This will be further developed for writing in section 5.1.1.

Hayes and Flower (1980) described writing as a distinctive form of thinking, which is being organised in the process of composition. As writers create texts, the different sub-processes are not carried out in a linear fashion, but are dynamic, recursive, and potentially parallel. For example, as text evolves, writers might begin to re-read already written text, change their initial writing goal, delete parts of what has been written, add more text that fits the writing-goal more appropriately and so forth. Hence, all processes may occur at any time and in any combination throughout the writing process. Handling the variety of these different processes is, as Hayes and Flower (1980: 30) put it, a “full-time cognitive overload”.

Even though the Flower and Hayes’ (1981) model was initially designed for L1 writing, it has been the most influential one in writing process research across languages. However, the applicability of L1 production models on L2/Lx contexts can be questioned and attempts have been made to adapt and extend these models to foreign language contexts (see R. Zimmerman [2000] for an overview). Börner (1987) for example, in his adaption of Hayes and Flower’s (1980) model, added the L2-factor at
different levels in the model, such as long-term memory, writing schemas (which he termed *intertexts L1/L2*) and the monitor. R. Zimmerman (2000) investigated the process-level in particular and identified and compared sub-processes in L1 and L2. Apart from a few differences in the pre-writing phase, he did not find anything L2-specific on the process level in *qualitative* terms.

However, many writers are multilingual and, as in this study, are required to write in their L3 as part of their formal education. De Bot and Jaensch (2014) discuss whether L3 processing is distinct from bilingual and monolingual processing. They conclude that there is as yet no evidence of a qualitative difference. However, evidence of *quantitative* differences in learning an L3 is overwhelming. Research on L3 production has to a large extent focused on cross-linguistic influences (Cenoz et al. 2001; De Angelis 2005; Murphy 2003), when investigating the dynamics in language learning and use. A number of learner- and language-based variables are considered to be decisive for the understanding of these dynamics (see Murphy [2003] for L3 or Jarvis [2000] for an overview). Factors such as the socio-cultural context, language learning setting, L2/L3 language proficiency, -exposure, language mode, language/learning awareness, educational background and language typology may interact and have an impact on the acquisition of an L3. In this study, L2 versus L3 status and learning motivation (see chapter 3) are potentially decisive factors for the description of acquisition processes.

Hence, it needs to be considered that L1 influence on L2 acquisition is different from L2 influence on L3 acquisition (de Bot & Jaensch 2014), which makes L2 a central variable in the description of L3 acquisition and production. Leung (2005), for example, argued that L3 acquisition is more complex than L2 and showed that the acquisition of French as L2 differs from French as L3. Further, De Angelis (2005) compared learners of Italian as L3 or L4 and concluded that the previously learned foreign language(s) have an impact on both language production and grammatical accuracy in the target language.

These findings indicate that L3 writing is complex and that multiple variables have a potential influence on the writing process in quantitative terms. These aspects are not yet sufficiently acknowledged in cognitive writing models based on L1 writing (see section 5.4 for a discussion). However, as mentioned earlier, there is little evidence of differences in the quality of the L2 and L3 writing processes, which led to the decision to use the process models in this thesis.

### 5.1.1 Working memory and demands on processing writing

Due to a growing acknowledgement of the complexity of the writing process in relation to the limited human capacity to hold activated knowledge and to process it (MacArthur & Graham 2016), processing demands and the role of
working memory for writing have received much attention during the last two decades (Hayes 1996; Kellogg 1996; McCutchen 1996, 2000; Ransdell & Levy 1996; Stevenson et al. 2006). In the revised writing model (Hayes 2012; see Figure 7), working memory is co-ordinated with long-term memory, reading and attention on the resource level.

As mentioned in section 2.1.1, long-term memory stores a potentially unlimited amount of information. Related to writing, this might refer to relevant knowledge regarding topic, genre, register, but also metacognitive writing knowledge. However, the amount to which this knowledge can be used during writing is largely dependent on processing demands put upon working-memory. In his description of the writing process, Kellogg (1996) outlines the demands on working memory during all sub-processes of writing. When learners engage in multi-tasking situations like writing, several sub-processes simultaneously access working memory. In these situations, the central executive coordinates task-performance, for example when writers transcribe, plan ahead and retrieve lexis at the same time. However, from the perspective of the so-called capacity approach (McCutchen 1996), there are trade-offs between working memory storage and processing during complex situations, which makes it difficult to meet the demands in tasks like writing. That is, learners implicitly focus their attention on some demands of writing, while others are more or less left aside.

### 5.1.2 L2 writing processes

Many foreign language learners consider writing in the foreign language exhausting and cognitively demanding (Cumming 2001; Silva 1992, 1993; Woltersberger 2003), particularly when lexical retrieval and transcription require much conscious attention (Schmidt 1992) and take a long time to become automated. This frequently results in a focus on low-level or local aspects of a text, such as language form, and leaves higher-level text aspects, such as text content, organisation and cohesion unattended to (Chenoweth & Hayes 2001; McArthur & Graham 2016; New 1999).

On a general level, it has been shown that lower-level processing heavily draws on L2 writers’ cognitive capacity. This might be visible both in the resulting text, for example through a lack of attention to higher-level aspects such as a coherent text organisation (Schoonen et al. 2003; Stevenson 2005; Whalen & Ménard 1995), but also in relation to the various writing sub-processes. Research has consistently shown that L2 writers struggle considerably with the formulation of text, hence compose less fluently in their L2 than in their L1 (Chenoweth & Hayes 2001; Lindgren et al. 2008; Roca de Larios et al. 2001; Silva 1993; Spelman Miller 2000a; Stevenson 2005; Van Waes & Leijten 2015). This can, for example, be displayed by producing fewer words in their final texts (for example Sasaki & Hirose 1996;
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Thorson 2000), pausing more frequently (Pennington & So 1993; Spelman Miller 2000a) and revising more often on text surface level (Chenoweth & Hayes 2001; Lindgren et al. 2008; Thorson 2000; Wallace & Hayes 1991). Further, L2 writers tend to plan text locally rather than globally (Jones & Tetroe 1987; Whalen & Ménard 1995) and differ to their L1 counterparts in the orchestration of writing sub-processes (Van Weijen 2009). Regarding the differences between skilled and less skilled L2 writers, studies have also demonstrated that more skilled writers spend less time on formulation, plan more and tend to revise at a discourse rather than a word and phrase level (Cumming 1989; Roca de Larios et al. 1999; 2001; Zamel 1983).

The sequence of the writing sub-processes and the cognitive effort, with which they are carried out, are indicated through concrete activities, such as transcribing, pausing, deleting or inserting. Together they form a picture of a writer's fluency, that is, the ability to formulate ideas into linguistic forms according to linguistic rules (Stevenson 2005). Tracking and interpreting these activities is difficult, as they form a very simplistic account of the complex underlying cognitive sub-processes deployed while composing (Alves & Limpo 2015). However, reconstructing the chain of events during composing can at least partly provide us with insights about the cognitive efforts of writing and learning.

5.1.3 L2 writing fluency
Acquiring writing fluency has been acknowledged as one essential component of L2 learning. A large production of language within a given amount of time is associated with quick retrieval of target language forms leading to a better L2 performance. Interest in fluency originates in studies on speech production (Kormos 2006; Segalowitz 2016), but has also grown in relevance for writing research during the last two decades (Wolfe-Quintero et al. 1998; Latif 2013).

In writing research, Chenoweth and Hayes’ (2001: 81) definition of fluency as the “rate of production of text” is most frequently used and depicts well what one can see when composition takes place. However, from a cognitive perspective, the appearance of text on paper or screen merely reflects underlying mental processes taking place while writing. Van Gelderen and Ooostdam (2002: 241) for example suggested defining fluency as “the efficient access to a rich linguistic knowledge base and the (equally efficient) retrieval of propositions for utterances”, which highlights that fluency is not necessarily what is displayed as transcribed text, but what is mentally accessed.

Writers, who perform a speedy transcription of text, are able to easily retrieve lexical segments held in working memory. This is an indicator that a certain level of automatisation of lexical retrieval is reached (see stages of skill acquisition chapter 2.1.2), and that learners might utilise writing
strategies effectively (Alves & Limpo 2015; Torrance & Galbraith 2006). For the production of text, this means that due to automatised translating and transcription processes, there is more free working memory capacity to consider other text dimensions (Schoonen et al. 2003; Whalen & Ménard 1995). Hence, more fluent writing is characterised by a higher production rate and fewer interruptions, such as pauses and revisions.

Writing fluency measures
Writing fluency has been measured by both product-based and process-based measures. Product measures typically involve counting written characters, words, clauses, sentences, t-units or error-free units in the final text product (for example Johnson et al. 2012; Sasaki 2004; Storch 2009, see also Wolfe-Quintero et al. 1998 for an overview). However, as has been argued by a number of researchers (Chenoweth & Hayes 2001; Latif 2013; Wolfe-Quintero et al. 1998), they neither reveal much about the efficiency of the production process nor about fluent and non-fluent writing phases in real time. Alternatively, production rate, that is, the number of written words (Chenoweth & Hayes 2001) or, as often in computer-based writing studies, characters (Spelman Miller et al. 2008) written per minute, has been suggested to include a temporal component in the analysis of fluency (Kellogg 1996; Sasaki 2004). Problematic about this measure is, however, that the amount of produced text is not exclusively related to translating, but also to writing processes, which might be related to higher-level processing, such as planning, re-reading or reviewing. All these fluency measures are considered to define fluency from a broader perspective than so-called on-line measures of writing fluency (Stevenson 2005).

Studies using on-line measures look at bursts, defined as the number of written words or characters between two pauses (P-bursts) or two revisions (R-bursts) (Chenoweth & Hayes 2001) (see 5.2.1 for further details). Compared to production rate, the main advantage of using bursts as measures of fluency is that they reflect the size of language chunks writers can produce on average without interruption, that is within two pauses/revisions. This process is largely dependent on the degree of automatisation of two main components, translation (Chenoweth & Hayes 2001) and transcription (Limpo & Alves 2013). Hence, the more automated these processes are, the lower the cognitive load is and the longer the bursts are, and vice versa. Therefore, measuring the length of bursts, both in characters and in time, provides a more reliable measure of the actual translation process (Stevenson 2005). Studies have shown that L2 writers produce shorter bursts than in L1 (Chenoweth & Hayes 2001; Roca de Larios et al. 2001; Whalen & Ménard 1995; Van Waes & Leijten 2015).

In Chenoweth and Hayes’ (2001) study, differences in fluency were associated with revision performance, that is, the higher the number of R-
bursts in relation to the overall burst number, the less fluently students wrote. The researchers compiled and analysed verbal protocols of learners’ written texts, think-alouds and video-recordings of their writing in order to identify bursts and formulation periods, which were not necessarily transcribed. This extremely time-consuming procedure, however, can nowadays be ameliorated by the use of keylogging software (see chapter 3.4.3).

Besides text production measures, the study of pauses and revisions offers a complementary view on writing fluency. While it is assumed that under conditions of high cognitive load text production rate decreases for L2 writers, the numbers of pauses and revisions increase under the same condition. A focus on the specific types and characteristics of the events that interrupt the writing flow could shed light on aspects writers are particularly engaged with.

The interpretation of pauses is complicated as writers may pause for cognitive, sociopsychological and physical reasons (Schilperoord 2001). Even though it is widely accepted that writing pauses are associated with conceptualisation and control (Chanquoy et al. 1996), it is difficult to deduce the exact underlying cognitive process from the event itself. The occurrence of a pause may either enhance or hinder fluency depending on its location and the specific cognitive process underlying it (Latif 2013). Alves’ et al. (2008) results, for example, confirmed findings of previous real-time studies, which found that pauses can be mostly linked to planning and revising processes, but also mental formulating was activated during pauses to a comparable degree. Hence, all major writing processes might be involved when pauses occur.

When investigating the nature of writing pauses, one first step is setting a pause threshold, which defines which pauses to consider in the analysis (based on certain assumptions about their purpose). In L2 writing research, a two-second threshold has frequently been chosen (for example Lindgren et al. 2008; Spelman Miller 2000a; Spelman Miller et al. 2008) in order to focus on pauses that are assumedly concerned with conceptual considerations of writing, such as planning, reading and reviewing. Pauses below this threshold are supposedly related to translation processes and formal aspects of language, for instance spelling or grammar (see section 5.2.1 for further information about the choice of thresholds in this study).

Alves and Limpo (2015) argue that longer pauses in the transcription phase can be seen as indicators of some sort of cognitive effort. Writers stop transcribing text to focus on a problem or to cope with several formal and conceptual demands at the same time. In that line of thought, longer pauses are not considered as conscious decisions to recapitulate the text, but as an inevitable reaction to high processing demands. Another perspective can be found in Lindgren et al. (2008), who argued that longer pauses in L2 writing
can be interpreted as compensatory devices in order to maintain a certain level of text quality despite L2 linguistic limitations. For example, having in mind how writing works in L1, adolescent or adult learners might try to keep the standards for their L2 writing as high as possible and pauses might serve different purposes simultaneously, such as trying to remember a specific L2 word, re-reading the last written paragraph and also thinking about how to continue the text.

Long pre-writing pauses have been associated with the writing strategy of conceptual text planning, which enables the writer to free up working memory space for other processes during transcription. Beauvais et al. (2011) for example, using think-aloud protocols and reaction time tasks, found that writers produced better texts if they had longer pre-writing pauses associated with planning. They confirmed earlier results by Kellogg (1988) and stressed the benefits of conceptual planning/outlining before writing for improving the quality of argumentative texts.

Apart from thresholds, other common pausological characteristics under study are for example mean length, the number and the location of pauses, such as before or within words, before sentences or particular grammatical units or elements. Particularly the investigation of shorter pauses before and within smaller linguistic units is important, as pausing might not only be dependent on the cognitive resources available, but also on linguistic constraints. Spelman Miller (2000b) for example studied the mean pause length of L1 and L2 writers at different locations and found that pauses for both groups of writers increase with the text unit level (character, word, intermediate constituent, clause and sentence), and that all pauses in L2 writing were longer. One particular characteristic of L2 writing in Spelman Miller’s study was the significantly longer pauses at sentence level, which suggest engagement in planning activities.

Other disruptions to writing fluency are revisions. In a broad sense, revisions have been defined as changes in the writing process (Fitzgerald 1987) in order to verify and improve text (Faigley & Witte 1981; Alamargot & Chanquoy 2001). They have also been termed problem-solving processes (Allal & Chanquoy 2004) or composing strategies (Latif 2013). The study of revision provides insight into the writers’ foci during writing (Lindgren et al. 2008), and these foci seem to be largely dependent on writers’ language and writing expertise (Rijlaarsdam et al. 2004). With low language proficiency, writers struggle with retrieval of lexical items, thus translation and transcription phases are effortful. The locus of attention is correct language production, which leads to more editing than rewriting (Allal & Chanquoy 2004; Chenoweth & Hayes 2001). Contrasting L1 and L2, it has been shown that L2 writers revise more than L1 writers (Cumming 2001; Silva 1993; Thorson 2000) and tend to treat revision as a local task focused on
orthography, punctuation and word semantics (Breuer 2014; Chenoweth & Hayes 2001).

In the writing model by Hayes and Flower (1980), revision processes are sub-divided into reading and editing. (Re-)reading allows writers to detect instances, where the text is not in accordance with the defined writing goals and task schema (see control and process level in Figure 7; reading would be a part of the evaluator in Hayes’ 2012 writing process model), both on a formal and a conceptual text level. This text-reviewing process (Allal & Chanquoy 2004) takes place in order to control how the already produced text fits into the required or intended mental model of the text. Further, it might serve as a trigger for new ideas (Hayes 2004). Sometimes, reading and thinking about already written text does not result in any further changes. This has been referred to as internal revisions (Hayes & Flower 1980). Internal revisions, which do not lead to text editing, might be indicated by pauses (Spelman Miller 2006) and can hardly be revealed without using introspective methods. The other possibility, external revisions, refers to visible modifications of the text in order to solve detected discrepancies between mental representations of the text and the actual written product so far. Both types of revision may have a “function as modifiers of concepts or form” (Lindgren 2005: 86).

External revisions can be studied both in a product- and a process-oriented manner. A product-based analysis of revisions would include the comparison of different drafts of a text and therefore only include those revisions, which remained in the final products (Faigley & Witte 1981). Hence, all intermediate steps would remain excluded. A number of taxonomies have been proposed to analyse revisions in written products, for example regarding the type of operation, the syntactic level or the text dimension. One widely used taxonomy of revision by Faigley and Witte (1981) makes a distinction between surface and text-based changes, depending on whether the change added information to the text or not. Other researchers have developed additional taxonomies (for example Allal & Chanquoy 2004; Chanquoy 2001). However, despite terminological differences, the main two-fold distinction between content revisions and language revisions remains a basic principle of these taxonomies.

Process-based analyses of revisions take into account the temporal features of revisions in addition to the location, where they occur. On the one hand, this perspective on revision would automatically increase the overall number of revision occurrences, as the entire writing process and all revisions that are not visible in the final text, are taken into consideration. On the other hand, it becomes of importance at which point in time revisions occur in an ongoing text production. Thus revisions are interpreted within the context of the already written text. In order to analyse revisions in ongoing text production, Lindgren and Sullivan (2006) and Stevenson et al.
(2006) introduced a taxonomy, which makes yet another distinction between revisions at the point of inscription of the text (Matsuhashi 1987) and revisions in previously written text (see Figure 8).

In the classification, revisions are distinguished on three dimensions. The first distinction refers to internal and external revision, the second one refers to whether revisions occur at the point of inscription or in previously written text, and the third distinction refers to revisions on the content, language or typographic level. Revisions at the point of inscription are to be located inbetween external and internal revisions, as the context, in which they occur, is not fully externalised. Even though it is problematic to interpret the object of a revision at the point of transcription due to the lack of context, the fact that they co-occur with transcription processes points to a greater probability of revisions, which require less cognitive costs (Lindgren & Sullivan 2006). Hence, revisions at the point of inscription are more likely to be related to language form than text content.

One important aspect to remember in the interpretation of fluency and disruptive events is the recursiveness and the dynamic character of the writing process (Flower & Hayes 1981). As writing continues, the already written text grows and writers’ task representation is therefore continuously changing. This requires writers to engage in various writing processes more often or less often at different stages of writing, or to compensate a lack of attention to some processes with an increased focus on others (Rijlaarsdam & Van den Bergh 1996; Rijlaarsdam et al. 2004). The flexibility in the execution of different writing processes reflects the problem-solving character in writing as such and points to the necessity to interpret single events also from a holistic perspective. Further, it has been stressed that additional factors are relevant to understand writing processes, such as motivation (Hidi & Boscolo 2006), writing medium (Van Waes & Schellens 2003) or knowledge of the task, genre and audience (elsewhere called

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**Figure 8. Classification of revisions (Stevenson et al. 2006: 206).**

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metacognitive writing knowledge, see chapter 6).

Related to questions about the writing medium, the access to writing aids in form of *online sources* has attracted more attention recently (for example Leijten et al. 2014; O’Neill 2012; Xu & Ding 2014) and needs to be increasingly acknowledged in the interpretation of fluency in on-line writing. As many writers frequently use computers to compose their texts, they are often provided with Internet access and aware of the possibility to access various kinds of information resources at any time; for example to consult websites to get inspiration, translate vocabulary, and check grammar and phrasing. This knowledge might influence their approach to writing and affect all other processes as well as their temporal distribution.

In more traditional terms, using an online source could be categorised as just another pause, perhaps followed by a revision. However, pauses, used to contemplate about the text, and pauses, used for language-related online search, are certainly based on different cognitive processes, put different constraints on working memory, and may involve different kinds of writing strategies. Xu and Ding (2014) state that treating online sources separately from other pauses makes the investigation of writing processes more complex.

The increasing role of online sources has been studied in different environments. Ehrensberger-Dow and Perrin (2009) for example investigated translators’ source use and research skills, Perrin (2003) described journalists’ writing from sources at the workplace and Leijten et al. (2014) looked at a professional communication designer’s content search. There are a number of studies investigating aspects of foreign language writers’ use of online sources, for instance learners’ beliefs and perceptions about source use (Garcia & Pena 2011; Steding 2009; Williams 2006), the influence of source use on text quality (Fredholm 2014, 2015; O’Neill 2012) or students’ purposes for source use and developed strategies (Elola 2008).

However, the influence of online devices on foreign language writing processes has not been studied extensively due to the common exclusion of support materials in frequently used experimental settings. These settings do not reflect the common writing environment of many writers nowadays and might even confront them with an unfamiliar situation. Only few studies have investigated the use of digital language-related writing aids from a temporal perspective and have located it as a distinct factor within the dynamics of writing fluency (for example New 1999; Xu & Ding 2014). Xu and Ding (2014) argue that computer-assisted L2 writing has features distinct from pen-and-paper writing, such as the permanent opportunity to leave the writing environment in order to look up unknown vocabulary, which places more competing demands of attentional resources on working memory. These frequent writing disruptions, most often caused by low-level
concerns, may distract writers’ attention from global planning and result in fragmented composing and conceptually poorer texts.

In this study, I argue that allowing writers to consult online sources during writing will provide research with a better understanding of how texts are composed in daily situations, in which Internet is a permanently accessible source of information. Therefore, besides pauses and revision, the factor of online source use was treated as a separate disruptive event in the analysis on fluency and it was further investigated how L3 students make use of multiple online sources when working with foreign language writing tasks.

5.2 Analysis of the process data

Fluent writing is generally associated with higher language proficiency (Chenoweth & Hayes 2001). The analysis of students’ writing fluency can be conducted in multiple ways (Van Waes & Leijten 2015). In this chapter, writing fluency is described from a process perspective since the focus is on the course of the students’ activities during text production. In order to allow multiple perspectives on the collected data, writing fluency will be described from two angles: first from the text production perspective, that is, the speed of typing as an indicator of automaticity of linguistic retrieval, and second from the perspective of the different interruptions.

The text production measures are reported per minute and demonstrate the speed of typing. To compare across sessions, two commonly used measures, production rate and bursts, were used. Further, as the speed of text production is dynamic and likely to vary within sessions (Van Waes & Leijten 2015; Van den Berg & Rijlaarsdam 1996), a within-session perspective will also be taken.

Various measures of interruptions in text production will be reported; besides pauses and revision, the consultation of online sources appeared to be natural to the students and could be observed frequently. As online source use has become an integral part of students’ natural writing environment, it appears to be valuable to analyse it on its own and thus, create a more comprehensive picture of how L3 writing processes can be characterised.

In general, pausing, revising and source use are inseparable from each other. Students might stop writing because they are unsure about the spelling of a word. They would then leave the document, open the browser, consult an online dictionary, and finally correct the error. So, from this perspective, pausing, revising and online source use are considered as factors disruptive of writing fluency, interacting with each other. However, for reasons of clarity, each disruption will be described independently in section 5.2.1, and how they might relate to each other is discussed in section 5.4. In Table 17 the process measures used in this thesis are overviewed.

All numerical measures were generated by different in-built Inputlog analyses (see section 3.4.3). They are reported as proportional values as the
writing session length differed between participants. All aggregated measures will be presented with values for the standard deviation (SD) and the coefficient of variation (COV), as they may indicate the degree of variation within the group of participants. The COV, derived by dividing the SD by the mean, is included to make the degree of variation more comparable. These values are a beneficial complement to the mean, as they indicate where a closer investigation of the participants’ data is worthwhile based on differences with respect to inter-subject-variation.

Additionally, all numerical measures were tested non-parametrically by using Friedman’s ANOVA in SPSS, which is based on ranks instead of scores (Field 2009). For each measure, the test was run twice, once with five different conditions (including the English writing session) and once with four conditions (excluding the English writing session). Further, only the complete data sets of six participants were included in the analysis. If an overall effect (p<.05) was found, a post-hoc test was conducted, in which the conditions were compared pairwise. In that way, sessions that showed a significantly different distribution could be identified. However, as in this

Table 17. Overview of reported writing process measures.

<table>
<thead>
<tr>
<th>Focus</th>
<th>Reported measure</th>
<th>Data generated by</th>
</tr>
</thead>
<tbody>
<tr>
<td>Text production</td>
<td>Production rate in characters per minute</td>
<td>Inputlog</td>
</tr>
<tr>
<td></td>
<td>Number of P-bursts and R-bursts per minute</td>
<td>Inputlog</td>
</tr>
<tr>
<td></td>
<td>Length of P-bursts and R-bursts in seconds and characters</td>
<td>Inputlog</td>
</tr>
<tr>
<td></td>
<td>Number of keystrokes per minute per interval</td>
<td>Inputlog</td>
</tr>
<tr>
<td>Fluency disruptions</td>
<td>Pauses Number of pauses per 100 words</td>
<td>Inputlog</td>
</tr>
<tr>
<td></td>
<td>Length of pauses in seconds and characters</td>
<td>Inputlog</td>
</tr>
<tr>
<td>Revisions</td>
<td>Number of revisions per 100 words</td>
<td>Inputlog</td>
</tr>
<tr>
<td></td>
<td>Proportion of language-related versus content and organisation related revision</td>
<td>Inputlog &amp; Camtasia</td>
</tr>
<tr>
<td>Online source use</td>
<td>Percentage of source use per session</td>
<td>Inputlog</td>
</tr>
<tr>
<td></td>
<td>Number of source switches per minute</td>
<td>Inputlog</td>
</tr>
<tr>
<td></td>
<td>Length per switch to online sources</td>
<td>Inputlog</td>
</tr>
<tr>
<td></td>
<td>Distribution of source use within sessions</td>
<td>Inputlog</td>
</tr>
<tr>
<td></td>
<td>Search strategies in online sources</td>
<td>Camtasia</td>
</tr>
</tbody>
</table>
study statistical data analysis is considered as an additional perspective to test assumptions about general tendencies, significant effects will only be noted in a footnote.

Besides the analysis of the numerical data, a qualitative analysis of the screen-recording files was undertaken when investigating the types of revisions and search strategies in online sources.

5.2.1 Measures of text production
This section reports on the measures chosen to describe the students’ writing fluency and possible changes during the intervention. These are production rate, the P- and R-bursts (number per minute and length in second and characters) as well as keystrokes per minute and interval.

Production rate
Production rate is one of the most commonly reported fluency measures in writing research (Chenoweth & Hayes 2001). Characters produced per minute provide a proportional value, which indicates at what speed a writer is able to produce text. In Inputlog, these values are provided by the summary analysis and allow a general comparison of writing fluency across sessions. The values reported in this study are based on process measures, that is, all characters produced in the writing process are included, and not on product measures, that is, characters in final text. The production rate is reported across writing sessions.

Number of P-bursts and R-bursts per minute
Bursts are segments of writing, which are terminated by interruptive events (Chenoweth & Hayes 2001: 88). While pauses themselves are non-active segments (at least regarding text production), the so-called P(ause)-bursts are those episodes of text production between two pauses, in which the (writing) activity happens. The same principle holds for R(evision)-bursts. Figure 9 illustrates a fictive example of how the writing process could be made up by bursts and interruptions. The lower line corresponds to the bursts, that is those segments of the process in which writers type in the text document. The upper line refers to interruptions, such as pauses, revisions or switches to an online source.

24 Later in this chapter, students’ switches between the main document and the websites are reported. This measure corresponds to what can be considered a S(ource)-burst. This term, however, has not been used in the literature so far. In the description of online source use, the focus will not be on the bursts, but on the online source use as disruptions.
In the case of R-bursts, the definition of what counts as a revision in computer-assisted writing seems relatively clear-cut: either a deletion of or an insertion in already produced text (Lindgren et al. 2008). A pause in online writing is generally defined as the time interval between two keyboard or mouse activities. However, revisions and pauses differ, as it has to be decided beforehand what is considered a relevant pause, or in other words, how long does a pause need to be before it is included in the analysis. For example, what is usually excluded for the analysis of pauses is the time writers use for transitions from one key to another, as this time span cannot be considered a pause related to the writing process but an unavoidable aspect of using the keyboard as a writing medium (Wengelin 2006). Apart from these so-called “interkey intervals”, other types of shorter pauses might be excluded for a number of reasons. For this purpose, pause thresholds need to be set based on the research interest.

In this study, a 200 millisecond (ms) and a 2000 ms threshold were chosen to investigate students’ pausing behaviour. A lower threshold of 200 ms was chosen, thus all pauses longer than 200 ms were calculated. This decision is based on a so-called two-minute copy task. In this task, a given sentence is typed as often as possible within the time span of two minutes. This sentence is an easily reproducible sentence in writers’ mother tongue, which they can type at maximum speed25. The purpose of this task is to define the pause threshold, which distinguishes purely motoric pauses, that is, the transition time from one key to the next, from those, which involve cognitive effort. The pauses identified in this task are thus almost all exclusively motoric transition pauses or interkey intervals. In the analysis of the students’ two-minute copy task, Table 18 shows means and upper as well as lower pause boundaries.

The data reveals that, even at such a low level, the students show a high variation in interkey intervals. Even though the optimal way to deal with these differences would be to define an individual lower threshold for each of them, a 200 ms threshold was used, as suggested in writing research in order

25 Each student was asked to perform this task at the beginning of one single writing session. The sentence to be typed was the Swedish nursery rhyme "I ett hus vid skogens slut liiten tomte tittar ut."
Table 18. Interkey-transition times in milliseconds.

<table>
<thead>
<tr>
<th>Mean</th>
<th>Hilda</th>
<th>Henry</th>
<th>Ida</th>
<th>Mia</th>
<th>Per</th>
<th>Sara</th>
<th>Tom</th>
</tr>
</thead>
<tbody>
<tr>
<td>SD</td>
<td>3.6</td>
<td>3.5</td>
<td>5.6</td>
<td>2.9</td>
<td>3.7</td>
<td>4.1</td>
<td>4.3</td>
</tr>
<tr>
<td>Upper bound</td>
<td>188.9</td>
<td>143.5</td>
<td>185.3</td>
<td>156.0</td>
<td>142.7</td>
<td>174.6</td>
<td>194.7</td>
</tr>
<tr>
<td>Lower bound</td>
<td>174.8</td>
<td>129.8</td>
<td>163.3</td>
<td>144.7</td>
<td>128.3</td>
<td>158.3</td>
<td>177.9</td>
</tr>
</tbody>
</table>

to exclude most motor-related pauses from the analysis (Van Waes & Leijten 2015).

However, during the on-going interpretation of the results it turned out that the 200 ms threshold, which had been derived from a copy task in L1 Swedish, was in fact too low for writing in L3 German. The observations indicated that this threshold did not exclude most motor-related pauses, but that typing German words in fact represented a much higher obstacle to the students than what had been expected. In other words, the participants’ pausing time, related to finding the next key for a German word frequently exceeded the 200 ms threshold frequently. This could be observed, for example, when comparing the production rate development with the respective number of pauses and P-bursts above 200 ms per minute. The more fluently the students wrote, the higher the number of pauses or P-bursts became. The most likely explanation for this observation is the difficulties in typing correctly spelled German words. However, also characteristics specific to the language German might influence the length of interkey intervals, for example the capitalisation of nouns in German, which does not exist in Swedish and English, or the production of letters such as “ß” or “ü”. Hence, an increase in the number of pauses can also indicate improved fluency.

For this reason, the 200 ms pause threshold was not used for measuring bursts per minute, as they would have shown the same picture as the production rate. However, to illustrate the writing characteristics regarding number of pauses, the 200 ms threshold remained in the analysis.

In contrast to this lower pause threshold, which captures low-level cognitive processes, a higher threshold of 2000 ms will be used to indicate higher cognitive processes. This threshold has been frequently used in writing research (see for example Spelman Miller 2000a; Sullivan & Lindgren 2002; Wengelin 2006) to investigate fluency in L1 and L2 writing processes. When this pause threshold is referred to, it implies that only pauses longer than 200 ms are calculated.

After defining these thresholds, the number of P-bursts was generated by Inputlog’s summary analysis. These values were further divided by the
writing time in minutes to derive the proportional value. The number of R-
bursts in each writing session was derived by Inputlog’s revision analysis and
treated in the same way.

Length of P-bursts and R-bursts in seconds and characters
In addition to the number of bursts per minute, summary and revision
analyses generated the bursts’ length in time and in typed characters. With a
growing length of bursts, it can be assumed that writers get more fluent as
longer periods of time remain uninterrupted.

In order to add more detailed information about how fluency developed in
the course of each session, the numbers of keystrokes per minute and interval were included.

Keystrokes per minute and interval
Inputlog’s fluency analysis provides an overview of the number of keystrokes
in the evolution of each writing session. For this purpose, the writing session
was divided into ten equal intervals. For each interval, the number of
keystrokes per minute is reported. This generates a picture of the
distribution of more fluent versus less fluent periods within each writing
session and facilitates across-session comparisons despite different time
lengths. Furthermore, these results can be evaluated against the background
of other measures, for example, the amount of source use in more fluent
versus less fluent intervals.

5.2.2 Measures of writing interruptions
This chapter describes in detail how the fluency disruption measures
presented in Table 17 were derived.

Number and length of pauses
Inputlog’s pause analysis generates values for the overall number and length
of pauses, depending on the threshold used. The pause analysis allows
distinguishing between pauses in general, pauses within and pauses between
words. Further, the number of pauses per 100 words is reported. In contrast
to a proportional value per minute, which reflects a students’ writing fluency,
a calculation per 100 words may indicate more appropriately how often
students need to interrupt their writing in relation to their language
proficiency. The number of pauses per 100 words was calculated with the
following formula.

\[
\frac{\text{No. of pauses}}{\text{No. of written words}} \times 100 = \text{No. of pauses per 100 words}
\]
Number of revisions per 100 words
Inputlog's revision analysis generated the absolute number of instances of deletions and insertions for each writing session. In this study, the sum of these occurrences is treated as the overall number of revisions. Thus, based on the same assumption and with the same formula described for the pauses, revisions were calculated per 100 words.

Types of revisions
The number of R-bursts per 100 words sheds light on how often students make changes within a fixed amount of produced text. A complement to these sheer numbers is the attempt to classify the types of revisions.

Inputlog generates a so-called revision matrix, which provides a detailed transcript of all instances of normal production, deletion and insertion with exact number of edits, point in time, time duration and position. With this data it is possible to analyse and specify the type of revisions made in the context of the text written up to the point of the revision (Lindgren & Sullivan 2006). In addition, screen-recording files can be used to facilitate this process. In this study, the main purpose of the analysis of these revision matrix files was to obtain the number of external content and organisation revisions compared to language-related revisions. The goal was to see how often students revise and to investigate to what degree they involve higher-level revisions. In these numbers, revisions both at the point of inscription and in previously written text are included (Lindgren & Sullivan 2006; Stevenson et al. 2006; see Figure 8). Table 19 shows examples of what was treated as a revision of content and organisation.

The attempt to analyse all external content and organisational revisions is problematic. In many cases, the revisions could have been categorised in multiple ways, for example the re-start of a sentence could indeed also be seen as a content change. Further, the deletion of a whole paragraph, for example, might have occurred due to the students' judgement of its grammatical correctness, but eventually also result in a text structure change. Finally, re-starts at the beginning of sentences sometimes comprised few words only, which were typed, then deleted and replaced by other words. If these re-starts were mainly concerned with phrasing the same idea differently or a real change in content could not always be clearly identified. These concerns mean that the numbers presented about content and organisational revisions need to be interpreted with care. However, the purpose of this analysis is to make an approximate comparison between the overall amounts of local (language and typography) and global (content and organisation) revisions in an L3 writing setting. Therefore, the overall number of revisions derived by Inputlog's revision analysis will be contrasted to the number of content and organisational revisions.
### Table 19. Examples of content and organisational revisions.

<table>
<thead>
<tr>
<th>Type of revision</th>
<th>Participant &amp; session</th>
<th>Original text</th>
<th>Revised text</th>
</tr>
</thead>
<tbody>
<tr>
<td>Change of content</td>
<td>Sara in G2</td>
<td>manche Tage (‘some days’)</td>
<td>nicht immer (‘not always’)</td>
</tr>
<tr>
<td></td>
<td>Per in G2</td>
<td>wird man fett (‘one becomes fat’)</td>
<td>wird es ungesund (‘it becomes unhealthy’)</td>
</tr>
<tr>
<td>Addition of content</td>
<td>Mia in G3</td>
<td>Mensch (‘human’)</td>
<td>Körper eines Menschen (‘body of a human’)</td>
</tr>
<tr>
<td></td>
<td>Hilda in G2</td>
<td>falls man weiter Fleisch (‘in case meat is continually’)</td>
<td></td>
</tr>
<tr>
<td>Re-start of a sentence</td>
<td>Hilda in G3</td>
<td>In die Schule (‘At school’)</td>
<td>Wenn du bist in die Schule (‘When you are at school’)</td>
</tr>
<tr>
<td>Reorganisation of text structure</td>
<td>Mia in G3</td>
<td>Überall (‘Everywhere’) Jeden Tag (‘Every day’)</td>
<td></td>
</tr>
</tbody>
</table>

#### Online source use

In addition to pauses and revisions, online source use is considered a disruptive factor with respect to writing fluency. As Inputlog logs every event during the writing session, it is possible to also generate the exact time when writers leave the main document (for example for a search query on a specific web page, for example), and when they enter the main document again. The sum of this search-related time on web pages enables us to obtain a calculation of the percentage of source use in relation to the overall writing time of each session and makes a comparison of values possible. Since Inputlog logs each event individually (for example each consultation is logged as a focus event with information about web browser, web page and search keyword), the logfiles had to be recoded in such a way that it was possible to summarise all consultation as an aggregated number.

This recoding process included clustering similar events that occurred during the writing into groups. The majority of logged events were related to the text production in the main document. The second largest group consisted of all events related to the consultation of language-related online sources, that is different online dictionaries (for example “Pauker”, “Babla” or “Tyda”) and one translation tool (Google Translate)\(^{26}\). See Figure 10 for the most commonly used sources in the writing sessions.

The third and last group included a number of other events not of central relevance for this study, such as content-related consultations of web pages, pop-up windows of the used programs or students’ browsing over the task.

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\(^{26}\) See section 5.3.3 for short descriptions of these online sources.
For example, if a student wrote 60 minutes, and spent 85% (51 minutes) of his or her writing time in the main document, it can be assumed that nearly the complete rest of 15% (nine minutes) was spent in online sources. The nine minutes are then on average divided into approximately 4 minutes on Pauker, 2 minutes on Google Translate, 1 minute on Babla, 1 minute on Tyda and 1 minute on other websites. The last minute will be excluded from the analysis, which was made possible by the recoding and filter procedure.

After recoding the raw data, Inputlog’s inbuilt source analysis and general analysis were run. As already mentioned, the generated data enabled derivation of the percentage of online source use in relation to overall writing time, the number of source switches per minute and the mean time duration of source use for each writer and session. The percentage of online source use describes the amount of source use relative to overall writing time. The number of switches per minute is a measure that reflects how often students switch from the main document to the web browser and from the web browser to the main document. In this study, every logged switch is a source-related activity and can be used as an indication of how frequent the students’ attention switched between the writing activity and the search process. See Figure 9, in which the lower line would refer to the main document whereas the upper line would indicate the time spent in online sources.

In this thesis, the mean time of source use refers to the average duration between the point when students leave the main document for online source consultation and the point when they enter the main document again. For example, in Figure 9, numbers one to four refer to different instances when a writer spends time in online sources. During such an instance, a writer might use one or several online sources after one another.

Dividing the overall time spent in online sources by the overall number of switches derives the mean time duration of online source use. It provides
information about the amount of time students spent in online sources on average indicating strategies. For example, if students display few but long source switches, it might be because they are careful in choosing a specific translation, because they are insecure or because they make use of certain features of an online source.

In addition to an across-sessions perspective, a within-session perspective was chosen. In order to investigate variations in source use at different points in time in a writing session, the log data of each writing session was divided into ten similar intervals (see the similar procedure for keystrokes per minute per interval). In this way it was possible to account for the percentage of source use in each of these ten intervals and allows a certain degree of reconstruction of the distribution of source use in the writing process.

Search strategies in online sources
In addition to the generation of numerical data, the first writing session G1 was also analysed qualitatively regarding the patterns and strategies of online source consultation. This is considered a useful complement to the overall amount of online source use, but in particular to the investigated patterns in number of switches per minute and mean time per source use. In order to draw a detailed picture of each student’s pattern, Inputlog’s source analysis, which identifies the web browser, the active URL, the title of the page and the search keyword (Leijten et al. 2014) was used. In that way, it was possible to create a general picture of the students’ writing processes in interaction with multiple online sources and to obtain exact information about writing time, text length, use of online sources in relation to time spent in the word processor, distribution of source use throughout the writing process, number of search queries and finally also active writing time and total pausing time.

In addition, the screen-recordings were analysed according to the online source used, the search item, the search results offered and the student’s following activity. In the first explorative analysis, common behaviours among the participants were observed and the students were divided into two groups in order to describe their behaviour. Within these groups, each participant will also be described individually. To complement these analyses, relevant information in the transcriptions of the stimulated recall interviews was used when appropriate.

Drop out of one student
One participant, Hilda, dropped out of the study after session G3 and only six participants provided data in G4 and E. This circumstance raised the issue if aggregated values of seven participants in G1–G3 could be compared to aggregated values of six participants in session G4 and E. By recalculating
Figure 11. Calculation of typed characters per minute for six and seven participants.

Figure 12. Calculation of online source use for six and seven participants in %.

the mean values of the different writing process measures in sessions G1–G3 for the six remaining participants, it became apparent that the general trend for sessions G1–G3 is resembled by aggregated values of both six and seven participants (see for example typed characters per minute in Figure 11 and online source use in Figure 12).

As the values for six and seven participants are comparable, all writing process values for sessions G1–G3 are reported for seven participants, and for sessions G4 and E for six participants.

5.3 Results

The developments of the students’ writing processes are described in two steps. In the first step, the general trend on the group level will be described by presenting aggregated values for the fluency measures. Particularly representative or outlying values of smaller sub-groups will be highlighted when appropriate. In the second step, three participants with rather diverging characteristics will be described in case studies in order to demonstrate the variation within the group.
For both the group and the case level, the presentation of the results is twofold. First, a number of text production measures are described, indicating at what speed the students produced text. Second, pauses, revisions and the consultation of online sources, that is events, which interrupt the speed of writing and interfere with text production, are presented.

Finally, in order to gain a deeper understanding of the influence of online source use on writing in an L3, a detailed analysis of the focus students’ (see section 3.3 for the selection of the focus students) online search behaviour in session G1 will be presented.

5.3.1 Fluency development - group level

Development of text production
The development of writing fluency, defined as the speed of writing, will first be described in an across-session perspective by reporting production rate (characters per minute) and number of P- and R-bursts per minute and length of P- and R-bursts in seconds and characters. A within-session perspective will then be taken by reporting the typed keystrokes per minute and interval.

Production rate
The aggregated values for the production rate across all writing sessions are summarised in Figure 13. The values display the fluctuation of writing fluency. However, from a developmental perspective, which comprises all German sessions, the graph indicates that there was an increase from session G1 to G2 and to G4, while G3 represents a setback (see chapter 4 for a similar trend in the students’ text quality). The values for session E, in comparison, reveal that the students are more fluent in writing English.

In addition, the data also suggests that the variation within the group became consistently smaller in German writing, while a substantial deviation can be observed for the English writing session.

Number of R- and P-bursts per minute
In addition to the production rate, the numbers of P- and R-bursts per minute were analysed to investigate the students’ writing fluency. In Table 20, the values for P-bursts for the threshold of 2000 ms are presented.

\[\chi^2(6, 4) = 14.7; p < .01\]
\[\chi^2(6, 4) = 14.7; p < .01 \text{ and } G3 - E p < .04.\]
By choosing a 2000 ms threshold to calculate the number of P-bursts, pauses that are presumably connected with the students’ higher-level considerations about their writing were isolated. Hence, a higher number of P-bursts at a 2000 ms level indicate that, within one minute, the students need a higher number of long pauses. The values in Table 20 show that the students need a higher number of pauses per minute in German compared to English, even though there is a slight decrease towards the end of the intervention. This result points to the production of a coherent text in German putting a heavier cognitive load on the students than producing an equivalent text in English and that this requires them to stop typing more often.

**Table 20. Number of P-bursts per minute.**

<table>
<thead>
<tr>
<th></th>
<th>G1</th>
<th>G2</th>
<th>G3</th>
<th>G4</th>
<th>E</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Mean</strong></td>
<td>42.5</td>
<td>47.3</td>
<td>38.7</td>
<td>50.2</td>
<td>74.6</td>
</tr>
<tr>
<td><strong>SD</strong></td>
<td>12.2</td>
<td>13.2</td>
<td>8.5</td>
<td>8.3</td>
<td>22.7</td>
</tr>
<tr>
<td><strong>COV</strong></td>
<td>28.7%</td>
<td>27.9%</td>
<td>22.00%</td>
<td>16.50%</td>
<td>30.40%</td>
</tr>
</tbody>
</table>

Figure 13. Mean number of characters per minute across sessions G1–G4 and E.

The non-parametrical testing for the number of P-bursts per minute (2000 ms) revealed no overall effect when considering only the German sessions, but when including English the overall effect was \( \chi^2(6, 4) = 12.1; p<.02 \). The post-hoc testing revealed a significant difference between G1–E \( p<.01 \).

---

28 The non-parametrical testing for the number of P-bursts per minute (2000 ms) revealed no overall effect when considering only the German sessions, but when including English the overall effect was \( \chi^2(6, 4) = 12.1; p<.02 \). The post-hoc testing revealed a significant difference between G1–E \( p<.01 \).
Finally, the number of R-bursts per minute was analysed. Table 21 shows the
development throughout the intervention. The data reveals that there were
only slight fluctuations in German writing, but the trend is generally in line
with the text production results already presented, that is a slightly
increasing fluency until G4, even with a return to the status-quo in session
G3. The difference to English is also revealed in this measure. The students
were able to write more fluently in English and consequently the writing was
characterised by a higher number of revisions per minute, and therefore a
higher number of R-bursts as well. Further, the COV values suggest that
there is a higher variation among the students regarding the number of R-
bursts in comparison to P-bursts.

**Length of P-bursts in seconds and characters**
In addition to the reported measures, the length of P-bursts in seconds and
characters are analysed in order to investigate how long the writing segments
were between two pauses and how much text the students were able to
produce within these segments.

The median values for P-burst length in time and characters are reported
with a threshold of 2000 ms, because these values are more prone to
variation and therefore more likely to show changes in fluency related to
conceptual aspects of text production. Tables 22 and 23 give an overview of
the mean P-burst time in seconds (s) and characters (chars) across all
writing sessions.

<table>
<thead>
<tr>
<th>Table 21. Number of R-bursts per minute.</th>
</tr>
</thead>
<tbody>
<tr>
<td>G1</td>
</tr>
<tr>
<td>Mean</td>
</tr>
<tr>
<td>SD</td>
</tr>
<tr>
<td>COV</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Table 22. Median P-burst time (seconds).</th>
</tr>
</thead>
<tbody>
<tr>
<td>G1</td>
</tr>
<tr>
<td>Mean</td>
</tr>
<tr>
<td>SD</td>
</tr>
<tr>
<td>COV</td>
</tr>
</tbody>
</table>

The non-parametrical testing for the number of R-bursts per minute showed an overall effect
when considering only the German sessions \( \chi^2(6, 3) = 10.4; p<.02. \) The post-hoc testing
revealed a significant difference between G1–G4 \( p<.02. \) When including the English session,
the overall effect was \( \chi^2(6, 4) = 16.7; p<.002. \) The post-hoc testing revealed a significant
difference between G1–E \( p<.01 \) and G2–E \( p<.02. \)
Table 23. Median P-burst length (characters).

<table>
<thead>
<tr>
<th></th>
<th>G1</th>
<th>G2</th>
<th>G3</th>
<th>G4</th>
<th>E</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mean</td>
<td>7.0</td>
<td>7.9</td>
<td>6.9</td>
<td>9.3</td>
<td>13.1</td>
</tr>
<tr>
<td>SD</td>
<td>3.3</td>
<td>2.9</td>
<td>2.5</td>
<td>3.1</td>
<td>8.6</td>
</tr>
<tr>
<td>COV</td>
<td>46.7%</td>
<td>36.3%</td>
<td>37.1%</td>
<td>33.7%</td>
<td>65.6%</td>
</tr>
</tbody>
</table>

The results indicate that the number of produced characters per P-burst generally shows more variation between the writing sessions. While the median burst time fluctuates little, with the exception of G3, the number of characters fluctuates more, for example between G1 and G4. Thus, when judging the values in both tables in relation to each other, the already observed trend of a slightly increasing fluency is confirmed: Apart from the drop in session G3, the students were able to increase the number of typed characters within a burst in German, while the length in time remained similar. The values for the English writing session reveal once more that the students write more fluently in English; they have longer P-bursts, both in time and in characters. An additional observation when including the COV values is that the deviation from the mean regarding the typed characters per P-burst is much larger than regarding their time length. This variation can be observed not only between students within sessions, but also in single students across sessions. Table 24 shows P-burst characteristics of Sara’s and Per’s writing as examples.

Sara’s results show that between G1 and G3 there was not a great difference in length of P-bursts. However, in G4 a remarkable increase in the number of typed characters in slightly longer bursts took place. The values for G4 are very similar to what can be observed for Sara’s English writing. Per’s values, on the contrary, do not show a remarkable change across the German sessions but rather smaller fluctuations. In G4, his results differ the most from Sara’s with regard to the length of P-bursts. The main difference between these two students’ production is their values for English writing. While it becomes apparent in Sara’s values that in both languages she writes in a comparable manner and that her German values gradually develop towards the level in English, Per’s values are rather puzzling. The length of

Table 24. P-bursts of two students in seconds and characters.

<table>
<thead>
<tr>
<th></th>
<th>G1</th>
<th>G2</th>
<th>G3</th>
<th>G4</th>
<th>E</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sara</td>
<td>s</td>
<td>6.7</td>
<td>6.1</td>
<td>6.6</td>
<td>7.3</td>
</tr>
<tr>
<td></td>
<td>chars</td>
<td>7.0</td>
<td>7.0</td>
<td>8.0</td>
<td>14.0</td>
</tr>
<tr>
<td>Per</td>
<td>s</td>
<td>6.2</td>
<td>6.1</td>
<td>5.9</td>
<td>8.0</td>
</tr>
<tr>
<td></td>
<td>chars</td>
<td>5.0</td>
<td>7.0</td>
<td>6.0</td>
<td>7.0</td>
</tr>
</tbody>
</table>

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the P-bursts increases, which, however, does not result in more characters, but in the exact opposite. Sara’s sudden increase in G4 and E could possibly be explained by language proficiency related matters, but Per’s drop seems less likely to be caused by linguistic deficiencies. This needs to be further investigated by examining what exactly happened in the writing session.

When relating the number of P-bursts per minute above a 2000 ms threshold in Table 20 with their corresponding length in Table 22 it becomes apparent that a rather large number of seconds within one minute of writing time remains, which was used for other activities. In order to find an explanation for these values, the generated files of Inputlog’s general analysis were analysed, as they provide a transcript of every single activity. It became apparent that the remaining time was often filled with pauses, but also other keyboard activities (apart from typing letters, punctuation or spaces), for example cursor movement, pressing the control, backshift or shift keys. Therefore, it can be stated that rather large parts of the writing sessions are in fact not used for generating text, but for different activities as re-reading, thinking, browsing or searching.

**Length of R-bursts in seconds and characters**

Table 21 showed that the number of R-bursts in English was higher than in German, which was interpreted as in indicator of a more fluent writing process. Like P-bursts, R-bursts were also analysed according to length in seconds and characters. The results are displayed in Tables 25 and 26.

The evaluation of the length of R-bursts shows that between the German sessions there is hardly any difference. A very slight increase in length might be observed in G4, but generally the level remains similar. In writing English, the length of R-bursts in seconds does not really differ to German writing, but slightly more characters are produced in English, which means that the students’ higher production rate is also reflected in this measure to a certain degree.

**Table 25. Median R-burst time (seconds).**

<table>
<thead>
<tr>
<th></th>
<th>G1</th>
<th>G2</th>
<th>G3</th>
<th>G4</th>
<th>E</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Mean</strong></td>
<td>3.8</td>
<td>3.8</td>
<td>3.9</td>
<td>4.3</td>
<td>3.9</td>
</tr>
<tr>
<td>SD</td>
<td>1.3</td>
<td>2.6</td>
<td>2.1</td>
<td>1.6</td>
<td>1.4</td>
</tr>
<tr>
<td>COV</td>
<td>33.1 %</td>
<td>67.7 %</td>
<td>52.4 %</td>
<td>37.7 %</td>
<td>37.1 %</td>
</tr>
</tbody>
</table>

**Table 26. Median R-burst length (characters).**

<table>
<thead>
<tr>
<th></th>
<th>G1</th>
<th>G2</th>
<th>G3</th>
<th>G4</th>
<th>E</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Mean</strong></td>
<td>8.3</td>
<td>8.4</td>
<td>7.7</td>
<td>8.9</td>
<td>10.8</td>
</tr>
<tr>
<td>SD</td>
<td>1.8</td>
<td>2.2</td>
<td>2.0</td>
<td>2.0</td>
<td>2.6</td>
</tr>
<tr>
<td>COV</td>
<td>22.0 %</td>
<td>26.4 %</td>
<td>25.6 %</td>
<td>22.0 %</td>
<td>23.9 %</td>
</tr>
</tbody>
</table>
In addition to the aggregated values across the writing sessions, it is worth taking into account how fluency levels were distributed within each of these sessions. For this purpose, the description of the writing fluency development also includes the number of keystrokes per minute and interval.

*Typed keystrokes per minute per interval*

The number of keystrokes per minute and interval provides an overview of fluency development in the writing sessions over time. In Figure 14, the x-axis shows the ten intervals into which each session is divided. The y-axis shows the relative number of keystrokes per minute in each interval. In that way, changes in fluency over time can be represented.

Apart from the overall differences in fluency already described, Figure 14 shows that the general trend of fluency distribution within the writing sessions is similarly shaped. All sessions show inverted u-curved lines, which indicate that the most fluent periods are located somewhere between interval four and seven. The difference between the less fluent initial and final parts

![Figure 14. Keystrokes per minute (process) in each interval within all writing sessions.](image)

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30 “Poly” means polynominal trendline, which is a curved line used to illustrate trends for fluctuating data.
and the more fluent middle parts is a distinguishing feature. While it is apparent that in session G1 there is a more evenly distributed amount of (generally low) fluency from the initial to the final stages of the writing session, all other sessions increasingly developed more clear curves with lower fluency at the beginning and at the end, but higher fluency in the middle. With this trend, the German sessions, especially G4, show an evolution towards the fluency distribution observed for English.

A preliminary conclusion is that the change in fluency in German writing is rather limited. This observation can best be seen in production rate. Two aspects are remarkable in German writing. First, from session G1–G2 and G4, a slight increase of fluency can be observed. G3 is characterised by a relative setback, which is reflected in all reported measures. The potential reasons for this setback will be discussed in section 5.4. Regarding writing in English, most measures indicate a higher level of fluency, even though for some measures, such as the number of P-bursts above a 2000 ms threshold or the length of R-bursts, this difference is less evident.

Second, fluency patterns within each writing session are comparable, that is higher and lower levels of text production seem to be relatively consistent irrespective of the level of language proficiency. However, particularly the middle parts of the writing sessions were affected, as there was a slight development throughout all German writing sessions towards a more curved fluency development, comparable to the very clear inverted u-curve, observed for English.

Writing interruptions
The second perspective on the writing process measures describes the factors that interrupt fluent writing. In this study, these factors are pauses, revisions and the use of online sources. The results of the analysis will be described below in that order.

Pauses
Pauses are interruptive events of writing fluency. Table 27 summarises the results for pauses in number per 100 words and their median length.

A slight decrease in the number of pauses is recognisable in the development of writing German from session G1–G4, even though the relative setback in G3 is repeatedly displayed. This trend is reflected in the values for pauses above both the 200 ms and the 2000 ms threshold. In addition, a clear difference in pausing behaviour between German and English becomes apparent. For both thresholds the students use almost
Table 27. Number and length of pauses.

<table>
<thead>
<tr>
<th></th>
<th>G1</th>
<th>G2</th>
<th>G3</th>
<th>G4</th>
<th>E</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Number of pauses per 100 words</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>&gt;200 ms</td>
<td>901.1</td>
<td>849.0</td>
<td>883.3</td>
<td>783.7</td>
<td>391.9</td>
</tr>
<tr>
<td>SD</td>
<td>93.1</td>
<td>140.1</td>
<td>245.5</td>
<td>178.4</td>
<td>58.0</td>
</tr>
<tr>
<td>COV</td>
<td>10.3 %</td>
<td>16.5 %</td>
<td>27.8 %</td>
<td>22.8 %</td>
<td>14.8 %</td>
</tr>
<tr>
<td>&gt;2000 ms</td>
<td>100.5</td>
<td>84.0</td>
<td>89.0</td>
<td>76.4</td>
<td>30.9</td>
</tr>
<tr>
<td>SD</td>
<td>38.3</td>
<td>27.3</td>
<td>18.8</td>
<td>15.8</td>
<td>11.5</td>
</tr>
<tr>
<td>COV</td>
<td>38.1 %</td>
<td>32.5 %</td>
<td>21.2 %</td>
<td>20.7 %</td>
<td>37.3 %</td>
</tr>
<tr>
<td><strong>Median pause time (s)</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>&gt;200 ms</td>
<td>0.484</td>
<td>0.435</td>
<td>0.446</td>
<td>0.463</td>
<td>0.395</td>
</tr>
<tr>
<td>SD</td>
<td>0.071</td>
<td>0.047</td>
<td>0.053</td>
<td>0.057</td>
<td>0.053</td>
</tr>
<tr>
<td>COV</td>
<td>14.6 %</td>
<td>10.8 %</td>
<td>11.9 %</td>
<td>12.4 %</td>
<td>13.6 %</td>
</tr>
<tr>
<td>&gt;2000 ms</td>
<td>3.724</td>
<td>3.672</td>
<td>3.971</td>
<td>3.974</td>
<td>4.389</td>
</tr>
<tr>
<td>SD</td>
<td>0.276</td>
<td>0.403</td>
<td>0.437</td>
<td>0.580</td>
<td>0.725</td>
</tr>
<tr>
<td>COV</td>
<td>7.4 %</td>
<td>11.0 %</td>
<td>11.0 %</td>
<td>14.6 %</td>
<td>16.5 %</td>
</tr>
</tbody>
</table>

twice as many pauses within 100 words in German as in English. Compared to the number of pauses, the values for the median length of pauses show much less variation. The values for the German sessions for both thresholds differ so little that no trend can be observed. In comparison, the values for English show a slight difference; in English writing, the short pauses are shorter than in writing German, and the long ones are slightly longer. Nevertheless, as already mentioned, the number of pauses is much smaller within the amount of 100 words.

In order to complement the findings about pauses in general, a further distinction for particular pauses, within words and between words, was made. These values suggest how easy or difficult it was for the students to retrieve words or spell them correctly. Table 28 illustrates that the students’ L3 writing was characterised by a high number of pauses related to spelling and making lexical choices. The pauses within words above a 200 ms threshold are particularly representative of this observation. Per 100 words the students needed up to 293 pauses, that is almost three pauses per word.

31 The non-parametrical testing for the number of pauses (200 ms) revealed no overall effect when considering only the German sessions, but when including English the overall effect was $\chi^2(6, 4) = 12.93; p<.01$. The post-hoc testing revealed a significant difference between G1–E $p<.02$ and G2–E $p<.04$. Further, for the number of pauses (2000 ms), the overall effect for all sessions including the English one was $\chi^2(6, 4) = 16.93; p<.002$. The post-hoc testing revealed a significant difference between G1–E $p<.001$ and G3–E $p<.035$.

32 The non-parametrical testing for the median pause time (200 ms) in fact showed an overall effect when considering only the German sessions $\chi^2(6, 3) = 11.833; p<.008$. The post-hoc testing revealed the only significant difference between G1–G2 $p<.01$. When including the English session, the overall effect was $\chi^2(6, 4) = 17.73; p<.001$. The post-hoc testing revealed a significant difference between G1–E $p<.001$.  

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For the pauses between words the generated values are not as high regarding the shorter pauses, but when comparing to the values above the 2000 ms threshold, it becomes visible that the students needed to pause longer in more instances, approximately after every third word. The length of the pauses is in line with these conclusions. The pauses within words above 200 ms tend to be much shorter than between words, even though the difference above 2000 ms is not as clear as that above 200 ms.

Between the sessions of German writing, the students generally showed only small fluctuations and there were two different developments regarding the number of pauses within and between words. The pauses within words above a 200 ms threshold increased slightly in German until session G3 and then dropped again in G4. The pauses between words above the 200 ms threshold instead decreased until session G3 and then increased again in G4. In both cases, the values for pauses above a 2000 ms threshold do not display a particular trend. The values for English show a much lower number of pauses per 100 words in all mentioned categories.

Within words, the length of pauses remained relatively stable in G1 through G3, but increased in G4, particularly for pauses within words above the 2000 ms threshold. The pause length between words shows some slight increase until session G3 and a drop in G4. A particular difference to English was not apparent, with the only exception for the length of pauses between words above a 200 ms threshold. Here, the students’ values indicate that pauses between words are shorter in writing English than in writing German. Even though the values for the number of pauses with a 2000 ms threshold clearly illustrate the difference between the German and English writing, the values with a 200 ms threshold seem to have more explanatory power, when pauses within and between words are considered. As these pauses are naturally rather short, the majority of them are best captured when choosing a low threshold.

33 The non-parametrical testing for the number of pauses within words (200 ms) revealed no overall effect when considering only the German sessions, but when including English the overall effect was $\chi^2(6, 4) = 12.4; p<.02$. The post-hoc testing revealed a significant difference between $G2–E \ p<.04$ and $G4–E \ p<.04$. Regarding the number of pauses within words (2000 ms) there was no overall effect when considering only the German sessions, but when including English the overall effect was $\chi^2(6, 4) = 12.93; p<.01$. The post-hoc testing revealed a significant difference between $G4–E \ p<.02$ and $G3–E \ p<.01$. Further, for number of pauses between words (200 ms) the overall effect, including all sessions, was $\chi^2(6, 4) = 14.5; p<.01$. The post-hoc testing revealed a significant difference between $G1–E \ p<.01$ and $G2–E \ p<.02$. Regarding the number of pauses between words (2000 ms) the overall effect for all sessions was $\chi^2(6, 4) = 13.6; p<.01$. The post-hoc testing revealed a significant difference between $G1–E \ p<.02$ and $G3–E \ p<.02$. 34 The non-parametrical testing for the median length of pauses between words (200 ms) revealed no overall effect when considering only the German sessions, but when including English the overall effect was $\chi^2(6, 4) = 15.83; p<.003$. The post-hoc testing revealed a significant difference between $G1–E \ p<.02$ and $G3–E \ p<.007$. 117
Table 28. Number and length of pauses within and between words.

<table>
<thead>
<tr>
<th></th>
<th>G1</th>
<th>G2</th>
<th>G3</th>
<th>G4</th>
<th>E</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Number of pauses within words per 100 words</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>&gt;200 ms</td>
<td>272.1</td>
<td>279.2</td>
<td>293.4</td>
<td>260.3</td>
<td>143.6</td>
</tr>
<tr>
<td>SD</td>
<td>54.7</td>
<td>75.5</td>
<td>90.2</td>
<td>83.6</td>
<td>37.7</td>
</tr>
<tr>
<td>COV</td>
<td>20.1 %</td>
<td>27.0 %</td>
<td>30.7 %</td>
<td>32.1 %</td>
<td>26.2 %</td>
</tr>
<tr>
<td>&gt;2000 ms</td>
<td>5.8</td>
<td>6.3</td>
<td>6.1</td>
<td>6.5</td>
<td>1.6</td>
</tr>
<tr>
<td>SD</td>
<td>2.7</td>
<td>4.0</td>
<td>2.6</td>
<td>4.0</td>
<td>0.9</td>
</tr>
<tr>
<td>COV</td>
<td>45.8 %</td>
<td>63.9 %</td>
<td>42.6 %</td>
<td>61.2 %</td>
<td>55.2 %</td>
</tr>
<tr>
<td><strong>Median pause length within words (s)</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>&gt;200 ms</td>
<td>0.299</td>
<td>0.288</td>
<td>0.296</td>
<td>0.308</td>
<td>0.286</td>
</tr>
<tr>
<td>SD</td>
<td>0.029</td>
<td>0.029</td>
<td>0.038</td>
<td>0.039</td>
<td>0.031</td>
</tr>
<tr>
<td>COV</td>
<td>9.7 %</td>
<td>10.4 %</td>
<td>12.8 %</td>
<td>12.7 %</td>
<td>10.7 %</td>
</tr>
<tr>
<td>SD</td>
<td>0.780</td>
<td>0.496</td>
<td>0.659</td>
<td>1.318</td>
<td>0.825</td>
</tr>
<tr>
<td>COV</td>
<td>21.9 %</td>
<td>15.9 %</td>
<td>21.6 %</td>
<td>33.6 %</td>
<td>25.0 %</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th></th>
<th>G1</th>
<th>G2</th>
<th>G3</th>
<th>G4</th>
<th>E</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Number of pauses between words per 100 words</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>&gt;200 ms</td>
<td>173.1</td>
<td>170.9</td>
<td>153.5</td>
<td>169.9</td>
<td>120.3</td>
</tr>
<tr>
<td>SD</td>
<td>29.2</td>
<td>34.9</td>
<td>22.8</td>
<td>49.2</td>
<td>8.0</td>
</tr>
<tr>
<td>COV</td>
<td>16.9 %</td>
<td>20.4 %</td>
<td>14.9 %</td>
<td>28.9 %</td>
<td>6.6 %</td>
</tr>
<tr>
<td>&gt;2000 ms</td>
<td>34.1</td>
<td>30.8</td>
<td>34.1</td>
<td>32.7</td>
<td>13.6</td>
</tr>
<tr>
<td>SD</td>
<td>12.7</td>
<td>10.5</td>
<td>7.7</td>
<td>9.6</td>
<td>4.9</td>
</tr>
<tr>
<td>COV</td>
<td>37.3 %</td>
<td>33.9 %</td>
<td>22.4 %</td>
<td>29.4 %</td>
<td>36.3 %</td>
</tr>
<tr>
<td><strong>Median pause length between words (s)</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>&gt;200 ms</td>
<td>0.876</td>
<td>0.811</td>
<td>0.981</td>
<td>0.874</td>
<td>0.651</td>
</tr>
<tr>
<td>SD</td>
<td>0.201</td>
<td>0.266</td>
<td>0.348</td>
<td>0.320</td>
<td>0.115</td>
</tr>
<tr>
<td>COV</td>
<td>22.9 %</td>
<td>32.7 %</td>
<td>35.5 %</td>
<td>36.6 %</td>
<td>17.7 %</td>
</tr>
<tr>
<td>&gt;2000 ms</td>
<td>3.743</td>
<td>3.593</td>
<td>3.928</td>
<td>3.700</td>
<td>3.626</td>
</tr>
<tr>
<td>SD</td>
<td>0.340</td>
<td>0.566</td>
<td>0.420</td>
<td>0.461</td>
<td>0.436</td>
</tr>
<tr>
<td>COV</td>
<td>9.1 %</td>
<td>15.7 %</td>
<td>10.6 %</td>
<td>12.5 %</td>
<td>12.0 %</td>
</tr>
</tbody>
</table>

The results suggest that the students’ pausing behaviour in German writing was little affected throughout the intervention. The only slight changes that can be observed are captured by the number of pauses per 100 words but not by the length of these pauses. Additionally, it is apparent that the development of the number of pauses varies between pause type. While the overall trend pointed towards a lower number in sessions G1–G3 and an increase in G4, the reversed trend was observed for pauses within words in particular. In contrast to these rather small changes between the sessions in German writing, the difference to English was much more distinct, but mainly regarding pause number and less so regarding pause length.
Revisions

Earlier in this chapter, revisions were indirectly investigated by analysing the number of R-bursts per minute in order to gain insights into the students’ writing fluency. In this section, revisions, defined as the sum of deletions and insertions, are calculated per 100 words. This measure reflects more accurately how the revising behaviour is related to language proficiency rather than typing fluency. The generated results are presented in Table 29.

The values do not show strong fluctuations in German. However, there is a slight increase of revisions in sessions G1–G3, while in G4 the number drops again. As already observed in earlier pause measures, there is a clear difference in the number of revisions in English, as students make less than half as many revisions per 100 words. However, when the variation within the group is considered, the data suggests that in English writing, the students show similar revision behaviour. The same is observable for session G1, but in the following sessions G2 to G4, the students approach revision rather differently, as the counted occurrences display more remarkable deviations. In Table 30, three students’ revisions per 100 words in each writing session exemplify this trend.

Hilda, Ida and Per were chosen as examples, not only because their development regarding the number of revisions per 100 words differed, but also because they illustrate that from a within-subject perspective, there does not seem to be a particular consistency or a trend throughout the intervention. While Hilda increased the number of revisions until session

<table>
<thead>
<tr>
<th>Table 29. Number of revisions per 100 words.</th>
</tr>
</thead>
<tbody>
<tr>
<td>G1</td>
</tr>
<tr>
<td>-----</td>
</tr>
<tr>
<td>Mean</td>
</tr>
<tr>
<td>SD</td>
</tr>
<tr>
<td>COV</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Table 30. Hilda’s, Ida’s and Per’s numbers of revisions per 100 words.</th>
</tr>
</thead>
<tbody>
<tr>
<td>G1</td>
</tr>
<tr>
<td>----</td>
</tr>
<tr>
<td>Hilda</td>
</tr>
<tr>
<td>Ida</td>
</tr>
<tr>
<td>Per</td>
</tr>
</tbody>
</table>

35 The non-parametrical testing for the number of revisions revealed no overall effect when considering only the German sessions, but when including English the overall effect was $\chi^2(6, 4) = 12.8; p<.01$. The post-hoc testing revealed a significant difference between G1–E $p<.04$, G2–E $p<.04$ and G4–E $p<.04$. 

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In addition to these results, the number of revisions was counted, which did not remain on a linguistic level, but were concerned with content or organisation of the argumentative texts. In the analysis of the revision matrix and screen-recording files, the numbers presented in Table 31 were derived. For each writing session, the absolute number of content and organisational revisions (C/O) and the absolute number of all revisions, that is the sum of deletions and insertions, are given.

The results indicate a low number of revisions concerning content and organisation in comparison to the overall number of revisions. Even though Hilda’s writing showed a few more instances of content and organisational revisions, it seems to be a consistent trend that these students are much more concerned with text revision on the local level. This observation is consistent for German and English writing. Consequently, compared to a number of previously presented measures, the number of global text revisions does not show a substantial difference between the two languages in this group of students.

**Online source use**

Finally, the third type of writing interruption, the use of online sources, is presented. The chosen measures are first the mean percentage of source use, which will provide an overview of the general amount of source use. Second, the mean number of switches per writing interval and the mean time per source switch will provide insights about the patterns and average length of source consultation. Third, the distribution of source use within each session reveals the dynamics of source use within each session. These measures were

**Table 31. Absolute number of content and organisational revisions compared to absolute number of all revisions.**

<table>
<thead>
<tr>
<th></th>
<th>G1 C/O</th>
<th>G2 C/O</th>
<th>G3 C/O</th>
<th>G4 C/O</th>
<th>E C/O</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>all</td>
<td>all</td>
<td>all</td>
<td>all</td>
<td>all</td>
</tr>
<tr>
<td>Hilda</td>
<td>12</td>
<td>288</td>
<td>11</td>
<td>410</td>
<td>13</td>
</tr>
<tr>
<td>Ida</td>
<td></td>
<td>17</td>
<td>180</td>
<td>126</td>
<td>72</td>
</tr>
<tr>
<td>Mia</td>
<td>1</td>
<td>250</td>
<td>570</td>
<td>250</td>
<td>405</td>
</tr>
<tr>
<td>Per</td>
<td>3</td>
<td>119</td>
<td>115</td>
<td>96</td>
<td>216</td>
</tr>
<tr>
<td>Sara</td>
<td>2</td>
<td>277</td>
<td>268</td>
<td>408</td>
<td>381</td>
</tr>
<tr>
<td>Tom</td>
<td>2</td>
<td>152</td>
<td>118</td>
<td>113</td>
<td>201</td>
</tr>
<tr>
<td><strong>Mean</strong></td>
<td>3.9</td>
<td>191.3</td>
<td>4.4</td>
<td>276.9</td>
<td>3.4</td>
</tr>
<tr>
<td><strong>SD</strong></td>
<td>3.7</td>
<td>76.9</td>
<td>3.6</td>
<td>165.6</td>
<td>4.6</td>
</tr>
<tr>
<td><strong>COV</strong></td>
<td>96.3</td>
<td>40.2</td>
<td>81.3</td>
<td>59.8</td>
<td>134.6</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th></th>
<th>%</th>
<th>%</th>
<th>%</th>
<th>%</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>%</td>
<td>%</td>
<td>%</td>
<td>%</td>
<td>%</td>
</tr>
</tbody>
</table>

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chosen in order to shed light on the potential impact of online source use on writing fluency.

**Online source use across all writing sessions**

The calculations of the mean percentages of source use in relation to the overall writing time in all writing sessions are presented in Figure 15. As it is shown, the proportion of source use in relation to overall writing time decreased throughout the intervention period\(^{36}\). Thus, the students were able to reduce their source use to a certain degree in their L3 German writing. In the delayed post-test the value shows a slight increase in source use when compared to the final intervention session G3, but overall the value indicates that G4 resembles the G3 situation most, indicating that the students manage to continually integrate the interaction with the sources available in their writing at a comparably low level. In the English session the value was below all writing sessions in German, which displays the major difference between these students’ L2 and L3 proficiency and writing habits.

Additionally, the SD values reveal that while the participants showed a higher variation in their online source use in the beginning, starting out from different levels, they converge towards the third writing session. In the delayed writing session this trend was again reversed and the variation within the group became larger. In Figure 16, the seven lines of development

![Figure 15. Mean percentage of source use across all writing sessions with respective SD and COV values.](image)

\(^{36}\) Writing session G1 was characterised by the highest source use and shows resemblance with students' natural way of writing without instructional influence. In section 5.3.3, a detailed description of their online search strategies in G1 is presented as complement to the numerical information presented in this chapter.
In session G2–G3, Hilda, Henry and Tom are most representative of the general trend; they continually decreased their source use. Two participants, Ida and Sara, increased their source use only slightly in session G2 and decreased noticeably in session G3. Mia can be considered an exceptional case within this group for two reasons. Even though there was a slight source use increase from G1–G3, her overall source use remained at a low level. The data suggests that between sessions G1 and G3 only those, who started out from a very high percentage of source use dropped remarkably and almost consistently. The students, who started out from a low or intermediate level, dropped less, or in Mia’s case, even increased the source use.

When adding the values for the delayed post-session, the students show diverse developments. Four students, Henry, Ida, Per, and Sara, increased their source use as compared to session G3, while Tom and Mia decreased their source use. Tom was the only one who showed a consistent decrease throughout all German writing sessions. Mia, in contrast to her development during the first three sessions, decreased her source use in the final session even below her initial value and displayed the lowest percentage of source use overall.

As already shown in Figure 15, the aggregated mean value for the English writing session was below all German sessions. In fact, only three out of six students made use of online sources in their writing at all - Henry, Per and
Sara. Their online source use in all writing sessions is displayed in Figure 17. It is shown that only Sara made considerable use of online sources in her English writing. With an amount of 20.1%, she reached a level comparable to the German sessions and even exceeded her value for session G3 slightly. The other two participants, Henry and Per, displayed a value below 5%.

**Number of switches per minute and mean time per source switch**

In addition to the overall amount of source use, the mean number of switches per minute and the mean time per source switch are proportional values, which can make clear in more detail, how online sources are used. In Tables 32 and 33, the individual and mean values are presented.

In the evaluation of sessions G1–G3, the data reveals that neither the number of switches per minute nor the mean time per source switch changed considerably in session G2, while G3 is characterised by fewer and slightly longer source switches. Especially Hilda’s values represent this trend as her source use pattern changed remarkably in her last writing session. This observation matches the expectations since a more elaborated discussion about source use in writing during the intervention took place between sessions G2 and G3. However, the students showed a rather large deviation from the mean value in general, especially in the number of switches per minute. Per for example differs from the development of the rest of the

![Figure 17. Three participants' percentage of source use in relation to overall writing time in German and English writing.](image-url)
Table 32. Number of source switches per minute.

<table>
<thead>
<tr>
<th></th>
<th>G1</th>
<th>G2</th>
<th>G3</th>
<th>G4</th>
<th>E</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hilda</td>
<td>4.1</td>
<td>3.9</td>
<td>1.0</td>
<td>n.a.</td>
<td>n.a.</td>
</tr>
<tr>
<td>Henry</td>
<td>2.4</td>
<td>1.5</td>
<td>1.2</td>
<td>1.6</td>
<td>0.1</td>
</tr>
<tr>
<td>Ida</td>
<td>1.5</td>
<td>1.2</td>
<td>0.8</td>
<td>0.9</td>
<td>0.0</td>
</tr>
<tr>
<td>Mia</td>
<td>0.8</td>
<td>0.8</td>
<td>0.7</td>
<td>0.4</td>
<td>0.0</td>
</tr>
<tr>
<td>Per</td>
<td>3.3</td>
<td>4.3</td>
<td>3.2</td>
<td>4.5</td>
<td>0.3</td>
</tr>
<tr>
<td>Sara</td>
<td>1.7</td>
<td>1.8</td>
<td>1.2</td>
<td>2.4</td>
<td>0.6</td>
</tr>
<tr>
<td>Tom</td>
<td>2.5</td>
<td>2.3</td>
<td>1.0</td>
<td>1.1</td>
<td>0.0</td>
</tr>
<tr>
<td><strong>Mean</strong></td>
<td><strong>2.3</strong></td>
<td><strong>2.3</strong></td>
<td><strong>1.3</strong></td>
<td><strong>1.8</strong></td>
<td><strong>0.2</strong></td>
</tr>
<tr>
<td>SD</td>
<td>1.1</td>
<td>2.3</td>
<td>0.8</td>
<td>1.5</td>
<td>0.2</td>
</tr>
<tr>
<td>COV</td>
<td>50.0 %</td>
<td>60.0 %</td>
<td>60.0 %</td>
<td>80.0 %</td>
<td>140.0 %</td>
</tr>
</tbody>
</table>

Table 33. Mean time of online source use in seconds and milliseconds.

<table>
<thead>
<tr>
<th></th>
<th>G1</th>
<th>G2</th>
<th>G3</th>
<th>G4</th>
<th>E</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hilda</td>
<td>4.1</td>
<td>3.8</td>
<td>8.0</td>
<td>n.a.</td>
<td>n.a.</td>
</tr>
<tr>
<td>Henry</td>
<td>6.9</td>
<td>4.7</td>
<td>5.3</td>
<td>6.5</td>
<td>7.8</td>
</tr>
<tr>
<td>Ida</td>
<td>7.9</td>
<td>10.5</td>
<td>8.5</td>
<td>7.5</td>
<td>0.0</td>
</tr>
<tr>
<td>Mia</td>
<td>5.1</td>
<td>6.3</td>
<td>10.7</td>
<td>4.9</td>
<td>0.0</td>
</tr>
<tr>
<td>Per</td>
<td>5.0</td>
<td>2.6</td>
<td>3.6</td>
<td>3.4</td>
<td>4.2</td>
</tr>
<tr>
<td>Sara</td>
<td>8.3</td>
<td>8.5</td>
<td>8.9</td>
<td>5.4</td>
<td>7.8</td>
</tr>
<tr>
<td>Tom</td>
<td>5.7</td>
<td>4.4</td>
<td>6.0</td>
<td>4.1</td>
<td>0.0</td>
</tr>
<tr>
<td><strong>Mean</strong></td>
<td><strong>6.1</strong></td>
<td><strong>5.8</strong></td>
<td><strong>7.3</strong></td>
<td><strong>4.7</strong></td>
<td><strong>3.3</strong></td>
</tr>
<tr>
<td>SD</td>
<td>1.6</td>
<td>2.8</td>
<td>2.4</td>
<td>1.5</td>
<td>2.1</td>
</tr>
<tr>
<td>COV</td>
<td>26.2 %</td>
<td>47.9 %</td>
<td>33.5 %</td>
<td>32.2 %</td>
<td>63.7 %</td>
</tr>
</tbody>
</table>

The group since he retains a relatively high mean number of switches per minute and short mean time duration of source switch. Other students, like Ida and Mia, show very low numbers of relatively long switches throughout the entire process of G1 to G3.

In the delayed post-session G4, the mean value indicates the opposite development. The students increased the number of switches again and reduced the time per source switch considerably below all previous values. Thus, the number of switches moved back to the initial intervention state, but the switches were generally shorter in duration.

For the English writing sessions, the aggregated mean values should be treated with care because they are derived from six participants, of whom only three actually made use of online sources. Therefore, both the mean number of switches and mean time duration of source consultations are, not surprisingly, very low. This is an important observation in itself, because it reflects the major difference between the need to consult online sources in L2 and L3. However, if the actual pattern of source use of only those, who did consult online sources in English, is considered, the aggregated value of only Henry, Per and Sara is more informative. For these three students, the
mean number of source switches per minute is 0.3 (SD 0.3, COV 75.4 %) and
the mean value for source use duration is 6.6 (SD 2.1, COV 31.9%). These
values indicate that the number of search queries in L2 English is in fact
lower than in L3 German, but the duration is comparable to the latter for
those who consulted sources in their L2-writing\(^{37}\).

**Distribution of source use within writing sessions**

In addition to values indicating the amount and pattern of source use across
all writing sessions, the distribution within each session was calculated,
similarly to what has already been presented for fluency distribution. The
purpose is to investigate what variation can be found in the amount of source
use at different stages of the writing process and if there are remarkable
changes between the different sessions. The results are presented in Figure
18. The x-axis shows the writing session divided into ten intervals, the y-axis

![Figure 18. Distribution of source use within writing sessions in % (trendlines).](image)

\(^{37}\) Only the non-parametrical testing for the number of source switches per minute, including
all writing sessions, revealed that the overall effect was \(\chi^2(6, 4) = 18.27; p<.001\). The post-hoc
testing revealed a significant difference between G1–E \(p<.003\), G2–E \(p<.02\) and G4–E
\(p<.04\). This result should be interpreted in relation to the fact that only three out of seven
students consulted sources in the English writing sessions.
shows the percentage of source use.

Comparing the trendlines of the first three German writing sessions, a general decrease of source use can be observed. Additionally, it becomes apparent that irrespective of the amount, the trendlines indicate a relatively similar pattern of source use throughout all writing sessions. However, small differences are noticeable. In G1 the source use was rather evenly distributed throughout the writing session and on a continuously high level above 15% in relation to the overall writing time of each interval. In sessions G2 and G3 a change in distribution can be observed. The initial intervals are characterised by a lower or zero percentage of source use. In G2 the source use dropped in the first, in some cases also in the second interval below 10% of source use. This trend remained in session G3. With the exception of Per, none of the students used sources in the first two intervals in session G3. Ida, Mia and Sara, however, did not use sources until interval 4 or later, while they had rather high values in single intervals in the second half of their writing process (see Figure 19).

The final stages are also characterised by a lower degree of source consultation compared to the initial writing session. These observations led to the conclusion that throughout the first three sessions, the source use not only decreased but was also more concentrated in the second half of the writing process. During the first intervals, the students changed their behaviour gradually and refrained from source use-related activities.

In session G4 the mean percentage of overall source use increased by 0.8% in comparison to session G3 (see Figure 15) and the distribution changed only slightly. The mean values of the intervals show that there were higher percentages of source use-related activities in the initial and final

Figure 19. Distribution of Ida’s, Mia’s and Sara’s source use in % in session G3.
intervals of the writing process when compared to session G3. In contrast, the middle part between intervals three and seven showed a slightly lower percentage. The graph for the English writing session at first sight indicates a close similarity to the even distribution of source use in session G1, even though at a much lower level. Using the value for English as a reference point for the development in German, it becomes visible that with continued interventional instruction and practice, the trend for online source use in L3 German writing in the first three sessions gradually moved towards the low source use level in L2 English writing.

However, this holds for five out of six participants. The mean values for each interval of this graph were calculated from the six participants, who wrote this text. Three of them did not use sources at all, two only to a very low degree. Therefore, these graphs should be treated with care because what the results show is not a generally low source use by multiple participants, but hardly any source use at all with one main exception. The three participants, who consulted online dictionaries in their English writing, are presented in Figure 20. It is shown that Henry and Per used sources sparingly in two and three intervals. Sara, who is the outlier in this session with an overall mean of 20.1 % source use, showed a different behaviour. Her source use was similar to what could be observed in her initial German writing and shows rather strong fluctuations between high and low levels of source use throughout the session.

Figure 20. Distribution of Henry’s, Sara’s and Per’s source use in % in session E.
Summary
After investigating the aggregated values of the group for all writing process measures, the following main points could be observed:

Generally, the fluctuations between the German writing sessions were rather limited. However, in the progression of the intervention, including the delayed post-test, the students were able to increase the level of writing fluency in German slightly, even though this was not a consistent development, but was interrupted by a setback in G3. This observation will be further discussed in section 5.4. The measures of production rate and length of P-bursts mainly reflected this slight increase of fluency in German. The number of pauses per 100 words was in line with the development of fluency; the more fluently the students wrote, the fewer pauses were counted both on a 200 ms and a 2000 ms threshold level. However, the length of pauses did not show a remarkable change throughout the intervention, even though small fluctuations could be noticed.

In contrast to fluency and pause measures, which are in line with each other, revision and source use progressed somewhat differently. The number of revisions increased until session G3 and then dropped in the delayed-post session G4. The reversed development was shown for the overall amount of source use. Hence, with decreased source use, revisions increased. In Figure 2, the general development of text production, the number of pauses and revisions per 100 words and the amount of source use are summarised to relate the four separate trends to each other.

The figure points to the fact that fluency and pauses as well as revisions and source use showed reversed developments. Taking departure from the source use, it can be speculated that relying less on online sources, as suggested during the intervention, would lead students to pause and revise more due to using as much of their own language resources as possible. It can be assumed that this results in a decrease in writing fluency. As mentioned earlier, session G3 is considered a relative setback or a return to status quo in the results. Thus, when comparing the initial with the final session G4 in order to summarise the overall development within the intervention, it becomes clear that compared to G1, the students’ writing fluency was higher in G4, per 100 words they paused less, revised more and used fewer online sources.

A further observation from the group level analysis is that the general distribution of fluency changed slightly as it became more concentrated in the middle parts and lower at the initial and final stages of the writing sessions. These changes correspond to what could be observed for the distribution of source use within sessions.
Figure 21. Development of fluency, pauses, revisions and source use.

In addition, the results showed the difference between writing in L3 German and L2 English. The students’ fluency in English was much higher, they paused and revised much less per 100 words and, with one exception, they used few or no online sources. Even though the majority of the presented measures clearly reflected the differences between writing in L2 and L3, some measures did not seem to be affected at all. For example, the length of pauses did not show any remarkable difference between the German sessions, nor between German and English.

Finally, at several points it was shown that the students in the group occasionally displayed a considerable degree of variation, for example regarding the length of bursts, the number of revisions or the amount of source use. In some cases, single students’ values showed large deviations from session to session. In order to capture this variation and demonstrate the writers’ profiles, three participants’ development will now be described in more detail.

5.3.2 Fluency development - case studies

Henry, Mia and Hilda were chosen for the case study description. The rationale behind this decision was their different pathways throughout the intervention. Henry was chosen, as the measures of his writing were most representative of the mean values, Mia and Hilda, because their writing showed special characteristics. Mia had developed a particular translation approach to writing, which she retained almost throughout the entire intervention period. Hilda, on the contrary, showed a remarkable change of her writing style throughout the first three sessions. She started out writing
at a high production rate and online source use and finished off much less fluently with more pauses and revisions but less online source use. She was the only participant, who gave up her participation in the project after session G3. Consequently, it is only possible to follow the development of her writing for the time, in which the actual intervention took place, but not for the English writing session nor for the delayed post-session in German. However, despite the fact that Hilda’s data set is incomplete, her writing process was chosen as her writing development in the first three sessions showed such clear deviations. The specific characteristics of each writing process will be described separately. The case study is summed up by a comparison pointing to the main similarities and differences.

Case study – Henry

The fluency measures of Henry’s writing reveal that this became more fluent from session G1 to G3, while in the delayed post-session, there was a partial reversal of this development. Table 34 illustrates that, apart from the number of P-bursts above a 2000 ms threshold and the length of R-bursts, all measures indicate this trend across the writing sessions.

In Henry’s case, an increase in fluency corresponds to a decrease in all investigated writing disruptions. In Table 35, the results for pauses, pause length and revisions are presented. Even though this development is not entirely consistent up to session G3, the results for the number of pauses per 100 words indicate that the increase in fluency was connected with a drop in pauses. The same can be observed regarding the number of revisions per 100 words, which shows a drop until G3 and a remarkable increase in G4. The length of pauses does not change much in Henry’s case. The fluctuations for the German sessions are rather small and there is no difference to English either. On all other measures both in Table 34 and 35, a remarkably higher fluency and fewer writing interruptions in English compared to German are apparent. Henry is able to write much faster with much fewer pauses and revisions per 100 words text.

Parallel to the development of the number of pauses and revisions, the percentage of source use decreased in G2 and G3 and increased again in G4. Table 36 summarises the overall amount of source use and the corresponding number and length of switches to online sources.

Henry’s overall results indicate that his writing changed to a certain degree within the first three sessions, but this was not maintained in G4. In the progression of the intervention, he began to pause less, revise less and use online sources less frequently. Consequently, his writing fluency increased. In G4, all measures of interruptive events increased, while the writing fluency decreased accordingly. Similar to the low number of pauses
The development of writing processes in argumentative writing in L3 German

Table 34. Text production measures in Henry’s writing.

<table>
<thead>
<tr>
<th></th>
<th>G1</th>
<th>G2</th>
<th>G3</th>
<th>G4</th>
<th>E</th>
</tr>
</thead>
<tbody>
<tr>
<td>Production rate (chars/min)</td>
<td>34.4</td>
<td>49.6</td>
<td>53.0</td>
<td>44.5</td>
<td>85.9</td>
</tr>
<tr>
<td>Number of bursts per minute</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>P-burst (2000 ms)</td>
<td>3.2</td>
<td>3.0</td>
<td>3.3</td>
<td>2.8</td>
<td>2.8</td>
</tr>
<tr>
<td>R-burst</td>
<td>1.8</td>
<td>2.5</td>
<td>3.2</td>
<td>2.6</td>
<td>4.9</td>
</tr>
<tr>
<td>Median burst length</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>P-burst (2000 ms)</td>
<td>7.4</td>
<td>7.6</td>
<td>7.2</td>
<td>7.4</td>
<td>8.5</td>
</tr>
<tr>
<td>seconds</td>
<td>7.4</td>
<td>7.6</td>
<td>7.2</td>
<td>7.4</td>
<td>8.5</td>
</tr>
<tr>
<td>characters</td>
<td>6.0</td>
<td>11.0</td>
<td>12.0</td>
<td>9.0</td>
<td>18.0</td>
</tr>
<tr>
<td>R-burst</td>
<td>3.4</td>
<td>3.7</td>
<td>3.4</td>
<td>3.2</td>
<td>2.6</td>
</tr>
<tr>
<td>seconds</td>
<td>8.0</td>
<td>9.0</td>
<td>9.0</td>
<td>8.0</td>
<td>8.5</td>
</tr>
<tr>
<td>characters</td>
<td>3.4</td>
<td>3.7</td>
<td>3.4</td>
<td>3.2</td>
<td>2.6</td>
</tr>
</tbody>
</table>

Table 35. Number of pauses, pause length and number of revisions in Henry’s writing.

<table>
<thead>
<tr>
<th></th>
<th>G1</th>
<th>G2</th>
<th>G3</th>
<th>G4</th>
<th>E</th>
</tr>
</thead>
<tbody>
<tr>
<td>Number of pauses per 100 words</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>200 ms</td>
<td>89.1</td>
<td>624.9</td>
<td>656.9</td>
<td>810.2</td>
<td>429.6</td>
</tr>
<tr>
<td>2000 ms</td>
<td>89.4</td>
<td>53.6</td>
<td>56.9</td>
<td>65.9</td>
<td>24.6</td>
</tr>
<tr>
<td>Median pause time (s)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>200 ms</td>
<td>0.468</td>
<td>0.436</td>
<td>0.375</td>
<td>0.436</td>
<td>0.343</td>
</tr>
<tr>
<td>Number of revisions per 100 words</td>
<td>73.1</td>
<td>67.9</td>
<td>64.6</td>
<td>83.3</td>
<td>49.6</td>
</tr>
</tbody>
</table>

Table 36. Source use across all writing sessions in Henry’s writing.

<table>
<thead>
<tr>
<th></th>
<th>G1</th>
<th>G2</th>
<th>G3</th>
<th>G4</th>
<th>E</th>
</tr>
</thead>
<tbody>
<tr>
<td>Percentage of source use</td>
<td>27.1</td>
<td>12.1</td>
<td>13.2</td>
<td>17.8</td>
<td>1.4</td>
</tr>
<tr>
<td>No. of switches</td>
<td>2.4</td>
<td>1.5</td>
<td>1.2</td>
<td>1.6</td>
<td>0.1</td>
</tr>
<tr>
<td>Time per switch (s)</td>
<td>6.9</td>
<td>4.7</td>
<td>5.3</td>
<td>6.5</td>
<td>7.8</td>
</tr>
</tbody>
</table>

and revisions in his English writing, Henry’s percentage of online source use remained at a low level.

In addition to the observations described, the within-session perspective on fluency and online source use indicates to what degree the distribution of these measures changed or not. Figure 22 illustrates the fluency distribution trends within sessions G1–G4 and E by keystroke per minute and interval. Figure 23 shows the trendlines for the use of online sources per interval. In both figures, the corresponding values are given in the tables attached to the graphs.

Apart from a generally lower fluency in the initial session G1, the figure illustrates a difference in distribution. Unlike all following sessions including
the English one, G1 was characterised by a low but much more evenly distributed fluency throughout the session. This implies that Henry typed from the very first to the very last moment in the main document. From G2 onwards the trendlines show a more curved development towards higher fluency in the middle parts of the writing sessions, approximately between intervals 4 and 7. Particularly the initial intervals were characterised by no or less writing activity. When comparing these observations to the generated results for the distribution of online source use within the writing sessions in Figure 23, it becomes clear that particularly for session G1, low fluency corresponds to higher source use.

The percentages of source use within the sessions reveal that the development described for fluency, generally also applies for source use. Along with a consistent (low) fluency distribution goes a consistent (high) source use (for example, approximately 20% - 40% in session G1 correspond to 1 minute up to 1 minute 48 seconds per interval). The less sources Henry consults, the more fluent his writing, while the distribution of both measures develops similarly. Henry's English writing shows that the highest fluency corresponds to the lowest percentage of source use (for example, 6.08 % correspond to 21 seconds in session E).

As for Henry, the decrease of online source use as well as pauses and revisions goes along with a clear increase in writing fluency. However,
Figure 23. Distribution of source use in % within sessions G1–G4 and E in Henry’s writing (trendlines).

Henry’s distributional values also reveal that the general pattern of trendlines in fluency corresponds to that of online source use. This indicates that even though the amount of source use drops, the consultation of online sources is a consistent characteristic of the writing process.

Case study – Mia

The development of Mia’s writing throughout the intervention was marked by fluctuations rather than a consistent trend. Her writing became remarkably more fluent from session G1 to G2, but this development reversed entirely in G3, and increased again in G4. This fluctuation is best reflected in Mia’s measures for production rate, number of P-bursts per minute above a 200 ms threshold and burst length. Table 37 gives an overview.

In Henry’s writing, an increase in fluency could be connected to a decrease of pauses and revisions per 100 words. This observation cannot be fully confirmed in Mia’s case. The number of pauses above a 200 ms threshold, for example, does not show a corresponding development of the fluency measures. Instead, a rather consistent number of short pauses per 100 words remained. On the contrary, pauses at a higher level follow the trend of Henry’s writings: the more fluent a student writes, the fewer pauses per 100 words occur. As Table 38 shows, in sessions G2 and G4, in which
Table 37. Text production measures in Mia’s writing.

<table>
<thead>
<tr>
<th></th>
<th>G1</th>
<th>G2</th>
<th>G3</th>
<th>G4</th>
<th>E</th>
</tr>
</thead>
<tbody>
<tr>
<td>Production rate (chars per min)</td>
<td>47.6</td>
<td>69.7</td>
<td>30.6</td>
<td>53.7</td>
<td>94.1</td>
</tr>
<tr>
<td>Number of bursts per minute</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>P-burst (2000 ms)</td>
<td>3.8</td>
<td>3.1</td>
<td>2.9</td>
<td>2.6</td>
<td>2.4</td>
</tr>
<tr>
<td>R-burst</td>
<td>1.6</td>
<td>1.7</td>
<td>1.8</td>
<td>1.7</td>
<td>3.9</td>
</tr>
<tr>
<td>Median burst length</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>P-burst (2000 ms)</td>
<td>6.9</td>
<td>7.3</td>
<td>7.6</td>
<td>8.1</td>
<td>10.9</td>
</tr>
<tr>
<td>characters</td>
<td>7.0</td>
<td>10.0</td>
<td>7.0</td>
<td>11.0</td>
<td>25.0</td>
</tr>
<tr>
<td>R-burst</td>
<td>3.7</td>
<td>3.4</td>
<td>3.7</td>
<td>3.8</td>
<td>5.2</td>
</tr>
<tr>
<td>seconds</td>
<td>10.0</td>
<td>12.0</td>
<td>8.0</td>
<td>10.0</td>
<td>15.0</td>
</tr>
</tbody>
</table>

Table 38. Number of pauses, pause length and number of revisions in Mia’s writing.

<table>
<thead>
<tr>
<th></th>
<th>G1</th>
<th>G2</th>
<th>G3</th>
<th>G4</th>
<th>E</th>
</tr>
</thead>
<tbody>
<tr>
<td>Number of pauses per 100 words</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>200 ms</td>
<td>868.0</td>
<td>957.3</td>
<td>892.5</td>
<td>880.2</td>
<td>331.6</td>
</tr>
<tr>
<td>2000 ms</td>
<td>102.2</td>
<td>67.4</td>
<td>85.9</td>
<td>79.0</td>
<td>16.3</td>
</tr>
<tr>
<td>Median pause time (s)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>200 ms</td>
<td>0.499</td>
<td>0.421</td>
<td>0.468</td>
<td>0.390</td>
<td>0.421</td>
</tr>
<tr>
<td>2000 ms</td>
<td>3.838</td>
<td>3.401</td>
<td>4.711</td>
<td>4.704</td>
<td>5.428</td>
</tr>
<tr>
<td>Number of revisions per 100 words</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>109.6</td>
<td>180.4</td>
<td>117.4</td>
<td>166.7</td>
<td>34.8</td>
</tr>
</tbody>
</table>

Mia wrote fluently, she made fewer pauses on a conceptual level and vice versa in session G3.

A possible insight from this observation is that Mia changed her pausing behaviour more on a conceptual level, as in fluent writing she needed fewer longer pauses, while the short pauses for low level issues did not change. Thus it seems that Mia’s writing is mostly affected by how much she needs to think about global text issues, which might be due to different writing related aspects, for example her pre-writing activities, her topic knowledge or interest. Regarding the median pause time, which did not vary much for Henry, a slight length decrease can be observed for the rather short pauses in Mia’s values. The final value even lies below the value for the English session. Instead, the long pauses became slightly longer in the final sessions. This trend indicates a development towards her standard for English, in which her short pauses were shorter and the long pauses longer.

Even more puzzling in Mia’s development is that the number of revisions fluctuated parallel to the writing fluency, that is, the more fluent, the more revisions per 100 words. As a preliminary conclusion it can be stated that in Mia’s case, fluent writing in German is accompanied by a low number of
longer pauses and a high number of revisions, while the number of short pauses and the general length of pauses is not considerably affected. To complement these insights, the measures for online source use are presented in Table 39.

Mia’s source use was comparatively low. However, as shown in Table 39, it increased until session G3, while it was considerably low in the delayed post-session. In order to better understand how these fluency and writing interruption measures might relate to each other, it was necessary to look at Mia’s actual writing. In fact, it was her common strategy to write her texts in Swedish first and then translate them into German. Step by step deleting the Swedish original resulted in a rather large number of revisions compared to all other students’ revisions. The only exception was G3, in which Mia did not pre-write her text in Swedish. The main characteristics of this session were more pauses, fewer revisions, more online source use and finally, generally lower fluency. Thus, it can be assumed that the fluency in G3 was not necessarily lower, but Mia did not write a Swedish original first. A comparison of process versus product production rate measures, shown in Table 40, partly confirms this assumption.

While the process measures fluctuate more and show a steep decrease in session G3, in which Mia did not start her writing session with the Swedish text, the product measures in G1, G3 and G4 are relatively stable. Additionally, it can be speculated that pre-writing a text in the mother tongue might decrease the need to look up unknown words in online sources, possibly because the cognitive load while writing in German is reduced as the writer is able to access the already formulated thoughts in the Swedish text version. The higher number of long pauses in session G3 confirms such a hypothesis.

To complete the picture, Figures 24 and 25 also show the distribution of fluency levels as well as the amount of source use within session G1–G4 and E. Figure 24 clearly indicates that just like Henry’s, Mia’s fluency in English

Table 39. Source use across sessions G1—G4 and E in Mia’s writing.

<table>
<thead>
<tr>
<th>Percentage of source use</th>
<th>G1</th>
<th>G2</th>
<th>G3</th>
<th>G4</th>
<th>E</th>
</tr>
</thead>
<tbody>
<tr>
<td>No. of switches</td>
<td>6.9</td>
<td>8.6</td>
<td>13.2</td>
<td>3.0</td>
<td>0</td>
</tr>
<tr>
<td>Time per switch (s)</td>
<td>5.1</td>
<td>6.3</td>
<td>10.7</td>
<td>4.9</td>
<td>0</td>
</tr>
</tbody>
</table>

Table 40. Process and product measures of production rate in Mia’s writing.

<table>
<thead>
<tr>
<th>Process</th>
<th>G1</th>
<th>G2</th>
<th>G3</th>
<th>G4</th>
<th>E</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>47.6</td>
<td>69.7</td>
<td>30.6</td>
<td>53.7</td>
<td>94.1</td>
</tr>
<tr>
<td>Product</td>
<td>24.6</td>
<td>42.5</td>
<td>24.6</td>
<td>29.6</td>
<td>79.1</td>
</tr>
</tbody>
</table>
was much higher and that the most fluent period in her session was concentrated in the middle intervals. Apart from that, the different German writing sessions generally show a similar fluency distribution. What becomes particularly obvious in session G2 is Mia’s choice to pre-write her text in Swedish. Intervals 2 and 3 show the extremely high fluency she reached in her Swedish typing. In session G3, represented by the lowest line in Figure 24, a decrease in fluency from interval 6 is shown. At exactly that point, Figure 25 shows the beginning of the online source use. From this observation it can be assumed that Mia did not write a Swedish original, but instead formulated her German version from the beginning and without the help of online sources. Towards the end of the session she began to look up items she thought she needed in order to finish her text.

Apart from the two different approaches to writing a text in German, Mia’s source use measures within the writing sessions also show that she began to increasingly postpone her online source use from session G2. Towards the final intervals the percentages increase remarkably, as Mia had marked all words she needed to look up after the text had been written. The same can be observed for English at the end of the writing session but at a lower level.

![Figure 24. Typed keystrokes per minute and interval in Mia’s writing within sessions G1–G4 and E (trendlines).](image)
The development of writing processes in argumentative writing in L3 German

Unlike Henry and Mia, Hilda started out from a very high writing fluency and then wrote fewer characters per minute in the successive writing sessions (see Table 41). All fluency measures show that Hilda typed extremely fast in the beginning and was less productive in G3: she produced fewer characters per minute, the bursts related to typing fluency became less frequent, the bursts related to longer pauses became more frequent and bursts generally became shorter.

In line with the decreasing writing fluency, Hilda’s values for the number of pauses per 100 words demonstrate that she began to pause more. As shown in Table 42, this is particularly apparent for the pauses in session G3 above the 2000 ms threshold, which doubled compared to session G2. Furthermore the table shows that the length of the pauses also increased slightly in G3. These observations indicate that Hilda slowed down her entire writing process by taking many more but slightly longer pauses. Additionally, the revision values show that she revised more per 100 words.

An explanation for this development might be that Hilda, as the intervention progressed, gave up her productive writing style and consciously tried to put more time and effort into the formulation and correctness of her German text, probably balancing more explicitly between fluency and correctness.

---

**Figure 25. Distribution of source use in % within sessions G1–G4 and E in Mia’s writing (trendlines).**

**Case study – Hilda**

Unlike Henry and Mia, Hilda started out from a very high writing fluency and then wrote fewer characters per minute in the successive writing sessions (see Table 41). All fluency measures show that Hilda typed extremely fast in the beginning and was less productive in G3: she produced fewer characters per minute, the bursts related to typing fluency became less frequent, the bursts related to longer pauses became more frequent and bursts generally became shorter.

In line with the decreasing writing fluency, Hilda’s values for the number of pauses per 100 words demonstrate that she began to pause more. As shown in Table 42, this is particularly apparent for the pauses in session G3 above the 2000 ms threshold, which doubled compared to session G2. Furthermore the table shows that the length of the pauses also increased slightly in G3. These observations indicate that Hilda slowed down her entire writing process by taking many more but slightly longer pauses. Additionally, the revision values show that she revised more per 100 words.

An explanation for this development might be that Hilda, as the intervention progressed, gave up her productive writing style and consciously tried to put more time and effort into the formulation and correctness of her German text, probably balancing more explicitly between fluency and correctness.
Table 41. Text production measures in Hilda’s writing.

<table>
<thead>
<tr>
<th></th>
<th>G1</th>
<th>G2</th>
<th>G3</th>
<th>G4</th>
<th>E</th>
</tr>
</thead>
<tbody>
<tr>
<td>Production rate (chars per min)</td>
<td>60.1</td>
<td>55.6</td>
<td>38.5</td>
<td>n.a.</td>
<td>n.a.</td>
</tr>
<tr>
<td>Number of bursts per minute</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>P-burst (2000 ms)</td>
<td>2.5</td>
<td>2.9</td>
<td>3.6</td>
<td>n.a.</td>
<td>n.a.</td>
</tr>
<tr>
<td>R-burst</td>
<td>3.6</td>
<td>3.7</td>
<td>1.9</td>
<td>n.a.</td>
<td>n.a.</td>
</tr>
<tr>
<td>Median burst length</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>P-burst (2000 ms)</td>
<td>8.1</td>
<td>7.5</td>
<td>6.8</td>
<td>n.a.</td>
<td>n.a.</td>
</tr>
<tr>
<td></td>
<td>14.0</td>
<td>11.0</td>
<td>5.0</td>
<td>n.a.</td>
<td>n.a.</td>
</tr>
<tr>
<td>R-burst</td>
<td>2.1</td>
<td>2.3</td>
<td>1.8</td>
<td>n.a.</td>
<td>n.a.</td>
</tr>
<tr>
<td></td>
<td>6.0</td>
<td>7.0</td>
<td>5.0</td>
<td>n.a.</td>
<td>n.a.</td>
</tr>
</tbody>
</table>

Table 42. Number and median length of pauses in Hilda’s writing.

<table>
<thead>
<tr>
<th></th>
<th>G1</th>
<th>G2</th>
<th>G3</th>
<th>G4</th>
<th>E</th>
</tr>
</thead>
<tbody>
<tr>
<td>Number of pauses per 100 words</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>200 ms</td>
<td>1032.4</td>
<td>1021.8</td>
<td>1387.7</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>2000 ms</td>
<td>46.8</td>
<td>54.4</td>
<td>109.8</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Median pause length (s)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>200 ms</td>
<td>0.359</td>
<td>0.359</td>
<td>0.390</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>2000 ms</td>
<td>3.393</td>
<td>3.175</td>
<td>3.503</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Number of revisions per 100 words</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>86.5</td>
<td>117.5</td>
<td>206.6</td>
<td>-</td>
<td>-</td>
</tr>
</tbody>
</table>

The assumption of such a consciously changed approach to writing in German is supported by Hilda’s values of online source use, which are presented in Table 43. The values show that Hilda started out from a high level of source use in session G1. Together with her high fluency measures, this confirms that her initial writing can in fact be described as hasty or even hectic. Further, the table shows that the decrease in fluency was accompanied by a decrease of overall source use and particularly longer time periods spent in the sources. From session G2–G4 the number of seconds doubled. These results confirm the observation that Hilda consciously tried to rely more on her own knowledge of German, which also required her to pause and revise more. High production and many source switches with few pauses and few revisions turned into low production with more pausing, and

Table 43. Online source use across sessions G1–G3 in Hilda’s writing.

<table>
<thead>
<tr>
<th></th>
<th>G1</th>
<th>G2</th>
<th>G3</th>
<th>G4</th>
<th>E</th>
</tr>
</thead>
<tbody>
<tr>
<td>Percentage of source use</td>
<td>28.2</td>
<td>24.6</td>
<td>14.0</td>
<td>n.a.</td>
<td>n.a.</td>
</tr>
<tr>
<td>No. of switches</td>
<td>4.1</td>
<td>3.9</td>
<td>1.0</td>
<td>n.a.</td>
<td>n.a.</td>
</tr>
<tr>
<td>Time per switch (s)</td>
<td>4.0710</td>
<td>3.8224</td>
<td>8.0022</td>
<td>n.a.</td>
<td>n.a.</td>
</tr>
</tbody>
</table>

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more revisions but less source use. In Figures 26 and 27, the measures for fluency and source use distribution are presented.

Figure 26 shows that Hilda’s fluency decreased from G1–G3, that the distribution of more fluent and less fluent intervals differed slightly and that in all of her lessons, she remained productive from the very beginning to the
end. Particularly the last observation distinguishes Hilda from Henry and Mia, who both began to introduce pre-writing phases without production from session G2 and onwards. In relation to the distribution of source use, Hilda’s high consistent fluency measures in G1 correspond to a high and consistent online source use (see Figure 27). A similar correspondence of fluency and source use distribution can be seen in G2. In Hilda’s final writing session this pattern changed. While her fluency decreased slightly, her source use showed a curved line, that is the initial and final stages of the session remained without source use. Thus, as already indicated, the results suggest that Hilda actively tried to adapt to what had been discussed in the intervention and to change from a highly fluent and consistently source-interrupted production with few pauses and revisions, to a much slower writing process with fewer source interruptions, more pauses and more revisions.

Summary

The description of the writing processes of three out of seven participants regarding fluency, pauses, revisions and online source use, adds yet another perspective on the process data. The results illustrate the variation between the participants, which would be hard to infer from the aggregated measures of all cases.

As summarised in Figure 28, the three participants’ initial writing fluency was rather different. These differences between the students were reflected in the same way in the copy task results in Table 18. Insofar the difference in initial writing fluency in German might, besides other potential reasons, also be related to individual typing skills. However, throughout the intervention, and in the session following the intervention the three students developed differently.

Figure 28 comprises the values for all three participants’ production rates. Apart from the different developments throughout the intervention, two participants, Henry and Mia, showed an increase in fluency, which was connected to a decrease of pauses and revisions per 100 words and vice versa. In session G3, Henry wrote more fluently than in the initial session and he relied more on his own linguistic resources than on online dictionaries. Hilda also made an attempt to use online sources less frequently, but this resulted in a less fluent writing process characterised by more and longer pauses and revisions. In contrast to Henry and Hilda, Mia had already developed a specific writing strategy at the beginning of the intervention. The fact that she wrote her texts in Swedish first forced her to write quickly due to time constraints, which resulted in high fluency, few pauses and few revisions. Additionally, this pre-writing strategy and presumably her generally good command of German made it unnecessary for
her to consult online dictionaries to the same extent as the other students. In the course of the intervention, Mia tried to abandon this habit in session G3. In this session, she had the lowest writing fluency, more pauses and revisions per 100 words and more online source use. She gave up this approach in the delayed post-session G4.

Regarding online source use Henry and Hilda, with a rather high initial percentage, tried to reduce it (Henry from 12 minutes in total in G1 to 4 minutes in total in G3; Hilda from 17 minutes in total to 10 minutes in total in G3), while Mia increased it until G3 (from 4 minutes in total in G1 to 8 minutes in total in G3) and then dropped again in G4 (see Figure 29).

In addition, the distribution of online source use changed as the students generally began to postpone the onset of source use. Two different lines of development could be observed. Henry’s and Hilda’s values showed that consultation of sources started simultaneously with text, that is they continued to consult sources during the transcription process. Mia, in contrast, started writing for a longer period without leaving her document, postponed source use further and further to the final stages of her writing session, and extended the length of switches to the sources. It can be assumed that she looked up all German words she did not know. Therefore, the use of sources remained a basic characteristic of the transcription phase for Henry and Hilda (even though the number of instances decreased), while it did not for Mia. Finally, two of the three case studies demonstrated the differences in writing skills in comparison to English. More fluent typing, much fewer pauses and revisions per 100 words and almost no source use characterise the writing processes in the students’ L2. In section 5.3.3, a more qualitative perspective is taken by analysing the seven focus students’ specific online searching behaviour.
5.3.3 Strategies in online source use

In section 5.3.1, the amount and distributional patterns of online source use were presented across sessions. It was argued that, in the observed amount and frequency, these represent an additional disruptive factor in writing and therefore need to be included in the description of fluency. As the field of foreign language writing using digital resources is still rather unexplored, this section aims for a deeper understanding of what writers do when they use language-related online sources. For this reason, the first writing session G1, in which the students had had the least instructional input, was analysed in an explorative way regarding individual amount, distribution and online source use patterns and strategies.

Overall amount and distribution

In Table 44, an overview of the characteristics of the students' writing processes in terms of time is presented. The overall writing time is the length of the writing session, followed by the final number of words in the text (as compared to the total number of words produced in the writing session including everything that was revised or deleted). Below, the time, which students spent in the main document is displayed together with the

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38 This section is a shortened and modified version of the following publication: Knospe, Y., Sullivan, K.H.P., Malmqvist, A., & Valfridsson, I. (forthcoming). Observing Writing and Website Browsing: Swedish Students Write L3 German. In E. Lindgren & K.P.H. Sullivan (Eds.), Observing Writing: Logging Handwriting and Computer Keystrokes.

39 'Discuss the following statement: Teenagers above 16 years are old enough to be allowed to buy alcohol.' (Original: "Diskutiere folgende Aussage: Jugendliche über 16 Jahre sind alt genug, um Alkohol kaufen zu dürfen.")
Table 44. Writing data for all participants.

<table>
<thead>
<tr>
<th>Student</th>
<th>Sara</th>
<th>Henry</th>
<th>Hilda</th>
<th>Tom</th>
<th>Mia</th>
<th>Per</th>
<th>Ida</th>
</tr>
</thead>
<tbody>
<tr>
<td>Overall time (100%)</td>
<td>45:41</td>
<td>44:35</td>
<td>1:01:49</td>
<td>47:24</td>
<td>1:01:17</td>
<td>57:48</td>
<td>46:31</td>
</tr>
<tr>
<td>Words final text (words written in total)</td>
<td>258 (370)</td>
<td>160 (217)</td>
<td>333 (484)</td>
<td>179 (262)</td>
<td>228 (483)</td>
<td>133 (195)</td>
<td>207 (248)</td>
</tr>
<tr>
<td>Time in main document</td>
<td>32:24 (71.0%)</td>
<td>32:14 (72.4%)</td>
<td>38:12 (61.8%)</td>
<td>35:22 (74.6%)</td>
<td>56:45 (92.7%)</td>
<td>41:26 (71.80%)</td>
<td>36:47 (79.1%)</td>
</tr>
<tr>
<td>Time in online sources</td>
<td>11:01 (24.2%)</td>
<td>12:04 (27.1%)</td>
<td>17:31 (28.2%)</td>
<td>11:16 (23.6%)</td>
<td>04:20 (06.9%)</td>
<td>15:50 (27.0%)</td>
<td>09:17 (19.8%)</td>
</tr>
<tr>
<td>Number of search queries</td>
<td>35</td>
<td>47</td>
<td>81</td>
<td>34</td>
<td>29</td>
<td>41</td>
<td>28</td>
</tr>
<tr>
<td>Total active writing time</td>
<td>33:04 (72.5%)</td>
<td>25:47 (57.9%)</td>
<td>48:40 (78.7%)</td>
<td>24:15 (51.2%)</td>
<td>37:05 (60.5%)</td>
<td>25:37 (44.4%)</td>
<td>27:25 (59.0%)</td>
</tr>
<tr>
<td>Total pause time</td>
<td>12:37 (27.5%)</td>
<td>18:47 (42.1%)</td>
<td>13:09 (21.3%)</td>
<td>23:08 (48.8%)</td>
<td>24:12 (39.5%)</td>
<td>32:31 (55.6%)</td>
<td>19:06 (41.0%)</td>
</tr>
</tbody>
</table>

percentage in relation to the whole session. The number beneath shows the time spent in online sources, also given with the respective percentage\(^\text{40}\).

Then the exact number of search queries for each student is given, a number, which has to be treated with care because it was not always clearly distinguishable when a new search was started or a previous one was extended or modified. The last two rows give the reader an idea of the participants’ overall writing and pausing behaviour. Writing and pausing occurred both in the main document and in online sources.

As the table shows, each student used online resources when being allowed to, but their performances in terms of time were quite different. The overall writing time ranged between 44:35 and 1:01:49 and the final and total number of words also varied, ranging from 333 words produced in slightly more than one hour by Hilda, compared to 133 words produced in slightly less than one hour by Per. Interestingly, using much time for writing did not necessarily imply that sources were used extensively. The two longest writing sessions differed the most as for the extent to which online sources were used: Hilda spent 17:31 minutes (28, 2%) in online sources while Mia spent only 4:20 minutes (6, 9%) time searching for language-related information on the Internet. All other time spans in online sources ranged between approximately one fifth and one fourth of their overall writing time.

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\(^{40}\) Time in main document and in online sources never result in one hundred per cent, because we excluded some activities from the calculation, for example scarcely appearing content related search queries, the opening of the web browser, error messages from the browser, and other non-related software activities from Inputlog or Camtasia.
The average of all students was at 22.4%, thus students spent almost one fourth of their writing time outside the main document.

The exact number of search queries corresponds to some degree to the students’ online time. This number in relation to overall online time may be an indicator of the students’ writing behaviour and search strategies. Mia, for example, managed to search for 20 items within 4 minutes 20 seconds. These numbers also confirm the impression created by her Camtasia file, that she was a targeted and precise source user. The numbers for the total active writing and pausing time are also provided, because these numbers may indicate how participants’ compose their texts. Looking at Hilda and Per again, we see that Hilda paused very little in comparison to Per, who paused more than half of his writing session. While Hilda constantly tried out new search key words in the online sources and wrote and revised frequently in her text, Per took much more time to think about what he had written and also, as will be shown later, browsed over translations by Google Translate.

Figure 30. Distribution of switches between the main document and online sources.
In Figures 30 and 31 visual representations of the students’ writing sessions on a time scale are shown. Figure 30 illustrates the switches between main document and online source for each participant. These graphs indicate how repetitive, how often and how long the writing process is disrupted by window switches. In each participant’s graph, the lower line represents time spent in the main document, the upper line time spent in online sources. Figure 31 shows the trendlines for each participant regarding his or her source use within the writing. For this calculation, each session was split into 10 intervals of similar length and for each interval the percentage of source use in relation to time in the main document was obtained. The corresponding numerical data is presented in Table 45.

The presented graphs show that in general all students used online sources almost throughout the whole session, even though the frequency was very different. This indicates that all sub-processes of writing are characterised by the students’ need to look up lexical items and are therefore interrupted by search related actions. Splitting their attention between fulfilling the task in the main document on the one hand, and managing the sources and finding the appropriate information on the other becomes a permanent writing characteristic. The graphs also indicate specific differences among the students, which the qualitative analyses later in this section will reveal in more detail.

![Graph showing percentage of time in online sources](image)

Figure 31. Percentage of time in online sources throughout the writing session (trendlines).
Table 45. Percentage of source use for each interval of the writing session.

<table>
<thead>
<tr>
<th></th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
<th>8</th>
<th>9</th>
<th>10</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hilda</td>
<td>14.3</td>
<td>30.6</td>
<td>28.9</td>
<td>31.7</td>
<td>20.2</td>
<td>25.1</td>
<td>33.4</td>
<td>34.4</td>
<td>35.3</td>
<td>28.0</td>
</tr>
<tr>
<td>Henry</td>
<td>21.2</td>
<td>24.8</td>
<td>29.3</td>
<td>39.9</td>
<td>40.8</td>
<td>23.1</td>
<td>18.5</td>
<td>22.5</td>
<td>29.3</td>
<td>19.9</td>
</tr>
<tr>
<td>Ida</td>
<td>19.7</td>
<td>34.2</td>
<td>22.2</td>
<td>15.2</td>
<td>24.6</td>
<td>28.6</td>
<td>20.4</td>
<td>19.7</td>
<td>14.0</td>
<td>0.0</td>
</tr>
<tr>
<td>Mia</td>
<td>4.1</td>
<td>14.5</td>
<td>14.8</td>
<td>2.1</td>
<td>8.7</td>
<td>2.4</td>
<td>11.1</td>
<td>12.6</td>
<td>0.0</td>
<td>0.0</td>
</tr>
<tr>
<td>Per</td>
<td>11.2</td>
<td>31.4</td>
<td>16.2</td>
<td>16.6</td>
<td>22.8</td>
<td>14.4</td>
<td>18.7</td>
<td>7.7</td>
<td>73.8</td>
<td>59.6</td>
</tr>
<tr>
<td>Sara</td>
<td>7.3</td>
<td>15.7</td>
<td>19.6</td>
<td>13.4</td>
<td>38.6</td>
<td>31.2</td>
<td>36.2</td>
<td>33.2</td>
<td>32.6</td>
<td>12.4</td>
</tr>
<tr>
<td>Tom</td>
<td>17.7</td>
<td>18.8</td>
<td>3.1</td>
<td>16.8</td>
<td>17.1</td>
<td>19.3</td>
<td>40.8</td>
<td>19.8</td>
<td>38.1</td>
<td>17.0</td>
</tr>
</tbody>
</table>

It is obvious that the students display quite different behaviours in their interplay between the main text document and the web browser. Some of them, for example Hilda, Ida, Per and Tom, immediately opened the browser and a language-related online source without having written anything in preparation of the writing setting. Comparing the two most divergent students Hilda and Mia regarding the frequency of their source use, it can be assumed how different their foci on the evolving text must have been. Hilda’s writing session is best described as a permanent switching between windows, while Mia left the main document only for very few search queries and stopped after approximately the second third of her writing session. Sara and Ida did not leave the main document towards the end of the writing session anymore, as they only proofread and revised what they had written. All other students used online sources until the final stages of their writing session.

Thus, it was revealed that the students spent on average 22.4% of their writing time in online sources and that the switches between the main document and the web browser were, in general, distributed throughout the whole writing session. Nevertheless, the students displayed very different writing behaviours, which will be the focus of the next section.

**Online search strategies**

In order to describe the analysed data, the seven focus students were grouped in two main groups, who shared similar online search behaviour. In the description of the two groups, each student’s individual behaviour will be presented, too. First, the four most commonly used online sources are described briefly in order to clarify what types of information the students could obtain there.

In Google Translate (www.translate.google.com) the writer can choose freely from which language into which language the machine should translate. The user can basically translate everything from a single word to a whole text or even a web page. If the user moves the browser over the translation, there
might appear a pop-up window with more alternatives to choose from. If users type in a whole sentence, they can browse over certain parts of that sentence and the machine will show the corresponding part in the other language and as well as translation alternatives. Google translate does not offer explicit grammatical information about languages.

Pauker (www.pauker.at) is an online dictionary, which offers translations from and into a large number of languages. It offers the most grammatical information for both search and target language search items among the presented online sources and often also an overwhelming number of contextual examples of words or fixed phrases. The order and choice of translations and examples is not always transparent.

Babla (www.sv.bab.la) is an online dictionary, which offers translations from and into a large number of languages. For Swedish as search language it only offers German and English as target languages. It offers basic grammatical information about target language search items, but only if the user scrolls further down. Sometimes several German translations are given.

Tyda (www.tyda.se) is an online dictionary for translating from Swedish into several other languages, even in just one search trial (for example from Swedish into English and German). It offers grammatical information for the Swedish search item, but not for the target languages. Sometimes several alternatives are offered for the translation in the target language.

**Mia, Ida & Sara - Controlling the sources**
The first group of students includes Sara, Ida and Mia. They are presented together because they showed a number of similar behaviours regarding their use of online sources. In particular, they used sources less, were more concerned about their search keywords and critically examined the generated results.

As can be seen in Figure 30 and Table 45, these students spent less time on the web browser. A general feature of their online source use was the reduction of search queries to only those items, which they believed they could really not remember themselves. Ida, for example, mentioned in the recall interview:

(1) Jag tror att jag försökte komma på ordet själv innan jag sökte upp det.41
‘I think I tried to remember the word myself before I searched for it.’

When the three participants searched keywords, they only relied on online dictionaries, not on translation tools like Google Translate. Ida and Mia only used Pauker, while Sara used Pauker and Babla. Furthermore, their search items were mostly Swedish single word items in their uninflected form (for

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41 All quotes and examples were translated from Swedish into English by the author.
example *hjärna* ['brain'], *utveckla* ['develop'], *ansvarig* ['responsible']; in few cases only short fixed phrases like *till exempel* ('for example') or *skulle kunna* ('could') were searched. Compound nouns were split before searching the unknown element (for example Mia searched for *förgiftning* ['intoxication'] when she wanted to write *alkoholförgiftning* ['alcohol intoxication']; with the correct generated result *Vergiftung* she was able to write the correct German word *Alkoholvergiftung*). It can be assumed that with these different strategies the students tried to reduce the complexity of their search keywords in order to increase the probability of their success.

As a consequence, most of Mia's, Ida's and Sara's search queries led to results they could use immediately in their texts. For example 18 out of 20 items were useful for Mia and also Ida's 29 search queries were mostly integrated in the text successfully. In the few cases when search queries were unsuccessful, these participants had different solutions at hand. Mia, for example, spotted her search mistake quickly and changed the keyword *risken* ('the risk') to *risk* ('risk'), which led to success. Sara made a similar mistake when first searching for *hälsoammare* ('healthier') before changing to *hälssam*, which finally generated *gesund*, a word she used in her text. Another example of strategic behaviour was Ida, who did not receive any results for the search keyword *till exempel* ('for example') and decided to write *für Exempel* in her text. This is not correct, but understandable. Sara, in another instance, could not find a translation for *drogfritt* ('drug-free') and decided to write *eine Gesellschaft ohne Drogen* ('a society without drugs').

In general, these three participants' search behaviour can be described as reduced, precise and very well targeted. In cases when they did not reach their search goals, they were able to come up with other strategic solutions. Apart from these shared characteristics, they displayed individual writing characteristics and strategies, which will be described briefly.

*Mia - The self-reliant translator*

In addition to the writing characteristics mentioned, a striking feature of Mia's writing session was that she spent least time in online sources, even though her text writing time exceeded one hour and her text was of average length. The explanation is that Mia wrote in two languages (see section 5.3.2). Her strategy was to write one sentence or even a paragraph in Swedish, then translate that sentence or paragraph into German and to
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repeat this procedure throughout the whole writing session. For example, the first two sentences in her text document were:

(2) Jag tycker att 18 är en bra ålder att få köpa alkohol.
Ich finde, dass achtzehn ein gute Alter, dass Alkohol kaufen darf. (*)

‘I think that 18 is a good age to be allowed to buy alcohol.’

Doing so, she revised parts of her Swedish text and then adapted the German translation to these changes. In her interview after the writing session, she said:

(3) Det är därför jag är mer osäker på Tyska på [...] hur man ska formulerar sig [...] det känns som att jag glömmt bort vad jag liksom ska skriva. Så därför skriver jag ner, så jag kollar på det liksom direkt. Så känns det lättare.
‘It is because I am more insecure in German about how I can formulate [...] it feels like I forget what I want to write. So this is why I write down, so I can have a look at it directly. So it feels easier.’

For Mia the use of her mother tongue represented a substantial help to reduce the cognitive constraints when writing in her L3. By splitting up the processes of content generation and translation of thoughts into a foreign language, she found a suitable way to deal with the task at hand. How this might be connected to her scarce use of online sources can only be speculated. One reason could be that Mia had a larger lexicon and did not need to search for words, another that she had more cognitive capacities to spend on lexical retrieval because the process of generating ideas had been executed separately in the mother tongue.

Ida - The thoughtful composer

Figure 33. Ida’s distribution of switches between main document and online sources.

A particular characteristic of Ida’s was to take more time when browsing on the web sites and longer breaks while writing, probably in order to re-read what she had produced so far and to plan her next steps. For example, after having written the first part of a sentence “Ein anderes Argument gegen Jugendliche über 16 Jahre alt kaufen Alkohol zu dürfen ist, dass (...).” Ida paused for 2:20 minutes and then continued “(...) sie nicht viel Geld haben.” (*) (Another argument against teenagers over 16 years being allowed to buy alcohol is, that [...] they don’t have a lot of money.) Here it seems plausible that Ida interrupted her writing in order to generate ideas about the further text content. Pauker was the only online source that Ida used and she allowed herself more time to go through the sometimes huge amounts of
results thoroughly and pick exactly the translation or grammatical information that she needed. For example, after having searched *annorlunda* (‘different’) she allowed herself 25 seconds’ reading time and after having searched *till exempel* (‘for example’) she continued in the main document after 30 seconds. This became visible not only through the time duration, but also because Ida hardly made mistakes in her text regarding the gender of nouns she had searched for. This is illustrated in examples (a)–(c).

<table>
<thead>
<tr>
<th>Source</th>
<th>Search item</th>
<th>Result</th>
<th>Result in text</th>
</tr>
</thead>
<tbody>
<tr>
<td>(a) Pauker</td>
<td>alkohol (alcohol)</td>
<td>Alkohol</td>
<td>Er (N.B. correct pronoun)</td>
</tr>
<tr>
<td>(b) Pauker</td>
<td>åldersgräns (age limit)</td>
<td>Altersgrenze</td>
<td>eine Altersgrenze</td>
</tr>
<tr>
<td>(c) Pauker</td>
<td>chansen (chance)</td>
<td>Chance</td>
<td>die Chance</td>
</tr>
</tbody>
</table>

These examples suggest that Ida not only made use of online dictionaries for the purpose of looking up unknown words, but also in order to write a grammatically correct text. In that aspect, she made use of all main functions of Pauker for her purposes.

*Sara - The efficient writer*

Figure 34. Sara’s distribution of switches between main document and online sources.

In contrast to Mia and Ida, Sara produced more text in a relatively short time and used more than one online source. First, she used Google search to generate ideas for text content. She searched for “åldersgräns Systembolaget” (age limit at the government owned liquor store in Sweden) and “unga som dricker mer” (teenagers who drink more). Both times she went further to the page of “Systembolaget” and browsed over information there. When being asked why she stated:

> (4) Jag kollar, i [...] en studie för att, som skulle visa det [jag] tänkte skriva.

‘I look at a study because it should show what I intended to write.’

Second, she used two language-related sources, Pauker and Babla. In a few cases she combined them to double check a word and also included English in her search queries after the Swedish search item had not generated any results that she found reliable. This is illustrated in examples (d) and (e):
The development of writing processes in argumentative writing in L3 German

When being asked why she switched languages, she declared:

(5) Jag läser engelskspråkigt program nu och ibland tycker jag att det är enklare att översätta från engelska istället för att jag har det ordet, men inte det svenska.

‘I study the English programme [N.B. at school] now and sometimes I think it is easier to translate from English instead because I know the word [N.B. in English], but not in Swedish.’

In example (d)–(e) and the corresponding quote it becomes visible that Sara made use of her whole repertoire of foreign languages in order to reach her intended communicative goal.

**Henry, Per, Tom & Hilda - Controlled by the sources**

In the second group of students, Henry, Hilda, Tom and Per, there was a greater variety of individual behaviours, yet these students shared some characteristics, which differ from the first group. In general, they made more frequent use of online sources, they were less concerned about the adequacy of their search keywords and they showed less criticality about the applicability of the generated search results in their texts.

The extent of online source use in this group was in general higher and the particular instances also longer in duration. As already mentioned, Hilda spent the longest time on the web browser (18:01 minutes) and Per, for example, spent several minutes only in the web browser towards the end of his writing session (see Table 45). There are several possible reasons for these observations. First of all, it is likely that these students simply had fewer linguistic resources available than those in the other group and thus had to initiate more queries. But it also became visible that all of them, in different ways, initiated a number of seemingly redundant search queries. Henry, for example, searched for 12 German expressions, which indicates, that he wanted to make sure his intentions were correct. Wanting to make sure that correct language is produced is positive in itself, but each of these search queries meant that he repeatedly interrupted his writing flow.

In this group, several sources were used. Henry and Tom only used Pauker, Per used Pauker and Google Translate and Hilda used content-related websites as well as Google Translate and Tyda. Particularly the use of Google Translate led to long lasting, complicated and, in many cases, unsuccessful search queries. These will be further elaborated in the following brief descriptions of the students' search behaviour.
The students in this group tried to search for various key items ranging from single keywords, and fixed phrases to complex phrases and even sentences. The single search keywords were often inflected, for example Hilda searched for the term “roligare” (funnier) and received the result “mehr Spaß, noch mehr tolle” (more fun, even nicer) and “mehr Spaß macht” (is more fun). She chose the second option, but clearly none of them would have made sense in German.

Due to such different ineffective search behaviours, the students did a relatively high number of search trials, which in many cases did not result in a translation and change of the text. For example, 21 out of 81 of Hilda’s searches remained without any result. Even in cases when the students’ search queries resulted in a change in the text, it was often the result of an unnecessarily long search process, as illustrated in examples (f) and (g).

<table>
<thead>
<tr>
<th>Source</th>
<th>Search item</th>
<th>Result</th>
<th>Result in text</th>
</tr>
</thead>
<tbody>
<tr>
<td>(f) Google Translate</td>
<td>ungdomar</td>
<td>Jugendliche, Youths,</td>
<td>-</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Jugend, Jugendlichen</td>
<td></td>
</tr>
</tbody>
</table>

(g) ungdomar - Revision: “Junge”
(Swe-Ger) ungdom Jugend became “Jugendliche”
Pauker Junge pojke

Another example illustrates Hilda’s attempt to find out about the gender of a German word. Examples (h) and (i) show that Hilda did not know how to retrieve grammatical information about a German noun directly, but tried to reach her goal through multiple, time-consuming search steps:

<table>
<thead>
<tr>
<th>Source</th>
<th>Search item</th>
<th>Result</th>
<th>Result in text</th>
</tr>
</thead>
<tbody>
<tr>
<td>(h) Google Translate</td>
<td>das Alkohol</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>(Swe-Ger)</td>
<td>der Alkohol</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td></td>
<td>die Alkohol</td>
<td>-</td>
<td>-</td>
</tr>
</tbody>
</table>

(i) Tyda
Google Translate (Ger-Swe) die Alkohol alkoholen -
                      der Alkohol alkoholen der Alkohol

Apart from the above-mentioned aspects common for the students in the second group, they applied the following individual strategies:
Henry - The double-checker

Figure 35. Henry’s distribution of switches between main document and online sources.

A particular feature of Henry as an L3 writer was his permanent attempt to avoid errors. One of his strategies was to double-check potentially wrong lexical choices or misspellings. As already described, he searched a number of German words because he wanted to make sure that his intended lexical choices were correct. Apart from that, he used a function of Pauker to reverse his search and double-check an intended word. Examples (j) and (k) illustrate how he first searched an item, then chose one translation, clicked on it and checked if the reversed search produced the original keyword.

<table>
<thead>
<tr>
<th>Source</th>
<th>Search item</th>
<th>Result</th>
<th>Result in text</th>
</tr>
</thead>
<tbody>
<tr>
<td>(j) Pauker</td>
<td>dann</td>
<td>sedan, då</td>
<td>-</td>
</tr>
<tr>
<td></td>
<td>då</td>
<td>da, wenn, dann</td>
<td>Da ist es, wenn</td>
</tr>
<tr>
<td>(k) Pauker</td>
<td>till och med</td>
<td>bis einschließlich, sogar rent av, även, till och med</td>
<td>-</td>
</tr>
<tr>
<td></td>
<td>sogar</td>
<td>können sie sogar sterben</td>
<td></td>
</tr>
</tbody>
</table>

In another instance, Henry decided to change a lexical item, because it seemed to be too risky for him to use a word he was not very familiar with. Examples (l) and (m) show that he changed a written phrase into another one, which he was more secure with.

<table>
<thead>
<tr>
<th>Source</th>
<th>Search item</th>
<th>Result</th>
<th>Result in text</th>
</tr>
</thead>
<tbody>
<tr>
<td>(l) Pauker</td>
<td>ångra (regret)</td>
<td>etwas bereuen</td>
<td>habe ich bereuen mich(*)</td>
</tr>
<tr>
<td>(m) Pauker</td>
<td>åsikt (opinion)</td>
<td>Meinung, Ansicht</td>
<td>Revision: habe ich meine Meinung ändern(*)</td>
</tr>
</tbody>
</table>

In his recall interview, Henry commented on this excerpt as follows:

'I did not think it was right when I wrote this with ‘bereuen’, it seemed wrong. [...] I tried to find a way around it, because it works anyway to write in more than way way, then I saw a [xxx] on Pauker and then I thought that this was smarter to write, I felt more secure with it. And that is why I changed it.'

This quote illustrates quite well Henry’s strategy to avoid mistakes by choosing a familiar, less advanced expression instead of a new and potentially wrong one.

_Hilda - The multiple source user_

Figure 36. Hilda’s distribution of switches between main document and online sources.

An interesting online source strategy of Hilda’s was related to her use of Google Translate, which she mainly used for searching complex phrases. When she was not satisfied with the results of Google Translate, she did not critically examine and modify the generated translations, but rather tried to slightly change the search phrase until the result would seem more appropriate to her. This is illustrated in examples (n) and (o).

<table>
<thead>
<tr>
<th>Source</th>
<th>Search item</th>
<th>Result</th>
<th>Result in text</th>
</tr>
</thead>
<tbody>
<tr>
<td>(n) Google Translate</td>
<td>klunkar i dig ett (you swallow a) dricker att glas (drink a glas)</td>
<td>schlucken sie eine nippt an sich trinken sie ein Glas</td>
<td>-</td>
</tr>
<tr>
<td>(o) (Swe-Ger)</td>
<td>dricker en burk öl (drink a can of beer)</td>
<td>trinken einer Dose Bier</td>
<td>trinkst einer Dose Bier(*)</td>
</tr>
</tbody>
</table>

Apart from the language related search trials, Hilda also used online sources to gather information about her text content. She turned to Google Search to find information about teenagers’ use of alcohol and browsed through a few results. In her second attempt she found a web page, which she consulted five times to collect ideas for her own text.
Tom - The non-critical searcher

Figure 37. Tom’s distribution of switches between main document and online sources.

Tom did not show particular writing or online source behaviours that could be classified as strategic. He mainly tried to use Pauker as a translation tool and not as a dictionary. He used to type in inflected keywords and fixed phrases. Sometimes this led to successful searches if Pauker could cope with these forms, but in some cases it did not, for example when he searched “myndiga” (of age) instead of “myndig” or “konsekvenser” (consequences) instead of “konsekvens” (consequence). Tom did not spend much time reading the generated results, but simply chose one and tried to integrate it in his text. The grammatical information offered on Pauker was not of relevance during his search queries. This resulted in misspellings, basic grammatical mistakes, which could have been easily avoided, and even in incomprehensible sentences, for example:

(7) Und das man nicht kann die folgen aus seinem trinken dabei man nich mögen sind.

‘And that you can not the consequences from your drinking at [when] you are not like.’

In this particular case, Tom had searched the Swedish word “mogen” (mature). Pauker generated “mögen” (like) as a first result and Tom used this. For such reasons, Tom’s use of online sources in general appeared rather careless and uncritical.

Per - The insecure language player

Figure 38. Per’s distribution of switches between main document and online sources.

Analysing Per’s Camtasia file revealed that he paused more than half of his writing session, he revised his text over and over again and, he spent much time in the web browser. A distinguishing characteristic of Per’s was his search behaviour on Google Translate. While searching single word items at the beginning of his writing session, he started to work with whole sentences in the second half. His strategy was to copy sentences he had already written into Google Translate and look at the result of the Swedish translation. In his recall interview, he commented this, saying that he hoped that Google
Translate would spot the errors in his German sentences. He took several minutes to browse over the sentences, compare the elements in each language, look at the suggested alternatives, then changed word order and looked at the result again. Examples (p) and (q) illustrate this.

<table>
<thead>
<tr>
<th>Source</th>
<th>Search item</th>
<th>Result</th>
<th>Result in text</th>
</tr>
</thead>
<tbody>
<tr>
<td>(p) Google Translate</td>
<td>Wann man die Alkohol zu 16-Jähriger verkaufen kann man überprüft welche Alkohol Jugend kaufen(*) (If you sell alcohol to 16-year olds, you can control for what alcohol they buy)</td>
<td>Och när du ska sälja alkohol till 16-åring du kollar vad alkohol att köpa ungdomar</td>
<td>-</td>
</tr>
<tr>
<td>(q) Google Translate</td>
<td>när man ska sälja alkohol till ungdomar så kan man kontrollera vad de köper (If you sell alcohol to teenagers you can control what they buy)</td>
<td>und wann Alkohol an Jugendliche zu verkaufen, so können Sie überprüfen, was sie kaufen(*)</td>
<td>-</td>
</tr>
</tbody>
</table>

**Controlling the source or being controlled by the source**

A closer look at the students’ writing in interaction with online sources revealed that using online sources in writing is a complex process of hypothesis testing, which involves much of the learner’s attention. The examples show that, on the one hand, the students displayed a number of similarities, for example searching online sources throughout the whole writing session, they predominantly searched Swedish keywords and most of the searches were due to limited linguistic resources. On the other hand, the students had developed their own composing and search strategies, as has been described in detail.

Three students exerted more control over the use of online sources in writing because they had developed the necessary skills: they had a precise search strategy, using mainly single uninflected keywords; they critically examined the results and integrated the provided information, both lexical and grammatical, in their texts. These skills in combination with their language proficiency allows them to make the best out of their online source use, or in other words, they exert control over it. Additionally, they save time that can be spent on the actual text generation.

**5.4 Discussion**

The goal of the intervention was to make the students more aware of their own writing habits and discuss possibilities to improve their writing process.
This section discusses how the intervention and the changes described might relate to each other and how some results might be interpreted. There will also be references to information obtained in the stimulated recall interviews. These are further interpreted in chapter 6.

The intervention was divided into three main topic areas: planning, transcription and revision. The main foci were preparing a written outline with regard to topic and argumentative text structure, developing strategies to compensate for limited linguistic resources, reducing and postponing online source use and finally, revising the text in several steps. Even though the writing process models that this intervention is based on stress the recursiveness of writing (Flower & Hayes 1981), the instructional programme was designed to go through different aspects of writing in a linear fashion.

It can be expected that the sequence, in which the different writing subprocesses were brought up, might have a direct impact on the generated results. For example, due to the fact that revision of texts was discussed at a later point, this aspect might have received less attention by the students in general, or might also show up to a higher degree in the measurements of the final writing sessions. However, when comparing the sequence of teaching content with the summarised process measures in Figure 21, this claim cannot be fully confirmed. The most obvious measures are revisions and source use. Both aspects were discussed between sessions G2 and G3 and in line with the teaching, the students would be expected to reduce source use and increase revisions. However, both measures show trends between G1 and G2, which either remain stable or continue in G3.

Further, the potential direct impact of pre-writing planning, which was discussed and practised at the beginning of the intervention, could possibly be reflected by three different measures: the onset of the transcription phase, the number of pauses during transcription (see Table 27) and the number of global revisions (see Table 31). One might expect that due to pre-planning content and organisation, students would postpone the onset of the transcription phase in order to prepare an outline, would make fewer pauses, display increased fluency and show fewer global revisions as structural text aspects would have been decided beforehand. The measures for fluency distribution (Figure 14) and source use distribution (Figure 18) in fact showed a delayed transcription onset. That this time was used for planning was not only observed in the respective single writing sessions but was also confirmed in the recall interviews. Further, Tables 27 and 31 show that the stated assumptions are also true for pauses, but not for revisions. Thus, it cannot be ruled out that the linear teaching of writing as a process had an impact on single aspects of writing according to the teaching sequence. Particularly the preparation of writing through mental planning or outlining seems to be well reflected. However, the process measures do not clearly support the claim that the linear teaching style had a stronger influence on
certain aspects in single sessions. Furthermore, a clear-cut mapping of single activities proposed in class and the change of single process measures are difficult to sustain, as the actual writing measures are likely to reflect a number of different on-going cognitive processes.

As already mentioned, it was overall shown that the students’ fluency changed slightly, in that text production increased, fewer pauses occurred and more revisions were carried out. These developments were, however, not continued in the delayed post-session. Compared to the other fluency measures, online source use decreased more noticeably and also seems to be the most likely aspect to be consciously influenced by the students. The topic of online sources caught most attention from the students during the intervention, as the sources’ reliability was discussed critically and their disruptive character in the writing process was demonstrated. However, as described for the three case studies, the students’ writing developed differently in that respect. Some students kept source consultation as a frequent activity during transcription; others postponed it to the later or final writing stages. According to reported scores of the DIA-test (see section 3.3), the students with the higher language proficiency, Mia, Sara and Ida, were able to transcribe large parts of the text without source switches - possibly due to a lower number of unknown items or the ability to rephrase and write in a more varied way. Others, for example Hilda and Henry, reduced their source use noticeably, but did not postpone it to the end of the writing session.

These observations indicate that beneficial use of external language-related sources is also dependent on students’ language proficiency. For students, who do not yet have enough command of the language, the permanent attempt to compensate for this deficiency by consulting online dictionaries seems rather counterproductive for their own thinking and learning processes while writing. It forces them to disrupt their writing fluency and focus their attention on the search process. The qualitative analysis of online source use patterns and strategies in the first writing session G1 illustrated how frequent and at times ineffective such switches between the text and the writing aid can be. In the course of the intervention, the mean number of pauses between words and also the pausing values, particularly for Henry and Hilda, showed that along with a decreased source use the number of pauses also decreased. On the other hand, the number of pauses within words showed the opposite development, which indicates that the students were forced to spend more time thinking about spelling when avoiding the use of online sources.

However, as the qualitative analysis of online search strategies also showed, other students with a higher level of language proficiency generally seem to benefit more from access to easily available information, as they can
regulate and minimise their use, apply additional strategies and evaluate the search results.

As already mentioned, the decrease of source use until session G3 and a slight increase in G4 was accompanied but the reversed development of the number of revisions. This result suggests that relying less on information obtained from external sources makes the students revise their text more, possibly because they feel more insecure about its correctness. As the detailed analysis of the types of revisions showed, these revisions are predominantly local, which means that they are focused on spelling and grammatical correctness. This observation supports the assumption that the increase of revisions is somehow related to less source use, as the sources were mainly used either for finding appropriate German translations, spell checking or retrieving simple grammatical information. More global revisions, on the other hand, could hardly be observed. This result as such seems disappointing at first, as it might indicate that students do not have the cognitive capacities to go beyond local revisions and consider text type, structure and argumentative string. However, as it was attempted to make students prepare for these aspects before starting to write by drafting an outline, the result is in fact in line with the teaching approach. Whether the number of global revisions had been higher if the pre-writing planning activity had not been part of the intervention can only be subject to speculation, but as research suggests, balancing attention between local and global aspects while writing in a foreign language puts a heavy cognitive load on students, which usually results in neglecting the latter (for example Schoonen et al. 2003, see section 5.1)

One conclusion from the observation regarding fluency, pauses, revisions and source use is that the changes that in fact could be observed throughout the intervention mainly concerned measures which are more representative of low level cognitive activities. A higher text production rate was associated with a lower percentage of online source use and a lower number of pauses in general, but with a higher number of pauses within words and a higher number of local revisions. This indicates that overall, the students could write slightly more fluently but that the cognitive effort for local text considerations like spelling and lexical issues increased due to less reliance on online sources. At the same time, this switch of cognitive effort from using online resources to using their own linguistic resources did not result in lower text quality, which is shown in chapter 4. The assumption that the developments of the different measures are to some degree connected becomes particularly apparent in session G3, which was characterised by a reversed trend compared to the other sessions, regarding both process and product measures.

Interestingly, the impression that the third writing session was less representative was also confirmed in the recall interviews that were
conducted before the writing product and process results were analysed. In several interviews, the students stated that they struggled considerably on that particular day for reasons like having a long school day and being in the exam period of the school year, which required hard work and caused stress. Yet another influential factor might have been the circumstance that G3 represented the sixth argumentative text for the focus students within a rather short period of time (see section 3.5 for intervention procedure). Thus, some students might have lost interest in this genre and begun to put less effort in their writing. Moreover, some students stated that particularly the task in G3 was perceived as slightly confusing which caused some problems in generating a good text structure. It can be deducted from these consistent results for G3 that apart from the students’ language proficiency and previous instruction, multiple other factors like heavy workload, stress and exhaustion as well as task type and comprehension may have a remarkable influence. In the case of session G3, the students were also able to realistically evaluate these factors in relation to their writing, which was finally confirmed in the analysis of the writing process and product measures.

What remained from the intervention in the delayed post-session G4 can be evaluated from two perspectives. On the one hand, as for G3, the students’ performance under the longest influence of instruction is the reference point. However, as already elaborated, due to the mentioned circumstances, G3 might not reflect the students’ writing ability well. Nevertheless it was shown that from G3–G4, the students used more sources again, decreased the number of pauses and revisions and finally, wrote more fluently.

On the other hand, choosing G1 as reference point for the final evaluation of the students’ writing is more valuable, as this is the session closest to the students’ pre-intervention state. Comparing G1 and G4 might reflect more of what aspects of writing might have changed in the long run as potential impacts from the intervention and writing practice. This comparison showed that the students’ writing processes were slightly more fluent and characterised by fewer pauses, more revisions and less online source use. Against the background of an increase of text quality scores in both analytical and holistic rating, this is considered an improvement of the students’ argumentative text writing skills in German.

However, it needs to be taken into consideration that 10 months lay between G1 and G4, in which all students, except for Per, had regular German instruction. Even though the students did not write any further argumentative texts in their German classes after G3, it can be assumed that

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42 The topic in session G3 was "Gyms, diets, plastic surgery, tattoos, etc. - in today’s society the own body and ‘good looks’ are more important than personality and intelligence."
an improvement of their general language proficiency also contributed to the results in G4. This might not only be reflected in process measures indicating more fluent writing, but in fact also the opposite. For example, the pause length within words between sessions G3 and G4 increased, particularly above the 2000 ms threshold (see Table 28). After several months of continued German instruction one might wonder what the reasons for this observation are, as it could be expected that the students developed increased fluency with higher language proficiency. One explanation could be that the students’ lexical choices had become more advanced, but at the same time required more processing time. Hence, an analysis regarding pauses relating to the particular text content might have been valuable to gain more insight into the particular aspects that students struggle with at different points in time. On the other hand, it needs to be taken into account that fluency as such does not necessarily say much about the actual writing proficiency. This aspect will be further discussed in chapter 7.

Another result of the writing process analysis was the number of differences between writing in L2 English and L3 German. The students’ English language proficiency was remarkably higher, which resulted in more fluent writing with fewer pauses and revisions and hardly any or no switches to online sources at all. As the results have shown, writing session G4 resembles the most the characteristics of writing session E, not only regarding the reported measures across the sessions, but also in the distribution of fluency (see Figure 14). Furthermore, this finding supports the conclusion that the development in German can be considered an improvement as the students’ writing skills in L3 gradually moved towards the process characteristics of L2-writing.

The reported tendencies regarding online source use in German and English further suggest that low source use is related to higher language proficiency. Sara is an exception, which shows that this conclusion cannot not be generalised. Her percentage of source use in German was at an average level and in English exceptionally high. At the same time Sara’s results in the text quality ratings were consistently at top level (see chapter 4). In order to explain the difference between Sara and the other students, her search queries in English were analysed. The analysis showed that almost half of the search items were English, assumingly to assure that she had the correct word in mind. Apart from that she searched for rather advanced lexical items and even metaphors and specific words (for example *vardagsmat*, which literally translates into ‘daily food’ and corresponds to ‘commonplace’). Having this in mind, Sara’s high source use cannot be considered an inferior approach to writing, but rather shows her awareness of translation difficulties and her advanced skills in using online sources for the benefit of her text. Thus, Sara’s example also shows that online source
use has various underlying reasons and therefore different pedagogical implications.

This conclusion pinpoints the controversy of online source use. Particularly in the first writing session G1, online source use represented a permanent interruption to some students’ writing. Hilda and Per, for example, consistently switched between their main documents and the web browsers and it was clear that this behaviour was far from efficient or beneficial (see section 5.3.3). On the contrary, Sara’s example shows that both a sufficient command of the language and the necessary search skills may contribute to foreign language writing in a positive way.

Apart from the indicated pedagogical conclusions of the study, which will be further developed in the final discussion of this thesis, the results and observations also suggest some modifications of the traditional writing process models. From empirical research in L3 (see section 5.1.3) it follows that learner- and language-related factors of multilinguals need to be implemented into theoretical models of language production. De Bot (2004), for example extended Levelt’s (1989, 1993) speaking model by accounting for the multilingual lexicon. Maintaining the existing terminology in Hayes’ (2012) current model, specific multilingual learner- and language-related aspects influencing the quantitative differences in writing would have to be located either on the control or on the resource level (see Figure 7). For example, the frequently stressed L3 learners’ metalinguistic and learning awareness should be included at the control level as an important factor influencing the process level. On the other hand, specific characteristics within the writing process dimension, such as increased planning and evaluation behaviour, might be explained by the access to the L1/L2/L3 linguistic systems at that particular point in time, hence relating to long-term and working memory capacities. Thus, the development of models accounting for L2/L3 learner- and language-related aspects is needed in order to gain a deeper understanding of the interplay of variables and their quantitative effect on L3 writing.

Further, in the recent writing model by Hayes (2012), Internet and language-related webpages could best be located within the task environment and become part of the category task materials (see Figure 7). In this study, the writers started writing immediately and made use of online sources throughout the whole writing process within one session. Therefore, one assumption is that the use of online sources in foreign language writing mainly connects to those writing sub-processes that are here referred to as translator and transcriber, that is when students formulate their ideas in the foreign language or when they possibly lack linguistic resources and decide to look up the spelling of a word while they are typing.

In addition, connections between online sources as part of task environment and translation/transcription should be bi-directional because
the generated results of the online source searches have a direct influence on the writing process. When a writer for example notices a lexical gap while translating his thoughts into language, he might initiate an online search query. Unsatisfactory results or insecurity might lead to simplifying the original idea (proposer) and manage to get the message across in trying other words (transcriber) (see section 5.3.3, examples [I] and [m] in the description of Henry, who changed the originally intended expression ‘regret’ to ‘change one’s opinion’). The use of online sources and the writing process are therefore best described as interplay.

Another attempt to include this intermediary component in the current writing model has been proposed by Leijten et al. (2014), who studied professional writing from multiple sources. They suggested adding a basic component to the writing process level called “searcher”, which is independent of the kind of information being obtained. The searcher is activated if knowledge from long-term-memory does not suffice to reach the writing goal and therefore, further search in external sources is needed. In the description of Leijten et al. (2014), the searcher is mainly connected to the proposer and the translator, but as already indicated, in the specific foreign language writing context, a stronger influence on the translator and transcriber is suggested. However, by adding a search component to the process level instead of reducing it simply to a part of the task environment, its impact on the composing process itself would get sufficiently acknowledged, as it would become part of it.

Finally, general conclusions about the students’ writing processes are difficult to draw. This was shown for example by the differences between the students described in the presentations of the sub-groups, the case studies and Sara’s exceptional online source behaviour in English. The frequently high standard deviations to mean values also pointed to the variation. In the initial writing session G1 the seven focus students showed a high variability in their writing levels and even represented entirely different approaches to writing a text in German. It can be speculated that one reason for this variation is the students’ previous instruction. As described in chapter 3, the project took place in the students’ first year at upper secondary school. In grades 6–9, different teachers had instructed them. Apart from that, the learners’ individual differences regarding their personal writing preferences, their motivation to engage in learning German and in writing texts may be another factor causing a large variation in process organisation. Per’s English text, for example, was exceptional as it was rated with low scores and showed somewhat outlying process measures. In his recall interview he mentioned that writing in English had become such a routine for him that he did not consider it a challenge anymore. Therefore, he did not put a lot of effort into it. Different language levels, previous instruction, individual differences and diverse ways to cope with the challenges of L3 writing may
all be factors influencing writing. By adding aggregated group values to the description of cases, the differences of the writing processes were highlighted.

In chapter 6, the focus on the individual student, which was started in section 5.3.2, will be continued. The detailed analysis of the case study students’ fluency development will be expanded by a description of what metacognitive knowledge they displayed in their recall interviews. Shifting the focus from the writing process and product to the writer allows a more comprehensive picture of influential factors in L3 writing.
6 Metacognitive knowledge about writing in L3 German

In the third and final perspective on students’ writing, the focus will shift from products and processes to a more learner-focused approach. Traditionally, perspectives on writing, which stress the role of writers, are located within a sociocultural approach. On the one hand, it is referred to as “writing as socializing” (Roca de Larios et al. 2002: 11), but on the other hand also as the “attitudes, practices, and beliefs of those involved in learning and teaching writing” (Polio 2008: 91). Even though aspects of the study’s social and contextual settings might be mentioned, these are not the main focus of the current chapter. Instead, the students’ own accounts of writing, their metacognitive reflections, are studied. Analysing transcribed protocols of stimulated-recall interviews enabled insight into what kind of metacognitive knowledge the students have and how they make use of it during the intervention. These insights complement the analyses of the writing products and processes.

The case study approach, used in section 5.3.2 in order to illustrate the within-group variability, is continued here, highlighting three focus group students: Henry, Mia and Hilda. After a theoretical background about metacognition and writing, the analysis procedure is presented, followed by the result section. The three students will be described individually at first, and then a concluding section will combine, compare and discuss the descriptions. When appropriate, the results will be underpinned by information obtained in the pre- and post-intervention questionnaires.

6.1 Metacognitive knowledge about writing

The added value of metacognition has been reported for various areas of learning. Research shows, for example, that metacognitive knowledge positively influences the quality and effectiveness of learning (Hartman 2001; McCormick 2003; Paris & Winograd 1990; Schraw 1998; Wenden 1998), the use of learner strategies and the development of self-regulated learning (Wenden 2002) and learner autonomy (Victori & Lockhart 1995) and academic success (Zimmerman & Bandura 1994). The role of metacognition in relation to writing has also been widely acknowledged (Dimmit & McCormick 2012; Hacker et al. 2008, 2009; Harris et al. 2009; McCormick 2003; Sitko 1998). In this thesis, the notion of metacognition,

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43 This chapter is an extended version of the publication: Knospe, Y. (forthcoming) Metacognitive Knowledge about Writing in a Third Language - A Case Study. In Å. Haukås (Ed.), Metacognition in Language Learning and Teaching.
initially defined as “knowledge and cognition about cognitive phenomena” (Flavell 1979: 906), is used in order to investigate the potential role of reflection about learning processes in foreign language writing instruction.

Successful writing is often associated with metacognitive knowledge and metacognitive regulation behaviour (McCormick 2003). While a number of researchers have given examples of metacognitive components in several sub-processes of writing, such as planning, organising, goal setting, translating, evaluating, monitoring and revising, others have argued that writing as a whole is applied metacognition and therefore needs to be defined from a metacognitive perspective (Hacker et al. 2009).

To clarify the pedagogical role of metacognition in writing instruction, it is important to understand what metacognition actually involves and how it relates to writing. Metacognition is usually divided into two main sub-components: a knowledge component and an executive regulation component (Hacker 1998; Kuhn 2000; Paris & Winograd 1990; Schraw 1998; Tobias & Everson 2000; Wenden 1998). For the first component, metacognitive knowledge, Jacobs and Paris (1987) also introduced a further division into declarative, procedural and conditional knowledge, which is adopted in this thesis.

Declarative knowledge (see section 2.1.1), in general terms, refers to factual knowledge about oneself and one's own cognition, and to skills, tasks, strategies and affective factors. In relation to writing, this knowledge component comprises a number of aspects. Harris et al. (2009) list learners’ knowledge about themselves as writers, about their successful and less successful experiences in writing, about less preferred elements of the writing process, relevant environmental aspects of writing, task knowledge, general or particular writing strategies for different kinds of texts, and also affective factors influencing writing, like self-efficacy and motivation.

In the present study, the additional factor of the foreign language in writing is highlighted, and for this reason the notion of declarative metacognitive knowledge needs to be extended. Learners may have declarative metacognitive knowledge about their own foreign language resources, for example, what aspects of grammar they have already understood or which still need to be learnt, and about their processes of learning this language, for example, in what way vocabulary is learnt best. These issues have not been studied extensively in the framework of metacognition, but in foreign language learning and teaching research they are well-known concepts called metalinguistic awareness and language (learning) awareness. Metalinguistic awareness refers to “one's ability to consider language not just as a means of expressing ideas or communicating with others, but also as an object of inquiry” (Gass & Selinker 2008: 359).

This means that students, who have metalinguistic knowledge, are able to think about languages as abstract and rule-based systems on a higher level.
Language awareness refers to “explicit knowledge about language, and conscious perception and sensitivity in language learning, language teaching and language use” (Svalberg 2012: 376). Accordingly, explicit knowledge about foreign languages and the learning processes involved are part of declarative metacognitive knowledge.

Procedural knowledge (see section 2.1.1) refers to knowledge about how to use declarative knowledge (Harris et al. 2009). In writing, this category refers to knowledge about how to apply different kinds of writing strategies. The third component of metacognitive knowledge, conditional knowledge, refers to knowing when, where and why to make use of declarative and procedural knowledge. This is especially important when it comes to the effective selection of strategies and allocation of resources (for a more detailed description of these knowledge types see for example Schraw [1998] or McCormick [2003]). In the writing process, conditional knowledge enables the learner to make particular decisions about how to approach a given task, for example what kind of writing environment needs to be created when carrying out particular parts of the writing process, or which strategies to choose.

The second sub-component of metacognition, executive regulation, has been referred to as “self-management” (Paris & Winograd 1990), “strategies” (Wenden 1998), “monitoring and control” (Tobias & Everson 2000), or “monitor and regulation” (Hacker 1998). In relation to writing, this component refers to the conscious regulation of the writing process through managing cognitive loads and applying metacognitive writing strategies (Harris et al. 2009). Particularly the planning, monitoring and evaluation processes in writing have been identified as the major regulation components and represent the link to the writing sub-processes in the cognitive models of writing (Bereiter & Scardamalia 1987; Flower & Hayes 1981; Hayes 1996; Kellogg 1996).

An interesting contribution to the understanding of the executive component of metacognition in writing is Hacker et al. (2009). As already mentioned, they suggest that writing is applied metacognition. They base their assumptions on a model proposed by Nelson and Narens (1990), which involves monitoring and controlling as the main processes in the interdependency between cognition and metacognition (see Figure 1 in chapter 2). Hacker et al. (2009) consider writing as synonymous with thinking, with the only difference that written thoughts have undergone a metacognitive selection process. Therefore, writing can be described as a permanent process of selection of thoughts. This selection of thoughts in writing is performed by the two executive activities monitoring and control, which also regulate cognition and metacognition.

Metacognitive monitoring denotes an awareness of one’s current thoughts and involves strategies like reading, re-reading, reflecting and reviewing.
### Table 46. The role of metacognition in writing.

<table>
<thead>
<tr>
<th>Metacognitive writing knowledge</th>
<th>Metacognitive regulation of writing</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Declarative writing knowledge</strong></td>
<td><strong>Monitoring writing</strong></td>
</tr>
<tr>
<td>• Knowledge about oneself as a (foreign language) learner and writer (e.g. own strengths and weaknesses, previous experiences in learning and writing),</td>
<td>• Reading</td>
</tr>
<tr>
<td>• Learning/writing processes</td>
<td>• Re-reading (e.g. from the audience’s point of view)</td>
</tr>
<tr>
<td>• The writing environment (e.g. time limits, writing technology, information resources)</td>
<td>• Reflecting (e.g. about how the written text fits the intended writing goal)</td>
</tr>
<tr>
<td>• The language in which to write (e.g. metalinguistic knowledge),</td>
<td>• Reviewing</td>
</tr>
<tr>
<td>• Task requirements (e.g. knowledge about text type, topic, readership)</td>
<td><strong>Controlling writing</strong></td>
</tr>
<tr>
<td>• Affective factors (e.g. anxiety, motivation or self-efficacy)</td>
<td>• Planning (e.g. determining purpose and audience, activating background knowledge, organising ideas, considering time, writing environment, text type and rhetorical requirements)</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Procedural writing knowledge</th>
<th><strong>Monitoring writing</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td>• Knowledge about how to apply general and specific writing strategies</td>
<td><strong>Controlling writing</strong></td>
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</table>

<table>
<thead>
<tr>
<th>Conditional writing knowledge</th>
<th><strong>Monitoring writing</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td>• Knowledge about when, where and why to use declarative and procedural writing knowledge</td>
<td><strong>Controlling writing</strong></td>
</tr>
</tbody>
</table>

(Table 46 is based on descriptions in Hacker et al. [2009], Harris et al. [2009], and Sitko [1998]; modified and summarised by the author.)

Metacognitive control is the modification of one’s current thoughts. It involves strategies like editing, drafting, idea generation, word production, translation and revision (for more concrete examples of monitoring and control activities during writing see for example Dimmit & McCormick [2012], Harris et al. [2009], Sitko [1998] or summary in Table 46).
According to Hacker et al. (2009) writing is a process involving an orchestration of these two processes. As the text evolves, the writer's own defined goals and the task environment might change, which in turn requires writers to monitor their writing and exert control. The overview in Table 46 summarises the role of metacognition in writing.

Irrespective of whether some aspects of writing or writing as a whole are considered metacognitive, its value for the development of the writing ability is generally agreed on. However, this inherent metacognitive characteristic of writing does not imply that each and every student is equally successful as a writer. Even if students have developed a fair amount of writing knowledge and strategies for writing in their L1 and L2, it does not necessarily mean that they are able to make use of them when writing in further foreign languages. Schoonen et al. (2003) point to the limitations of the working memory. For foreign language learners, the demanding process of lexical retrieval tends to take up a large part of their cognitive capacity at a given point in time. This constraint might make it harder or even impossible for writers to deal simultaneously with higher-order processes, for example activation of metacognitive knowledge.

6.2 Analysis of metacognitive knowledge
The analysis will focus on how Henry, Mia and Hilda reflected on their own writings in German and in English. Henry and Mia participated in five interviews each and Hilda provided three. Henry's interviews lasted between 23 and 37 minutes and altogether make up 11,456 words of transcribed data, Mia's interviews lasted between 14 and 50 minutes and the transcribed protocols make up 9,998 words, and Hilda's interviews were between 36 and 50 minutes long and the transcribed data consists of 4,920 words.

For the analysis, the students' statements or short interactions with the interviewer were given within-session numbers. Then the data was scanned in a first round regarding all potential metacognition-related reflections. In the next step, a deductive approach was chosen and the distinction of declarative, procedural and conditional metacognitive knowledge, as suggested by metacognition theory, was used to code the numbered statements. Some cases were given more than one category, for example both declarative and procedural knowledge as statements contained both types, and others were left out if it was not clear enough that they were metacognitive reflections at all. A majority of entries were categorised as declarative knowledge, while it was hard to identify any procedural and conditional knowledge, which could be clearly defined as knowledge and not as an overlap with executive regulations. Due to this, procedural and conditional metacognitive knowledge will only play a minor role in the results of the analysis.
For declarative metacognitive knowledge all entries were scanned again and four main categories emerged: (1) knowledge about oneself as a learner, (2) knowledge about the task, (3) knowledge about languages, and (4) knowledge about strategies. In the last step, the students' statements were grouped into these four sub-categories in order to see possible tendencies or developments across writing sessions.

The stimulated-recall transcripts were coded by the author. The coding was carried out in several steps and doubtful cases were excluded. However, it should be acknowledged that the lack of an independent rating procedure may influence the reliability of the coding and the validity of the generated results.

6.3 Results
In the stimulated-recall interviews, in which Henry, Mia and Hilda were asked about their writing experiences, parts of their metacognitive writing knowledge was revealed. In their descriptions about how they went about writing argumentative texts, they explicitly or implicitly referred to knowledge, which motivated their decisions and behaviours. For example, when Henry was asked why he paused at a particular moment, he referred to lacking knowledge of a specific grammatical rule in German. In such an instance, metacognitive knowledge about a specific language was displayed. In other cases, he referred to metacognitive knowledge in a more explicit way. Regarding the importance of topic knowledge for writing, Henry mentioned that he believed writing was much easier for him when he had much knowledge about the topic of the text. This knowledge is not in every case explicitly labelled as such by the learner, but has to be inferred with the help of existing categorisations.

As already mentioned, the type of knowledge that was identified was mainly declarative and categorised into learner, task, language and strategy knowledge. In this chapter, these categories will be described in detail for each student. A development of metacognitive knowledge could not be observed consistently, but when it became clear that a change had taken place, this will be indicated.

6.3.1 Henry’s metacognitive writing knowledge

Knowledge about himself as a writer
Regarding metacognitive knowledge about himself as a writer, it was remarkable how negatively Henry referred to himself. He repeatedly made remarks about his own poor writing ability in German, especially after the first two writing sessions. At several points he commented on his own perceived weaknesses, what he was not able to express in German or where he usually performs poorly or writes “sloppy” texts. In sessions one and two
he repeatedly mentioned what German writing rules he had not learned yet, for example the use of commas or, as in the following quotation (8), the choice of subjunctions:


‘I don’t really know in which context one should use ‘wenn’, ‘wann’ and ‘ob’, I think. So, I don’t really know that very well.’

Henry frequently reflected on his shortcomings in German and admitted that it was his own fault that he could not apply grammatical rules that had been dealt with in class, because he had not put enough effort into learning them. In session G1 he said:

(9) Ja, det är mitt eget ansvar, för att vi har gått genom det här på tyska lektionerna många gånger nu och men då, när jag har gått igenom, då har jag förstått, då hade det inte varit svårt, men sen har jag glömt bort det med tiden och del är, jag måste repetera det, alltså flera gånger för att det är inte det att det är jätte komplicerat, det är bara att jag glömmer och minns inte hur det var och därför kan jag inte riktigt rätta det.

‘Yes, it’s my own responsibility, because we have gone through this in the German lessons several times and then I went through it and understood it, then it was not difficult, but then I forgot it as time went by and then I have to repeat it several times because it is not like it is very complicated, it is just that I forget and cannot remember how it was and therefore I cannot really correct this.’

These perceptions about himself were reflected in a similar fashion in his questionnaire answers. When asked about his feelings about learning German, his answers indicated that he liked it and would even like to deepen his knowledge. However, it was also clear that he neither considered himself a good writer nor believed in his own competences in German. The questionnaire revealed that particularly grammar and word choice were aspects he believed were the most demanding ones for him when writing and also the foci of his attention during revision.

In relation to the writing topics, Henry mentioned in several interview sessions how much or little topic knowledge he had and reflected about what topic knowledge meant for his writing. Regarding the topic in text G345 for example, he had not much to write about while in text G446 he had the feeling that he had much to say because he felt strongly involved:

44 In the retrospective interviews, the students talked either Swedish or English. When only an English version is presented, the student talked English.
45 The topic in session G3 was “Gyms, diets, plastic surgery, tattoos, etc. - in today’s society the own body and ‘good looks’ are more important than personality and intelligence.”
46 The topic in session G4 was “Social networks (like Facebook, Twitter, Instagram, Tumblr, etc.) are dangerous for teenagers.”
I felt it worked because I am a teenager and this text is about how it affects teenagers.

In the last session, after having talked about the role of topic knowledge a few times in earlier sessions, he elaborated even more on the influence of such knowledge and related it to the planning process, one of the executive processes in writing.

I think it depends on what you’re supposed to write because, for example, if it’s about a subject you’re not really used to or you don’t know a lot about, you have to, like, process the information you have in your mind before and kind of write it down, so you know: yeah, this is what I can write. But if you, if you, you’re for example very educated in something, then, then you don’t really need a lot of planning to write structured and detailed because you already have it like structured in your mind, for example. So that is why I sometimes make this, you know, detailed, less detailed plannings.

This statement indicates that Henry’s metacognitive knowledge about himself as a writer had developed and that he had understood what this means in relation to organising the writing process. This impression was also confirmed when comparing some answers in the questionnaires. When asked about his pre-writing activities, Henry answered in the pre-intervention questionnaire

After the intervention, Henry commented in much more detail on the same question, which also points to a development towards a clearer view about what works for him as a writer when it comes to pre-writing activities:

Apart from this increase in declarative knowledge, it also becomes clear that Henry has gained conditional metacognitive knowledge, because he has understood that he should plan a text carefully when he does not have sufficient topic knowledge at hand.

Knowledge about the writing task
In addition, Henry showed declarative knowledge about the writing tasks in terms of text type. Even though this is not surprising, as the intervention dealt with how to write argumentative texts in German, it is interesting to note how his reflections developed throughout this period of time. On several occasions in all writing sessions, he described how he tried to come up with arguments and counter-arguments, both successfully and
unsuccessfully. At two points he also mentioned the writing goal regarding the audience and the need to make himself understood and to discuss the controversial topic of the text. In G1 his representation of the task became clear when he described it in comparison to ordinary German lessons:

(14) Jag ska formulera så det blir lätt för att när jag skriver då, då hinner jag inte tänka lika mycket som till exempel om, om vi gör en övning alltså på en tyska lektion. [...] Då, då kan vi tänka längre, hur ska jag sätta orden [...] rätt ordning, alltså sådana, det gör jag inte här [...] och sen det är därför ibland det blir fel eller även hur ofta det kanske blir fel ofta, men när jag ska skriva texten, och det är där att jag inte får att jag inte kan liksom hinner tänka lite hur var det här nu, vilka regler är det här, alltså i grammatiken.

'I formulate so it becomes easy because when I write, then I do not manage to think as much as, for example, when we do an exercise in a German lesson. [...] Then we can think longer, how to put the words, [...] the right order, such things, I do not do that here [...] and then it is because of this I get it wrong sometimes, even quite often I get it wrong when I write a text, and then I do not manage to think a little how that was again, which rules apply, in grammar I mean.'

This example suggests that declarative knowledge of task environment affected Henry’s process of planning as he deliberately decided to choose simple constructions due to time and task constraints.

In writing session E, that is after the entire intervention had taken place, Henry again connected his task knowledge and planning processes in an interesting comparison between argumentations and descriptions:

(15) Well, writing an argumentation, you really need to have, you know, a good structure before writing. And, and I don’t think that is nearly as necessary while writing a description because the only thing you need to do is just, you know, it’s, write as careful as possible so if a person needs to read it, he or she will understand, you know, what you’re talking about. It’s not really, you know, meant to like: here I will describe how, how, what colour her hair is and here I will tell him about the pants she’s wearing. It’s not, you know, this is more complicated to write [...].

Henry seemed to have quite deep knowledge about argumentation as a text type right from the beginning. Apart from the interviews, this became visible in his answers in the questionnaire. Even though he indicated that he had not written many argumentations in German, it became apparent that he had very good knowledge about the characteristics of text types in general, irrespective of the language used. As the majority of the students’ answers suggested that they thought that text type knowledge is dependent on language proficiency, it should be highlighted that Henry obviously understood that this knowledge could be utilised across languages and subjects. However, as already shown, his reflections in the interviews also indicate that a development of knowledge about how to approach this writing task under the given constraints had taken place.
Knowledge about languages

Henry’s metalinguistic reflections are closely related to both knowledge about himself as a learner and writer and to knowledge about the task. In the first two sessions Henry often indicated his lack of linguistic competence. Interestingly, he did not make remarks about language or grammar in general, but he was able to directly refer to grammatical aspects using metalinguistic language, for example the use of certain subjunctions or the case system in German including cases after prepositions. This fact in itself actually indicates his high degree of reflectiveness about the foreign language and about his own competence. In session G2, for example, he commented on his lack of knowledge about the future tense in German and compared it to a Swedish construction:

\[
\]

I wanted to write that ‘otherwise [...] we have to face the consequences’, but of course you cannot, one cannot use ‘kommer’ [N.B.: be going to] like ‘ich komme’ [N.B.: I’m coming], in Swedish for example I can, we can say, then I can say ‘I am coming now’, like ‘I’m coming to you now’, but, and one can also say ‘I’m going to face the consequences.’ [...] Yes. But, but I did not know if that works in German, if you can write ‘sonst kommen wir behöver möta konsekvenserna’ [N.B.: otherwise we come to face the consequences (literally translated)].’

Session E gave Henry a good opportunity to reflect on the differences between German and English and consequently led to a number of statements showing his metalinguistic awareness. Throughout this session he stated that he found his English very good, that he could express almost everything in this language without any major problems and that he usually felt satisfied with his English texts. This judgement was also reflected in the questionnaires, in which he rated his competence in all four skills as good or very good and stated that he considered himself a good writer, who knows exactly what to do when writing compositions. In comparison, he complained that he was not able to write everything he wanted in German, so that he usually had to express his thoughts less elaborately:

\[
	ext{(17) [...] after I have written the text in English, I feel that I, I got to write about everything that I wanted and that, that my opinions were expressed clearly, so that other people will understand it but sometimes after writing in German, I feel like, you know, this is not really good. They won’t understand what I’m trying to say or this is not really what I mean when I write this.}
\]

Since these differences were so clear to Henry, he also indicated that it affected the planning of his texts. While his answers in the questionnaires generally indicated that his planning was rather similar across languages, he
stated in the interviews that while he plans his English texts in English, he usually plans his German texts in Swedish:

(18) Because if I planned this in, let's say it was German today, if I planned it in German, I would have to think how to write it in German and that would just slow down the process too much. And I want the planning to be at least you know, I want it to be quick but I need a time to, to process all my thoughts, but I still wanted, you know, not take too much time.

Here it becomes clear that Henry had developed a strategy for dealing with writing in different languages. This shows his ability to adapt to the task environment including time constraints and his beliefs about his own language proficiency. He thinks that planning should take little time and mainly serve to generate and organise ideas. According to this, he made conscious language choices.

Knowledge about strategies
Henry also showed his knowledge about strategic behaviour in other instances. While he relied on his ability to reformulate in English, he would rather rely on online dictionaries in German, because it was too time-consuming to engage in a rephrasing strategy in German:

(19) Henry: Yeah, that's because I, you know, in, this is very different, for example, as in German, because I can easily find another way to write a sentence in English than in German. So if I don't know a word, I just, I will just write it in another way.
Interviewer: Okay.
Henry: Yeah, so in, in, the only time I checked here was when I needed to check spelling and nothing else.
Interviewer: So you were able to rephrase things in English easily?
Henry: Yeah.
Interviewer: And you cannot do that in German?
Henry: Well, I, I can do it in German, but sometimes, but it's a lot harder.
Interviewer: Hm and if you, if you come up, if you come across problems in German, then you, what do you do then?
Henry: Go to Pauker [N.B. online dictionary, see section 5.3.3 for information about Pauker]. First, but I don't really, you know, give much time into trying to find another way, maybe I'll just spend two or three minutes thinking of how I should re-write the sentence but then I'll go to Pauker or Google Translate or whatever.

These reflections on the differences in the strategic use of dictionaries also occurred in the questionnaires. He indicated that in general, he would use the same strategies across languages, with the exception that he would look up words in a dictionary slightly more frequently in German. However, in the interviews Henry showed awareness of the challenge to choose from the translations offered by such an online tool. He admitted that he usually decided to choose the first translation in the list of words, although he was aware of the risks of such a strategy and had learnt that these translations...
may be wrong and also that even what seems to be a correct translation cannot be used in all contexts. The following statement indicates that this awareness resulted in a development in the use of this tool. In session G3 he made the following comparison with session G1:

(20) I tried to avoid it, but sometimes I couldn’t like find another way and it happened a lot of times today because there were a lot of words that I didn’t know or found complicated so I had to check it out, but I’m pretty sure that I used it more the first, you know when I wrote the first text, because then I didn’t even think when I, you know, when I, you know, got to a dead end, and I didn’t know what to do, I just went to Pauker without thinking really. But now at least I try to find another solution before writing, before going to Pauker.

While the use of online dictionaries seemed to be the predominant behaviour when Henry faced his own inadequate linguistic resources or when he wanted to create more variation in his text, he also reported that he tried out several strategies, which indicates a development of his metacognitive strategy knowledge. In G1, he decided to come back to a certain expression later, in G2 he translated literally from Swedish into German, in G3 he rephrased and in G4 he tried to avoid certain expressions since there is more than one way of formulating something. He stated:

(21) And then, the next word I am writing now, that was a bit sloppy, it was like, directly translated from Swedish, like ‘alkoholinköp’ (N.B. alcohol shopping), there I thought ‘inköp’ and then ‘alcohol’, and put these two words together, and that can surely go totally wrong.

As in many of his other evaluations about his own learning and writing processes, he again judges his compensatory behaviours in a rather negative way. He is aware of the risks of using compensatory strategies, like literal translation for example, but on the other hand, he does not seem to fully realise that even if compensatory behaviour might result in errors, it still represents a communicative competence in learning.

### 6.3.2 Mia’s metacognitive writing knowledge

In contrast to Henry, Mia neither referred to herself as a learner with little language proficiency nor stressed those aspects, which she did not know or had not yet understood. Instead, she showed a rather strong awareness of her own writing habits. She was able to reflect on how writing worked best for her, in what situations she experienced problems and what solutions she had developed.

**Knowledge about herself as a writer**

Already in the first session G1, Mia talked about the various constraints in German writing, saying that writing so slowly made her forget the intended
content of a sentence because she had to consider all the form-related aspects. In session G3, she said:

(22) När jag skriver tyska så kan det va mitt i, om man har en svår mening, så glömmer man det man har tänkt liksom, som resten. Så jag brukar skriva på svenska, ja, innan, så glömmer man som inte.

‘When I write in German, in can be in the middle, when I write a difficult sentence, that I forget what I had thought as an ending. That is why I usually write in Swedish before, so I don’t forget.’

Mia’s reflective observation could also be found in the questionnaire. When asked what she considered difficult when writing in German, she indicated that both grammar and how to formulate complex thoughts were most challenging compared to Swedish and English. This feeling prompted her to write her texts in Swedish first and then translate them into German. This compensatory behaviour will be further elaborated under ‘knowledge about strategies’.

Besides the awareness of this problem of cognitive load, Mia could also talk rather explicitly about her preferred writing strategies and the impact of the environment on writing. At different points, she made the distinction between writing a text at home with plenty of time in contrast to writing a text at school under the pressure of a time limit. In session G2, for example, she indicated that her revision practice at home differed from the school environment, as she would re-read the text very carefully at home:

(23) Jag brukar kolla, om jag gör det hemma, varje mening liksom, liksom meningsuppbyggnad med satsdelar, att verben är böjd i personböjda och att det, om det är bisats, sen brukar jag försöka kolla på det här ackusativbökning.

‘When I do this at home, I usually look at every sentence, like sentence structure with clauses, that the verb is inflected and if it is a subordinate sentence, then I usually look that it is an accusative inflection.’

These preferences also became apparent in the questionnaire answer to what she would typically do after having written a text. She made it clear that to her, revision meant re-reading several times with a strong focus on grammar and word choice. However, she knew she could not do that at school, which usually made her feel dissatisfied with the result of her writing. Her description of writing session G3 resembles these school experiences:

(24) Men nu, nu rättade jag inte, allså jag rättade inte jättemycket så att jag tog en satsdel av, på varje mening eller så, det gjorde jag inte, men försökte det, det jag hittade. Det var inte så effektivt rättande.

‘But now, now I did not revise, well, I did not revise a lot so that I took the clauses and every sentence or so, that I didn’t do, but I tried to revise what I saw. But it wasn’t a really effective revision.’

In conclusion, she stressed that she tried to produce good German texts, but that the experience in itself was not enjoyable. She actually considered
writing as a creative and communicative activity, but to her writing in German was characterised by the permanent need to consider language-related aspects. This kind of high cognitive load made writing in German a less enjoyable activity for Mia.

*Knowledge about the writing task*

Throughout the entire intervention, Mia showed a clear idea about different text types and what needs to be considered when writing an argumentative text. In her descriptions, she often referred to the differences between narratives and argumentations. She reported both in the interviews and in the questionnaire that the majority of texts written in German lessons were descriptions of one’s day or daily habits. She disliked writing this kind of texts, but found them much easier to produce. In contrast, she perceived argumentative texts as more formal, requiring more serious content and words she was often not familiar with. In session E, she stated:

> (25) I think it’s pretty hard because the arguments have to be, you have to [...] make the reader believe what you write. And then you, I think you have to, have like complicated things, like you can’t just have basic sentences because the point doesn’t, the reader doesn’t really get the point. It’s not when you like describe something or a story, you can have easy sentences and it’s okay but here I think you have to have more, better sentences and you have to be more persuasive [...] I think it’s a pretty hard type of text.

Apart from these general differences between text types, Mia showed her knowledge about components of an argumentation on several occasions. She mentioned that she was required to write an introduction, then list and describe a number of arguments for and against the thesis statement and finish the text with a conclusion. At several points, she mentioned that she had not fulfilled these requirements for various reasons, for example failing to find further arguments or running out of time. In session G3, for example, she evaluated her writing as follows:

> (26) [...] för jag visste som inte riktigt vad jag skulle argumentera för eller så, alltså, jag vet inte det blev bara konstigt. För att det är ingen sammanhängande argumentation, för jag visste som inte, ja, jag visste som inte vad jag skulle säga eller hur skulle lägga upp, ja. Jag vet faktiskt inte. ‘[...] because I didn’t really know what to argue for, I don’t know; it was just strange. Because this did not become a coherent argumentation, because I didn’t know, I didn’t know what to say or how to structure it. I don’t know actually.’

Mia’s reflections about the writing task show that she had a good knowledge about the task at hand. She compared argumentations to narratives and also evaluated her products, when she had not met the indicated requirements. Particularly in session G3, which resulted in the lowest text quality scores (see chapter 4), she mentioned perceived problems with the given task and
instruction and could not apply her knowledge about argumentations sufficiently.

**Knowledge about languages**

Mia’s reflections regarding her metalinguistic knowledge mainly occurred when she talked about her text revisions, which were to a high degree concerned with language-related aspects (see section 5.3.2). She mentioned that usually she controlled verb inflections, word order in subordinated clauses and the gender of nouns at the end of the writing process.

She showed awareness of grammatical aspects and made clear that it had become a routine for her to consider these when the text was written. Regarding revision behaviour, both the interviews and the questionnaire indicated that she used this grammar-focused re-reading as a strategy in order to avoid errors.

Mia also mentioned what she perceived as differences between writing in German and writing in English. Similar to Henry, the latter appears much easier, as text and words would “just come” (session E), although English is a foreign language. In the questionnaire, this impression was confirmed, as she reported to consider herself a good writer in English. Most aspects, which need to be considered in writing (such as expressing her own point of view, using correct grammar, organising writing, considering text type or choosing correct words), did not seem to be problematic. In contrast, she did not like writing in German because she perceived it as difficult requiring much thinking in order to create a good text. After session E, she commented:

(28) I need to think so much and can’t really say what I want to say, and must simplify it so much, I don’t really like it. [...] I would like it if I, if I could just write and not think.

This quote illustrates once more that the perceived language proficiency level and the cognitive effort, required to produce a text, left Mia with a feeling of unease when writing in German.

**Knowledge about strategies**

The broadest metacognitive knowledge that could be identified in the analysis of Mia’s reflections was knowledge about strategies. The most apparent one, as already mentioned, was her strategy to write texts in
Swedish first and then translate them into German. In her view, this strategy made it easier and more efficient for her to write because she believed that she could retrieve more ideas for the text when formulating them in full Swedish sentences at first. After session G1 she reflected:

(29) Nej, jag brukar skriva upp som, alltså på svenska innan för att jag tycker det bli lättare att komma på [...] jag tänker ju som på svenska och därför brukar jag skriva upp vad jag tänker och sen översätta det så.

‘No, usually I write everything in Swedish first because I think it is easier to come up with things. [...] I do think in Swedish and that is why I write down what I think and then translate it.’

In session G4, Mia indicated knowing that this approach often resulted in problems, as her thoughts formulated in Swedish were too complex to be translated accurately into German. However, she tried to change this behaviour in order to gain more control over the actual German text. In examples (30) and (31), she describes how she began to simplify her German translations compared to the more complicated Swedish originals or alternatively write a simpler original in Swedish.

(30) [...] I think I do it more simple when I translate it to German instead of trying to write exactly what I write in Swedish. (…) I think I try to make it like, so I, so I have control over the German, and not super long sentences that are just weird.

(31) I thought I would know what ‘skapa’ [N.B. create] was, and I also thought it was maybe easier to say ‘skapa ett beroende’ [N.B. create an addiction] than to find the right word for ‘beroendeframkallande’ [N.B. addictive] in German.

Three other strategies were connected to each other. First, when noticing that she did not know an appropriate translation in German, she tried to re-formulate what she had intended to write. This reflection matches her low source use values (see section 5.3.2), which indicated that she preferred other compensatory strategies than the use of online writing aids. For example, after session G2 (example 32) and G4 (example 33), she stated:

(32) Ja, nu börjar jag skriva på tyska. [...] och jag behövde helt formulera om det för det blev som svårt med hur allt är skrivit på svenska kommer på, därför gick som svänga om.

‘Yes, now I begin to write in German [...] and I needed to re-formulate it because it became too difficult with how everything was written in Swedish, that’s why I went around it.’

(33) I try to write it in another way, but sometimes it’s like, I want to say it, and when I don’t know how else to say it. [...] I want to make my point, and if it doesn’t make my point in another way, I want to look it up, and yeah, I tried my best to write it in another way.

When this re-formulation strategy did not work, Mia said she would probably look up the intended word in online sources. However, unlike others, she almost entirely postponed looking up words to the end of the
writing session. To be more effective, she wrote down the unknown items in Swedish, either in capital letters or in another colour. After session G1 she mentioned:

(34) Jag markerade för att jag tänkte då kunde jag kolla på det sen för att jag var osäker. [...] Det är därför jag är mer osäker på tyskan på hur det ska liksom, ja, hur man ska formulera sig.

'I marked them because I thought I could search them later because I was insecure about them. [...] That’s because I am more insecure in German how I should formulate my thoughts.'

When she finished writing her text, she began to look up the marked words one after another in online dictionaries and replaced them with the generated results. The following quote is taken from the interview after session G2:

(35) Nu börjar jag bara först leta efter, efter alltså sånna ord jag hade skrivit med stor bokstäver.

'Now [N.B. in the end of the writing session] I begin to search for such words, which I had written in capitals.'

When using online dictionaries, Mia was careful. She knew that the generated results could be misleading and would rather refrain from using an expression when she felt unsure about search results. Avoidance of specific terms and phrases was another of Mia’s last options in order to produce a good German text (see section 5.3.3).

(36) [...] särskilt när orden kan betyda jättemånga saker. Så många sånna meningar så känner jag det kan betyder ett helt annat, då lägger jag bara bort det.

‘[...] especially if the word can have very many meanings. So, for many of these expressions I have the feeling that it could mean something entirely different, and then I just leave it out.’

Her preference to rely on her own linguistic resources using external aids was not only expressed in the interviews, but also reflected in the questionnaire. Regarding what she would do if she did not remember or know a word needed, she indicated trying to simplify the message, using a similar word or coming back to it at a later point rather than looking it up in a dictionary.

In general, Mia’s reflections on her writing were similar to Henry’s with regard to her ability to reflect on writing. Her way of expressing herself suggests that she is a student, who has developed a rather clear idea of the characteristics of herself as a writer in relation to writing in different languages, genres and even environments. The descriptions of her own behaviour referring to these factors show that thinking about writing on a metacognitive level was not new to her and that she had been able to develop a number of strategies in writing German texts. Overall, her descriptions
indicated a good self-confidence and a rather pro-active approach to producing text, for example by regulating her writing both in Swedish and German, trying to come up with compensatory solutions without external aids and finally, using online sources strategically.

6.3.3 Hilda’s metacognitive writing knowledge
The analysis of Hilda’s comments revealed fewer indicators of metacognitive knowledge than the other students’ protocols. One reason might be that Hilda did not participate in the English writing session, which triggered other students to reflect at length on a metalinguistic level. Another reason is that a rather large amount of her comments about writing in G1 to G3 were categorised as reflections about regulation and control, that is, her concrete activities and not her knowledge (see Hacker et al. 2009). However, these do not play a role in this analysis. The metacognitive knowledge reflections will be presented according to the previously introduced categories. Metacognitive knowledge about languages will not be included, as it was not verbalised in the interviews.

Knowledge about herself as a writer
Regarding herself as a writer, two aspects could be identified in the protocols of Hilda’s interviews. In the first session, she stated that she had perceived the given task as difficult and that she particularly struggled with German grammar when writing.

(37) Jag tyckte det var svårt. Jag vet att jag inte är så bra på grammatiken.
‘I thought it was hard. I know that I am not so good at grammar.’

Similar to Henry, Hilda’s quote indicates that she connects successful writing in a foreign language primarily with the command of grammatical rules. This impression was confirmed by her questionnaire answers, in which she stated that in her opinion the hardest aspects about writing in German was the control of grammatical rules and choosing appropriate words.

Further, she described her revisions. She reflected on the fact that normally she would postpone the revision to the end of the writing session, but that she occasionally also revised when re-reading the text while writing. She said:

(38) Alltså ibland gör jag både, men det är ofta så att jag, åtminstone tror jag att jag rättat så här, som jag gör nu, men jag kan ibland bara gå igenom sen alltså men ja, det brukar ju bli så att man kommer på med nya idéer och sen fortsätter man skriva och så.
‘Well, sometimes I do both, but it is often that I, at least I think so, that I revise like I do now. But sometimes I just go through the text and then it can be that I just have new ideas and then I continue to write or so.’
Hilda’s answers to questions about what she would usually do at different stages of writing were contradictory at times. She stated that she would write the text entirely without changing anything, and at the same time her answers indicated that she would check each sentence for possible mistakes and errors. Both the interviews and the questionnaires suggested mixed writing habits. In the analysis of the interview protocols, only these two hints about her knowledge about herself as a writer could be found.

Knowledge about the writing task
Regarding the writing task, Hilda did not seem to have a clear idea about what an argumentative text required her to do. In one of her reflections she referred to what she had learned during the intervention and said that she intended to follow the outline of an argumentation. For example, after session G2 she reflected about the requirement to present two different standpoints:

(39) Nej jag vet inte, jag vill bara, nej jag vet inte varför jag gjorde det. Typ att, jag ville säga att det lika omiljövänligt att vara vegetarian som köttätare, så jag ställer som deras argument mot varandra.

‘No, I don’t know, I just wanted to, no, I don’t know why I did that. Kind of, I wanted to say that it is as environmentally unfriendly to eat vegetarian, as it is to eat meat. So I oppose their arguments against each other.’

Apart from stating that different arguments should be discussed within an argumentative text, Hilda did not mention further aspects of this text type, for example the rhetorical goal or German phrases common for this genre. Neither did she say anything about the given time frame, the writing setting or her writing preferences.

Knowledge about strategies
Due to the fact that Hilda used online sources rather frequently in the initial session G1, some of her reflections focused on how she applied them specifically. Apart from online dictionaries, she consulted Google Translate and spent a fair amount of time in this tool to translate specific words, phrases and clauses. When asked about how she would proceed when Google Translate had offered her a result, she answered:


‘I know for sure that this doesn’t work well and I don’t want to copy it either, like I try to get in my own sentences, and then I also write another form as well, like I write ‘you’ (N.B. singular), not ‘she’ or ‘you’ (N.B. plural). So, I saw myself that this went wrong, in these sentences that I am writing right now.’

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This quote indicates that Hilda was aware that a translation engine could rarely offer exactly what she was searching for and that she had to make adaptations to the generated results. Insofar it is clear that she had developed a strategy to deal with her own linguistic limitations by using online sources, yet being aware of potential pitfalls. Interestingly, when comparing the pre- and post-intervention questionnaires, Hilda’s own account of the amount of her online source use had changed. While she considered it the most often used strategy to deal with lexical constraints in the beginning, she replied she would seldom use it in the end. Instead, her answers suggested that she rather relied on the use of similar words or possibly chose to get back to it at a later point.

Apart from translation, Hilda also used the Internet for text content search. In session G2, she visited a number of webpages and consecutively changed what she had already written. When being asked about it, she answered:

(41) [...] Jag fick lite inspiration därifrån, och då hur hjärnan, typ att den inte utvecklas.

‘[...] I got some inspiration from there, like the how the brain doesn’t develop [N.B. under the influence of alcohol in adolescent age].’

Both quotes (40) and (41) indicate that Hilda was acquainted with using the Internet as a writing aid, both for language and content-related issues, and that she had developed an individual approach when implementing accessed information. She rarely mentioned other strategies besides online source use. In session G2, she stated that in case Internet access was not given and she could not retrieve a specific word, she would try to change the entire sentence or make a circumscription.

In two instances in session G2, Hilda referred to the intervention. First, she described that she had tried to plan her text by preparing both a mind map and an outline for one and the same text. While this demonstrates that she tried to apply acquired strategic knowledge, she had not yet developed conditional knowledge about when to use either of them. Secondly, she referred to the previously introduced strategy of marking unknown words while writing to look them up at a later point and thus avoiding to interrupt the writing process. She commented as follows:

(42) Hilda: Jag provade också på olika, alltså, idéer som vi gått genom på lektionen, och det var till exempel att skriva ordet på svenska och sen gå tillbaka.
Interviewer: Och kändes det praktiskt för dig att göra det?
Hilda: Nej. [...] 
Hilda: I also tried different things that we went through in the lesson, and that was for example to write the [N.B. missing] word in Swedish and then go back.
Interviewer: And was it practical for you to do that?
Hilda: No.
The last example again shows that Hilda had transferred some of the knowledge acquired during the intervention to the individual writing sessions and that she had also evaluated them regarding their usefulness for herself.

Compared to Henry and Mia, Hilda showed less metacognitive knowledge in her reflections about writing. Only little insight could be gained from her answers in the stimulated-recall interview, for example that she perceived German grammar as difficult, that she had to revise her text frequently, and that her main strategy in writing was to rely on online dictionaries and translation engines, even though she knew about their downsides.

6.4 Discussion
The third perspective on writing in a third language shifts the traditional focus of writing products and processes to a more learner-centred view. Three students’ reflections about writing, taken from retrospective interviews, were analysed applying a framework proposed by Hacker et al. (2009). Four main categories of reflections could be identified in the data. Henry, Mia and Hilda showed metacognitive knowledge about themselves as learners, about the task at hand, about languages and about strategies.

The choice of these three students for case studies was mainly based on their variability with regard to writing processes and products. The analysis of their reflections about writing reveals once more the individual approaches to the challenge of writing in L3 German.

The results suggest that if learners are encouraged to report about how they proceed and deal with challenges when solving language tasks, their metacognitive knowledge is (at least partly) displayed in their reflections. However, the students’ ability to reflect on their writing differed. Even though the number of interview sessions was not the same for all of them, the variety and elaboration of thoughts suggested that Henry and Mia were able to reflect on their own writing in a more advanced way. Both of them picked up a greater variety of topics related to metacognitive writing knowledge, related and compared them to other writing contexts and were able to evaluate their own development within the intervention period.

Further, the opportunity to reflect on learning German against the background of learning English seemed to make Henry and Mia think more deeply about the specific aspects that constrain them in German writing and what they usually do in order to overcome these obstacles.

The lower number of observations made for Hilda does not necessarily mean that Hilda knew less about her own writing or that she applied fewer strategies. The interview procedure, her view of the researcher or a general attitude towards this project might be potential reasons, too. However, it also became apparent that in comparison to the other two students, Hilda indicated more frequently that she failed to motivate choosing a specific
activity, for example replacing or deleting a word or rewriting a passage in a written text. One conclusion is that, according to the reflections in the intervention and some indications in the pre- and post-intervention questionnaires, she seemed less able to verbalise her metacognitive knowledge and/or was less experienced in consciously reflecting about writing-related aspects in an L3.

As regards the use of online sources, there were clear differences between the three students. Their reflections show how different their approaches to implementing online writing aids are. While all three students looked upon the actual benefit of online sources critically, it was mainly Mia, who tried to minimise her consultation to the most necessary search queries. The large impact of online source use that was observed has different reasons. Two of them were revealed in the metacognitive reflections.

First, Henry’s reflections show it might be students’ low self-confidence in writing in their L3 that motivates them to rely more on online writing aids. The analysis of his online search strategies (see section 5.3.3) and metacognitive reflections (see section 6.3.1) revealed how negatively he looked upon himself as a L3 learner and writer. His switches to the web browser were rarely motivated by the need to translate an unknown word but rather guided by his own insecurity regarding his lexical choices.

In Mia’s protocols it became apparent that writing in L3 was not an enjoyable experience for her because she could not express her thoughts as precisely as she wanted. From this particular observation it can be concluded that students might consult online dictionaries to a higher degree due to the perceived need to write more complex texts with a more varied and nuanced lexicon. However, no matter what the reasons for online source use are, it seems as if their free and easy availability prompts students to use them frequently.

The results of this chapter also stress the relevance of learners’ reflections on learning in the foreign language classroom and the impact of affective factors on learners’ beliefs and decisions. It is advisable for teachers to give learners space and time to reflect on multiple aspects of learning, to pay closer attention to their metacognitive knowledge, especially regarding their image of themselves as learners and their learning capacities. In this way it might be possible to correct false assumptions and learner behaviours, which, in the worst case, constrain progress. This may also contribute to raising awareness about differences and similarities in learning different languages and possibilities of knowledge and skill transfer. This conclusion may be even more relevant for learning third languages, as learners tend to feel frustration and resignation when comparing their proficiency in the second and third language(s).

The analysis of the students’ reflections focused on metacognitive knowledge according to a theoretical framework suggested by Hacker et al.
The categories, identified in earlier studies, are useful in order to analyse and summarise learners’ reflections. However, when trying to apply them, the limits of these constructs become clear, as authentic reflections usually involve a number of facets, which are necessarily interwoven, interdependent and most likely far more complex than what can be shown in a deductive analysis. Procedural and conditional metacognitive knowledge, for example, can hardly be displayed in learners’ reflections without referring to declarative knowledge.

The analysis of metacognitive regulation was not included in this study. There were two main reasons for this decision. First, monitoring and controlling are in fact umbrella terms for all activities, called sub-processes in the cognitive models of writing, such as planning, re-reading, reviewing, translating and revising. In the interview protocols, comments referring to these activities were indeed detected. Hilda stated in session G2 “I have no idea. I probably thought I could write a better sentence or that I could write a conclusion. Ah, I don’t know what I thought”. This comment indicates that she had re-read a sentence, decided that it did not fit her intended communicative goal and contemplated about revising it or not. Including this dimension in the analysis of metacognition would have led to yet another description of students’ writing processes. Even though it would have been insightful to investigate if the students’ reflections were in accordance with the generated measures, the descriptions in chapter 5 were regarded as sufficient to draw a comprehensive picture of the writing processes.

The second reason for the exclusion of this dimension of metacognition was to avoid fuzziness of the results. As the example from Hilda above demonstrates, metacognitive knowledge and regulation in retrospective reflections are often tied together. When the students commented on an activity, they would usually refer to metacognitive knowledge, for example as a motivation for an action. In Hilda’s example, the metacognitive knowledge component would have been awareness that the text type argumentation required her to write a conclusion.

Thus, a clear-cut distinction between the knowledge and the regulation dimensions according to Hacker et al.’s (2009) theoretical model were difficult to maintain, as a merged presentation would have resulted in a lack of clarity. Nevertheless, some aspects of metacognitive regulation were included in the analysis when it was part of the writers’ metacognitive knowledge about themselves, such as when they described pre-planning as a regular behaviour as writers instead of an on-going writing activity.

By adding the students’ reflections about writing, it was attempted to complement previous results with the writers’ own thoughts and explanations. Pedagogical implications can be best drawn from an interventional study like the present one, if not only scores and measures
determine how writing is taught, but also how students experience the instruction. The last chapter will discuss all results in relation to each other, present a number of pedagogical conclusions and discuss further observations made in the context of this study.
7 Conclusion

In this chapter, the results of the three pillars of this thesis, writing products, writing processes and metacognition in writing, are revisited and discussed in relation to each other. The findings will then be viewed in the context of L3 learning opportunities in the language classroom. Finally, the insights gained from the study are summarised, its limitations mentioned and future research directions suggested.

7.1 Results revisited

The three different dimensions of L3 writing were investigated in relation to an intervention concerned with argumentative writing in L3 German and focused on teaching composition and writing strategies.

In order to answer the first research question, text products from IC (intervention class), NIC (non-intervention class) and by focus students were analysed applying analytical and holistic rating procedures. Students' writing under three different conditions was compared: without writing focused instruction, with writing focused instruction and with writing focused instruction plus additional practice and reflection. The results show that the focus students, who had both participated in the intervention and practised and reflected on writing in single sessions, produced texts of the best quality. In both the analytical and holistic text-rating procedure an improvement between texts G1 and G4 and a relative setback in G3 was reflected.

A difference to English was initially reflected by both rating procedures, however, when the focus lay on argumentative text organisation and content, the students were able to gradually develop their writing towards the higher level of text quality in English. When texts were rated holistically, a clear difference between L3 and L2 remained. Compared to both IC and NIC, the focus group showed the best results, which was more evident in the analytical text ratings. IC and NIC did not differ remarkably from each other in the analytical text scores, but in the holistic rating the NIC outperformed the IC. Both classes showed rather high within-group variability before and after the intervention. Thus, regarding research question one it can be stated that the 12-week writing intervention did not influence the written texts in this study. However, the results of the focus students suggest that additional writing practice and reflection improved text quality.

In order to answer the second research question, the focus was narrowed down to the writing processes of the seven focus students. These processes were analysed regarding the development of writing fluency, which was described as a multi-factor compound of text production and disruption measures. The findings reveal that in the development from G1 to G4, the students' writing became slightly more fluent. In particular, the measures
indicating writing speed and the number of revisions increased, but online source use decreased. Hence, the students were able to produce slightly more text and the balance between the two kinds of disruptive elements changed gradually from G1 to G4. In the same fashion as for the writing products, the fluency measures in G3 also indicate a relative setback in the evolution of the four German writing sessions. A majority of the applied measures demonstrated a higher fluency in L2 English than in L3 German. Within a given time span, the students were able to produce more text with fewer pauses, fewer revisions and fewer source use interruptions. Further, the fluency measures indicated a rather large within-group variability. These findings were supported by the three case studies Henry, Mia and Hilda and by a closer look at online source use strategies in session G1.

In order to answer the third research question, three focus students’ retrospective interviews, based on screen-recording files of the students’ writing processes, were analysed regarding metacognitive writing knowledge. In the analysis, metacognitive knowledge regarding themselves as learners, the task, languages and strategies was identified and described. The number of metacognitive reflections varied among the three studied students, which was interpreted as potential differences in the degree of reflectiveness in learning to write and/or the ability to verbalise their own thinking processes. In general, the descriptions of these students’ metacognitive knowledge resources highlighted the influential role of affective factors in the process of learning to write in an L3. Often resulting from a direct comparison with successful experiences in L2 English writing, writing in L3 German was almost exclusively associated with feelings of insecurity, frustration and dissatisfaction. The findings reveal the students’ different approaches in dealing with these experiences, for example by a high reliance on online sources or the development of other writing strategies. Particularly the case study of Henry showed that students, when engaging in reflections about themselves and their writing, expand their writing knowledge, which in turn seems to have an impact on their compositions. In order for students to develop a more positive and enthusiastic attitude to the L3 learning and writing process, the value of a reflective element in the teaching of L3 writing is highlighted.

7.2 Aligning products, processes and metacognition
As already mentioned, the findings in this study suggest that a combination of writing intervention and writing practice including reflection has an impact on students’ writing products and processes. The relationship between product and process is a central issue in writing research (for example Tillema [2012]; Van Weijen et al. [2008]). Text quality has been considered an indicator of the effectiveness of the writing process (Rijlaarsdam & Van den Bergh 1996), and from the reversed perspective, it
has been argued that fluency might indicate the quality of a text (Kellogg 1996). However, it has also been pointed out that drawing causal relations between process and product is impossible (Breetvelt et al. 1994; Rijlaarsdam & Van den Bergh 1996).

In this study, the aggregated values of the focus group’s products showed best text quality results in sessions G2 and G4. In relation to the assumed baseline G1, G2 and G4 not only showed text quality improvements, but also a higher text production rate, a lower number of pauses, a lower amount of source use and an increased number of revisions. However, as noted repeatedly, G3 represents an outlier in the observed developments. The text quality scores of G3 were at approximately the same level as the initial session G1 in both rating procedures. The production rate had gone below G1 and represented the lowest score overall. The number of pauses increased in relation to G2, particularly within words, and they became longer, particularly between words. Source use was on the lowest level across all sessions and the students made the highest number of revisions per 100 words. This raises the questions: How can the changes in text quality be related to writing process measures and/or other aspects expressed in metacognitive knowledge? What might be the reasons that G3 turned out so differently?

At first sight, the relation between products and processes between G1 and G4 seem to support the explanation that more fluent writing is connected to better text quality and vice versa. However, when taking into account all applied measures, the picture is not as clear.

First, it is apparent that text quality measures showed a stronger fluctuation than writing fluency. This observation is in line with previous writing intervention research. For example, in Sasaki’s study (2002), students improved their text quality after writing process instruction, but not their processes (see also Sasaki [2000] for a discussion about fluency). Hirose and Sasaki (2000) showed that writing practice in combination with instruction improved text quality, but not fluency. Hence, within the limited time frame of writing interventions, text quality seems to be more easily amenable to relatively fast changes regarding a focused text dimension. This is not necessarily reflected in substantial changes in fluency measures, which might require a longer period of time to be affected. Thus, the developments of both dimensions are not necessarily interdependent and other factors seem to come into play, too.

This observation is also supported by individual measures, such as those from Henry and Hilda. For both of them, it became apparent that high production rate co-occurred with lower text quality. In her very first writing session, Hilda had the highest production rate and lowest text quality scores. In the detailed description of her writing processes in chapter 5 it was indicated that initially she was a hasty writer, producing a large amount of
text but also switching continuously between the word document and online sources. Thus, fluent writing, at least according to the measures, did not lead to a text of high quality. Hilda herself reflected on her writing as form-focused, which in combination with her assumedly insecure writing style and rather negative self-perception led to a strong reliance on external writing aids and to persistent production and revision at a local level. Hilda mentioned in her interviews that she actively tried to reduce her source use and to apply strategies that had been discussed in class, even though she was doubtful about their usefulness. Nevertheless, as the results indicate, decreasing the speed of her text production in combination with less source use and more revisions improved her text quality.

In Henry’s case, all writing sessions after G1 had a higher rate of production with a top speed in G3. Interestingly, precisely in G3 the text quality dropped to intervention-initial state, while G2 and G4 were rated much higher. Hence, two relatively weak writing products are either connected to higher and or to lower writing speed. For the first writing session, it can be assumed that the given task was new for Henry and caused his relatively low production rate and a higher number of long pauses. For G3, finding potential reasons is more difficult. When comparing G2 and G3, the text production measures, the number of revisions per 100 words and the amount of source use are very similar. Eventually, Henry himself gave a potential answer to the question, why high fluency did not lead to a text of high quality in session G3:

(43) Det gick sämre, jag vet inte varför det gick dåligt, jag tyckte att temat var inte så särskilt svårt att skriva om, men jag kom inte på så mycket och min planering var också jätteålib. [...] Jag skrev bara vad jag tyckte och tänkte.

'It went worse, I don’t know why it turned out badly, I didn’t think the topic was particularly difficult to write about, but I didn’t come up with a lot and my planning was also very bad. [...] I just wrote what I thought.'

In his reflections in session G3, Henry described how planning had become an important aspect of his text writing since it helped him organise his thoughts and write more structured texts. He even reported on instances outside the German classroom, where he had made use of that strategy.

(44) Of course, because we wrote an argumentation when we did the national test in Swedish and I did, you know, a planning, like you taught us, and you know, and what was [...] I planned it very carefully, so it wasn’t like this [N.B. the ‘bad’ planning in session G3], you know.

Hence, Henry’s high fluency in G3 did not correspond to a high text quality, because, according to him, he had failed in preparing a good planning.

Hilda and Mia provided similar explanations regarding session G3, even though their fluency developed in the opposite direction, that is, writing became slower. Hilda commented similarly to Henry, that it had been hard
for her to plan this particular text. Mia had the same experience, but thought
the topic and the task formulation in G3 were the actual problem, as they
appeared confusing and difficult for her:

(45) Jag tycker det var svårt, ett svårt ämne att skriva om. Så, jag vet inte. Det gick så
där typ, det kändes inte som det blev en riktig argumentation för jag visste som inte
riktigt vad jag skulle skriva.

'I think it was difficult, a difficult topic to write about. So, I don't know. It went so-so,
it didn't feel like it turned out to be an argumentation because I didn't know what I
should write.'

Besides these task-related difficulties, G3 took place during the end of the
school year, a stressful time for the participants due to a number of national
exams. Additionally, it was mentioned that having written the sixth
argumentative text within three months, the students were gradually
becoming fed up with composing the same text type. In the post-intervention
questionnaire, when asked for suggestions to improve intervention, one
suggestion was that looking at more than just one text type would have been
appreciated. Even though it is impossible to pick out one specific variable as
responsible for the described set-back in G3, the perceived problems with
topic and task as well as external factors such as stress or fatigue appear to
have a strong influence on performance, which may be reflected in process
measures in various ways. The special case of session G3 illustrates that it is
difficult to relate writing products and processes to each other and suggests
that more factors are decisive in the evaluation of students' writing and can,
to a certain extent, overrule previous instruction and practice.

In addition to the observation that text quality does not necessarily predict
writing fluency, it became clear in this study that writing fluency is a
combination of a number of elements, which makes it impossible to describe
text quality scores in relation to writing fluency in a simple way. Even though
overall fluency in aggregated values might indicate that better texts are
associated with more fluent writing, single measures might still not fully
support this trend and particularly disruptive elements need to be evaluated
in detail.

The mean number of revisions per 100 words, for example, was similar in
sessions G2 and G3. However, we know that these two sessions differed
remarkably regarding the quality of the texts. Consequently, the number of
revisions was not decisive for the composition of a good text in these two
instances or the revisions differed in their effectiveness (see Rijlaarsdam et
al. 2004) or, once more, other variables come into play.

The observation that disruptive factors should be investigated carefully
was also made earlier in this thesis. For example, it was argued that one
focus student, Ida, had a high amount of source use in her English writing,
which did not necessarily mean that she struggled more with the language
than the others. Further, it was shown at the example of Hilda that online source use decreased consistently, while revisions per 100 words increased. Hence, the number of overall disruptions probably decreased only to a minor degree, but it was mainly the ratio that shifted between these two. In the intervention, the use of online sources was discussed critically and thorough revisions after having written the text were promoted. According to the measures and reflections in the stimulated-recall interviews, the students followed this advice and slightly changed their approaches and sources for writing accurate texts in L3 German. A positive conclusion from these observations is that this shift of resources from online dictionaries to individual language knowledge and text-writing skills, which were promoted by the intervention, did not result in a drop of text quality but the opposite.

Hence, better products are not necessarily predicted by particular fluency measures or by more fluent writing in general, and non-fluent writing does not necessarily result in a text of poorer quality. Different writing process measures and individual approaches to the task at hand need to be examined closely in order to make a judgement about the effectiveness of the individual student’s writing.

Besides indications that the students generally attempted to change their writing in L3 German in relation to the use of online sources and the initiation of revisions, their planning strategies seem to have changed during the intervention. A fair amount of time was spent on explaining the merits of writing an outline and practising this before starting to write. In quote (43), Henry, referring to his unsuccessful writing in session G3, explicitly relates his unsatisfactory performance to inadequate planning. Hilda also referred to this strategy, which suggests that both considered planning texts as helpful in L3 composition. At the level of aggregated measures, the graphs of both production rate distribution (Figure 14) within sessions and the distribution of the use of online sources (Figure 18), presented in chapter 5, showed that the students postponed their transcription to later stages, assumingly in order to engage more thoroughly in a planning period. This might have released some cognitive load regarding the generation of text content within an argumentative text structure and led to better texts.

When asked in the questionnaire what the students had learned during the intervention and what they had perceived as most useful, the planning was referred to repeatedly. They wrote for example:

(46) Att man har lärt sig att planera texter och fått ett tänkesätt som gör det lättare/roligare att skriva och ej kör fast.
‘That we learned how to plan texts and got inspiration that makes it easier/more enjoyable to write and not get stuck.’

(47) Jag lärde mig mer om hur man planerar en text.
‘I learned more about how to plan a text.’
The quotes from the interviews and questionnaires as well as a number of process measures indicate that some parts of the intervention obviously influenced the students’ writing habits and improved their texts. Still, the relation between intervention and practice remains to be discussed.

Particularly the improvement of language production in relation to practice has been investigated under the notion of *effects of task repetition*. Bygate (1999) discusses the role that repetitive use of similar tasks in the facilitation of fluency, accuracy and complexity of language plays. In his studies (Bygate 1996; 2001) he investigated second language learners’ oral language production in narrative and interview tasks. He demonstrated that even the first repetition of a task, for example the re-use of the same properties of discourse, led to improved performance compared to controls, who encountered the task for the first time. He argues that learning is promoted by holding tasks constant initially and thereby let students gradually shift their attention from form to content, thus improving their ability to handle communicative tasks with similar demands over time. Bygate’s results have been confirmed in other oral language production studies, focusing for example on picture description (Finardi 2008), movie rendition (Gass et al. 1999) or explanation of complex concepts (Lynch & Maclean 2000).

These findings are also highly relevant for studies of written language production, particularly working with intervention programmes and research designs involving multiple text collection moments. They raise the question whether observed changes can be attributed to the interventional instruction, to the repetitive use of similar tasks, or to both. In this study, these questions relate mainly to the focus students, who wrote seven German texts altogether. Considering the changes in their writing compared to those of the classes, who wrote fewer German texts that hardly changed regarding analytical and holistic scoring procedures, the variable practice becomes a decisive aspect.

Thus, the results seem to confirm a positive influence of repetitive use of tasks, particularly on the texts. Fluency, however, has been demonstrated to be generally less affected by interventions within a relatively short period of time (Sasaki 2002; Sasaki & Hirose 1996) and requires a large amount of practice in order to improve. Chenoweth and Hayes (2001) for example concluded from their writing fluency study that students need to be given many opportunities to practise writing so that lexical retrieval can become automatic (see also Van Gelderen & Oostdam [2002] for a theoretical account of how to improve writing fluency within a skill-acquisition paradigm). One of the pedagogical conclusions of this study is that, even after a short period of explicit instruction and writing practice, the text quality of L3 texts may improve, but that particularly improvement of
fluency requires a substantial amount of practice. The following section will
discuss in more detail the pedagogical implications of the present study.

7.3 **Pedagogical implications**
The findings suggest a number of pedagogical conclusions regarding L3
learning both outside and inside the classroom. As the students'
questionnaire and interview responses revealed, the exposure to L3 German
is rather limited and immediate benefits to learn it are not given. Hence,
non-classroom learning opportunities are mainly dependent on students'
own motivation and initiative. As there are a large variety of sources in
German available on the Internet, such as texts, movies and music, the
possibility of accessing learning material in theory exists. However, for
learners at the beginning stages of L3 learning the selection and use of such
materials might be too difficult. Insofar encouraging and supporting
students to take opportunities to learn outside the classroom, similar to what
students spontaneously do in L2 English, would be likely to facilitate
learning inside the classroom.

Further, several pedagogical insights for language learning and teaching
within the classroom arise from the findings of this study. The writing
intervention combined what Rijlaarsdam and Couzijn (2000: 158) call a
traditional “writing-as-a-process perspective” with a “self-regulated-learning
paradigm”. While the first component focused on making writing more
transparent to students by the introduction of a simplified cognitive model of
writing, the second component describes a learning approach aiming for
more independence of students by introducing strategies and initiating
metacognitive reflections. In the literature it has been stated that this
teaching approach has “positive effects on the quality of students' writing, on
their view of themselves as writers, and on their understanding of the writing
process” (Pritchard & Honeycutt 2006: 276). In the present study, this
positive influence on text quality did not become evident under the
intervention-only condition. However, this does not necessarily mean that
the students did not benefit from the teaching. For example, the responses in
the post-intervention questionnaire indicate that the majority of the
students generally found the teaching approach challenging, but that it helped them
to write texts. When being asked about their general impression of the
writing course, they answered for example:

(48) Svår ibland, men även rolig.  ‘Sometimes difficult, but also fun.’
(49) Det har definitivt förbättrat
min skrivförmåga.  ‘It has definitively improved my
writing competence.’
(50) Den har varit lite jobbigt, men
lärorikt.  ‘It was a little bit difficult, but
insightful.’
(51) Det var jobbigt men det hjälpte mig att skriva på tyska.

'It was difficult, but it helped me to write in German.'

(52) Jag tycker att kursen har varit jättenyttig, och man har verkligen fått ett tänkesätt som gör det 10000 gånger lättare att skriva.

'I think the course was very useful, and one really got a way of thinking that makes it 10000 times easier to write.'

(53) Den har varit bra och lärorik samt ett bra alternativ till den ordinarie undervisningen.

'It has been good and insightful and was also a good alternative to the ordinary teaching.'

(54) Den var bra.

'It was good.'

(55) Skrivkursen har varit lärorik, ett bra sätt att lära sig att skriva texter på tyska men även bra för att skriva på andra språk.

'The writing course was insightful, a good way to learn to write texts in German, but also good for writing in other languages.'

The only two negative replies were:

(56) Den tog för mycket tid och jag tror att min tyska har lidit pga. den.

'It took too much time and I think that my German suffered from it.'

(57) Jag tycker att det har varit bra eftersom jag har lärt mig en hel del men det duger fortfarande inte för att jag ska kunna skriva en text på tyska.

'I think it was good because I learned a fair amount of things but it still does not suffice in order to write a text in German.'

Some of these quotes indicate that the students believed they had learned useful things about writing that were even applicable in other languages. The ability to infer from concrete classroom activities, such as writing a text, what the learning outcome is and how it can be used in other contexts, is precisely what strategy instruction aims for. Regarding writing, Rijlaarsdam and Couzijn (2000) discuss that writers have to manage parallel processes: they have to produce a text and they have to learn from that text production. Weaker learners tend to have a strong focus on the composition of a text and attend less to the learning component of writing. This also applies to foreign language writers, whose foci in text composition are often even narrower, that is, on formal language aspects of the text. Hence, what can be learned from writing activities might remain unattended to if not highlighted by the teacher. Consequently, not only writing practice will help students to become better and aware writers, but also the inclusion of writing strategies, reflections on the cognitive processes underlying writing as well reflections on one’s own language learning experiences. The students’ questionnaire responses and the reported reflections of the focus students indicate that this approach was appreciated and helped the students to manage the task of writing and develop generic strategic skills.

Further, including discussions and reflections in the L3 classroom will inform teachers about learners’ self-perceptions. It has been reported for
L1/L2 contexts (for example Rijlaarsdam & Couzijn 2000; Sullivan & Lindgren 2002) that students tend to focus on their problems, to not trust the quality of their work and to display low self-esteem. These observations were confirmed in this study, too, when the students consistently stressed their low L3 proficiency and poor performance. It has been argued that it is essential in the foreign language classroom to engage into reflective discussions with students in order to gain an understanding of their beliefs and perceptions and how learning can be affected.

A similar claim has been made by researchers investigating the role of “self-efficacy” (Bandura 1977), that is “students’ beliefs about their academic capabilities” (B.J. Zimmerman 2000: 82). In general, it is assumed that higher self-efficacy activates learners to engage in tasks and therefore influences learning positively, and vice versa, positive learning experiences enhance self-efficacy (Schunk 1991). Thus, for teachers it is highly relevant to find ways to increase low self-efficacy. Pajares (2006) for example provides a long list of implications for teachers to deal with students’ self-efficacy beliefs, whose discussion goes beyond the scope of this thesis.

However, two recommendations clearly overlap with the observations and conclusions from this project. The first is to focus on skill development. In L3 learning, this means that students should be given the opportunity to master challenging tasks by good scaffolding and enough practice in order to experience success and develop self-efficacy on the basis of skill competence and mastering of language, not on the basis of mere praise by the teacher. The second recommendation is to ask students about their self-efficacy in order to handle inaccurate beliefs and low self-confidence. This is in line with the highlighted role of metacognitive reflections, based on learner products or learning processes.

Another aspect to consider is how applicable personalised learning practices, such as the tracking of writing and stimulated recall (Gass & Mackey 2000), are in the language learning classroom. The pedagogical value of the keystroke logging automated analysis and the replay function (alternatively replay of screen-recordings) for retrospective reflections on writers’ own writing experiences has been stressed widely (Lindgren & Sullivan 2003; Spelman Miller at al. 2008; Rahmanpanah & Tajeddin 2015). The learning effect lies in the opportunity to use students’ own output as input (Rijlaarsdam & Couzijn 2000; Sullivan & Lindgren 2006b) and “diagnose” writing (Spelman Miller et al. 2008) in real time by observing writing behaviours and possibly comparing them with what is known about composition, writing strategies and the writers themselves. In doing so, awareness can be raised by reflecting. This study shows that only a small number of individual writing sessions with retrospective interviews can influence students’ writing and develop their metacognitive knowledge.
However, despite good will and ambition, due to common time constraints, the broad use of keystroke logging and individual interviews with students is generally beyond the working capacity of most teachers. As an alternative teaching method, which utilises the notion of observational learning and computer writing tracking, *peer-based intervention* (Lindgren et al. 2008) has been suggested, in which pairs or groups of students examine and reflect on their own and their peers’ writing processes. After the joint reflection, the student revises the written text in a second session. In such a setting, installing and handling the program by the students would still be an obstacle to overcome, however, working with the replay-function in groups and focusing on single events in the evolution of the text would initiate a truly self-reflective and eye-opening activity for each student and raise awareness about relevant language and non-language related aspects in writing.

The retrospective reflections on one’s own text writing process could be didactically instrumentalised in other ways, too. Students could be encouraged to produce short writer portraits from observations of their own or others’ writing, engage into role plays giving each other advice about writing or compile lists of writing lessons learnt from reflective activities throughout a longer period of time. Working with a stimulus, like the replay of a writing session, could also be carried out in a more “controlled” way by displaying recordings in front of the entire class and let students make notes and discuss these. There are a number of possibilities to make use of presenting tracked writing, depending on the amount of time available in the particular learning context. Finally, in case the required technical prerequisites are not available in the classroom, *observational learning* (Braaksma et al. 2002, 2006) is an adequate method to let students observe each others’ writing and reflect on it, even in a pen and paper writing setting. One shortcoming of this method is, however, that learners cannot observe their own writing, but have to rely on their peers’ descriptions.

A practical implication of the use of personalised learning methods, which include discussion and reflection on abstract themes, is the allowance to use another than the target language, as the L3 proficiency of most learners is not likely to suffice to express themselves comprehensively. This implication might seem counterproductive to language teachers. However, it has, for example, also been argued in strategy intervention research (Grenfell & Harris 1999; Macaro 2001) that in teaching approaches, which value transparency of learning and students’ reflection, the mother tongue should be considered as supportive help in the process of learning about how to learn.

Yet another pedagogic conclusion of this study concerns the use of online sources in foreign language writing. The findings suggest that in authentic L3 writing situations, students frequently consult online dictionaries and
translation tools, which can have a considerable impact on their writing process. This needs to be accounted for when researching computer-assisted writing in a digital environment (Xu & Ding 2014), but the growing trend of writing with the help of sources is also highly relevant for the teaching and learning situation. The easiest way would indeed be to exclude the possibility of online source access, which might be appropriate for a number of exercises. However, as students’ every day writing setting most often includes online source access, it might be of more help for students to teach them about handling the available sources.

As the descriptions of the results show, the students in the present study had developed individual strategies to integrate online sources into their writing. Henry, for example, had a high number of search queries, which he initiated in order to test whether his assumption about a lexical choice was correct. Online sources thus helped him to test his hypotheses. Mia, on the other hand, postponed her online source use to later stages of revising her text in order to fill lexical gaps. However, not all students had developed the required skills to handle source use with the necessary care and criticism. During my presence in the German classrooms, I got the impression that students have a strong belief in the correctness of computer-generated language and even those, who are aware of the pitfalls, do not necessarily know how to avoid them. Both O’Neill (2012) and Fredholm (2014) stress as results of their investigations that applying online sources effectively requires both better language proficiency and training in their use. Xu and Ding (2014) suggest that L2 writers need strategic plans about how to coordinate and regulate writing resources in an electronic environment. These conclusions are also drawn in the present study.

In foreign language classes, in which digital writing is a regular practice, it is necessary to problematise both students’ trust in the sources’ reliability and the amount of time they spend online. Further, the necessary skills to use online sources need to be integrated and trained in class. Regarding search behaviour it would undoubtedly be useful to remember traditional search and look-up strategies, which were used with printed dictionaries, such as searching for the infinitive of a verb or knowing where grammatical information can be found (if available). In that sense, traditional and modern sources do not differ substantially.

Further, the findings of this study suggest that teachers should engage in a discussion with students about when and where consultation of online sources actually makes sense, such as when single words are unknown, and when other compensation strategies, such as simplification of an entire expression, might be appropriate. Regarding the generated results of online searches, the given information can only be exploited fully if students make use of their own linguistic knowledge and look critically at what the tools offer them. Hence, for students at basic levels of language learning it should
be considered carefully how beneficial online source use actually is. At the end of the day, all this advice can only be realised if teachers themselves become more aware of the chances and challenges of online sources and try to moderately integrate them into classroom activities in a constructive way instead of either ignoring them or forbidding their use.

Overall, the findings of this study suggest that in a formal L3 learning setting students can be helped to deal with the constraints of writing through instructional scaffolding, which involves elements of writing process and writing strategy instruction, observational learning and metacognitive reflections. Such scaffolding will not only help students to deal with the multiple challenges of text production, but also enhance their learning, support their development of strategies and reveal potential language- and learner related aspects constraining learning and performance. Additionally, it is decisive to offer enough possibilities to apply this knowledge and practise writing in different and challenging tasks.

7.4 Limitations, research contribution and future research
A number of aspects limit the validity of the results of the present study. First of all, studies conducted in a real world environment are vulnerable compared to experimental settings regarding a number of uncontrollable factors. As for example became clear in the discussions of the results in session G3, the potential effects of school stress or fatigue on the learners’ performance could not be controlled for. This is just one out of many factors influencing a writer’s performance at a particular point in time. Further, the number of participants is small, which renders it difficult to generalise about Swedish L3 learners’ development, let alone L3 learners in other contexts. Although attempts were made to recruit a fairly homogeneous group of participants, the learner variability within this group was relatively high (particularly regarding the proficiency level in German). These aspects make the evaluation of the influence of the teaching method on the results more difficult.

Moreover, the collection of complete data sets at specific points during the intervention turned out to be problematic, as not all students were present in every session, and therefore either missed instruction or text writing moments. This circumstance led to the decision to work with a smaller number of texts based on the selection criteria described. Analyses of texts of entire classes might have led to different results and influenced the conclusions regarding the influence of the intervention on L3 text quality.

Besides the research design, analysis procedures might also limit the validity of the results. This study attempted to provide reliable data analysis procedures, particularly for text rating and manual coding of protocols. Still,
it cannot be ruled out that the generated results were affected by disturbances of the analysis tools, such as rater or rating effects.

A further aspect, which needs to be discussed critically, is the inclusion of an English writing session in the study design, which was used as a comparative baseline in relation to the development in German writing. The special role of English in Sweden has been discussed in this thesis and indicates that a comparison of L2 English and L3 German in a Swedish setting has a number of weaknesses. Still, English was chosen instead of the mother tongue Swedish, because it is assumed that comparing language proficiency and skill performance in foreign languages to the native language would indicate that foreign language learners are expected to meet their own L1 standards in the foreign language. This monolingual bias has been discussed and criticised mainly in research on multilingualism (for example Cenoz & Gorter 2011; Cook 1992, 2008; Grosjean 2010), which attempts to account for learners’ entire linguistic repertoire in the investigation of language competence. Even though this view is not adopted in this thesis, it shares the general idea that a comparison between languages should reflect what FL teaching could possibly aim for. For L3 teaching it is primarily those levels of language competence, which are observable in Swedish learners’ L2, not in their mother tongue.

This study contributes to the research field of L3 learning, a comparably young discipline, in which much remains to be investigated. A reasonable amount of research has dealt with psycholinguistic aspects of L3 learning, such as cross-linguistic influences or the multilingual lexicon, while research on L3 skill acquisition has received less attention. This study contributes to this field by combining three different perspectives on the acquisition of the writing skill, moving from an external “teacher” perspective on the product to the processes of composition and further to internal representations by learners. These three perspectives on the same issue were intended to offer a comprehensive picture of the multifaceted character of writing in this particular context.

While others have looked at multi-linguals and their writing from a more holistic point of view, exploring the interplay of their entire linguistic repertoire in text production (Cenoz & Gorter 2011), this study explores writing in the third language in a more isolated manner by describing processes, experienced difficulties and potential solutions for L3 German in particular. The specific pedagogical contribution is that it takes departure from the reality in many educational settings of subsequent foreign language learning and that it investigates how previous experiences in language learning in general and learning to write in particular can be utilised.

Observations made in carrying out and evaluating this study give rise to a number of future research questions. What has been repeatedly pinpointed is the difficulty to interpret writing process measures in conventional ways...
when looking at the L3 data of this study. In the given context, the learners appear to have developed varied ways of dealing with the challenges of L3 writing and it is crucial to investigate in more detail self-regulation and problem-solving strategies and how these are reflected in writing process measures. Hence, more work that combines tracking writing and introspective methods is needed to understand the complexity and the variety of L3 writing.

Regarding writing process research, particularly the investigation of disruptive elements at a more detailed level than this project could offer would be valuable for developing teaching approaches. For example, it would be worthwhile to identify and group types of pauses according to the location of their occurrence, such as in specific linguistic units (see for example Spelman Miller [2000b] for L2 learners) or even in combination with other events, such as the consultation of online source use. This would give a better indication of the ratio between pauses related to transcription versus pauses related to writing aid consultation. It would also provide us with information about which aspects of the L3 linguistic system students struggle most with.

Similarly, revisions were not analysed in depth in this study, but it was clear that most revisions were on a local level and appeared at the moment of inscriptions. A stronger focus on revision might provide additional insights into what students attend to, but also reveal more about L3 learners’ compensation and re-formulation strategies. For pedagogical purposes the investigation of revisions in L3 writing would also be highly valuable, as systematic revisions including changes on a global level are perceived as too difficult by students. Further interventional research is needed to gain more insights into possible teaching approaches and effective practices.

Finally, more research is needed on digital writing practices. Along with the digitalisation of writing, the dynamics of composing as well as students’ distribution of attentional resources have changed. While writing by hand used to be carried out in a rather linear fashion with no or a rather limited number of easily available resources, composition in a word processor and with Internet access provides writers with a completely different writing environment and opportunities for writing. This needs to be investigated with regard to the cognitive processes underlying writing, and more applied L2/L3/Lx research is also needed to critically investigate the chances and challenges of digital writing, and the use of online sources in particular, against the background of the aims of foreign language teaching and learning.
Summary in Swedish

Att skriva på ett tredjespråk
En studie av gymnasieelevers texter, skrivprocesser och metakognition

Bakgrund
Att skriva betraktas ofta som en utmaning, eftersom en skribent måste hålla många bollar i luften för att producera en text som motsvarar givna krav vad gäller t.ex. ämnesbehandling, textstruktur, grammatik och ordval. Skrivande på ett främmande språk (L2) ses i allmänhet som ännu mer utmanande, inte minst på grund av skribentens bristande språkliga kompetens. När det gäller skriftlig produktion på ett tredje språk (L3) skulle det dock kunna hävdas att det finns fördelar som har att göra med att de lärande redan har erfarenheter av flera språk. Flerspråkighet förknippas ofta med tillgång till en större språklig repertoar, fler språkövergripande processer, högre grad av metalingvistisk medvetenhet och olika lärandestrategier.

I den första europeiska granskningen av språkkunskaper (European Commission 2012) som testade 15-åringars språkfärdighet i 16 medlemsländer uppvisade L3-deltagarnas performans dock knappt märkbara sådana fördelar. Resultaten visade att kunskaperna i ett andra främmande språk i allmänhet är otillfredsställande, särskilt hos svenska elever där det finns tydliga skillnader mellan deras produktiva färdigheter i det första (L2) och det andra (L3) främmande språket. En möjlig förklaring till detta är att eleverna inte drar nytta av sina tidigare erfarenheter av att lära sig språk. För att råda bot på detta skulle man i undervisningen kunna underlätta elevernas utveckling av den skriftliga färdigheten genom att arbeta med strategiövningar, metakognitiva reflektioner och övningar som ökar deras språkliga medvetenhet.

Syfte och studiedesign
Syftet med denna avhandling är att undersöka hur undervisning om skrivande och användning av skrivstrategier påverkar elevernas förmåga att skriva på ett tredje språk och att reflektera kring sitt skrivande. Utgångspunkten är att undervisning i skrivande som process och i strategianvändning hjälper de lärande att överbrygga hindren i skrivprocessen, dvs. att skriva bättre texter, att utöva mer kontroll över skrivandet och att reflektera kring detta.

Två grupper tyskelever i gymnasieskolan deltog i den 12 veckor långa studien. En av dessa, interventionsgruppen, fick undervisning i hur man planerar och strukturerar argumenterande texter, medan den andra undervisades som vanligt. Vid tre tillfällen samlades texter in från båda

I studien ställs följande forskningsfrågor som är relateterade till den ovan beskrivna interventionen:

1. Hur påverkas kvaliteten hos texterna på tyska som L3?
2. Hur utvecklas de sju fokuselevernas skrivprocesser?
3. Hur kan den metakognitiva kunskapen hos tre av fokuseleverna beskrivas?

Studien använder sig av flera metoder, en s.k. mixed-method approach, och undersöker skrivande ur tre olika perspektiv; den utgår från olika typer av data och tillämpar olika metoder och analysredskap. Pragmatiska val av kvalitativa och kvantitativa metoder måste därför göras (se t.ex. Coe 2012; Creswell 2013). Texternas kvalitet bedömdes analytiskt av två bedömare och holistiskt av två andra. Skrivprocesserna, definierade som växelverkan mellan textproduktion och brytande aktiviteter, analyserades huvudsakligen automatiskt med hjälp av programvaran ”keystroke logging”. Metakognitiva kunskaper undersöks genom deduktiva analyser av intervjuprotokoll med hjälp av kategoriseringar som föreslås i litteraturen.

Resultat

Resultaten visar att de texter som producerades av de sju fokuseleverna, som både hade deltagit i interventionen och övat och reflekterat kring skrivande vid ytterligare tillfällen, uppvisade en tydligt förbättrat kvalitet. I de texter som skrevs av de övriga deltagarna, både i interventionsklassen och i icke-interventionsklassen märktes ingen höjning av kvaliteten. Från det första till det sista skrivtillfället på tyska förbättrades fokuselevernas texter, dock med viss tillbakagång vid tillfälle tre. De kvalitativa skillnaderna mellan elevernas tyska texter och deras engelska text var till en början stora men minskade vad gällde innehåll och textuppbild vid interventionen.

De processrelaterade resultaten för fokuseleverna visar en viss förbättring av flytlet. Särskilt noterades en ökning av skrivhastigheten och antalet revideringar, medan användningen av online-källor minskade. Dessa elever lyckades alltså producera mer text och ändra balansen mellan de båda typerna av brytande aktiviteter. Liksom vad gäller textkvalitet visar måten på flyt en viss tillbakagång vid det tredje skrivtillfället. Samtliga mätningar visar på bättre flyt i den engelska (L2) texten än i de tyska (L3).

Intervjuprotokoll från tre fokuselever analyserades utifrån metakognitiva perspektiv. Antalet metakognitiva reflektioner kring dem själva som lärande,
kring skrivuppgiften samt kring språk och strategier varierade. Om dessa skillnader beror på deras skiftande förmåga att reflektera eller på deras förmåga att verbalisera sina reflektioner är en fråga som måste undersökas separat. Generellt kan sägas att beskrivningen av elevernas metakognitiva förmåga framhäver vilken stor roll affektiva faktorer spelar när det gäller att lära sig skriva på ett andra främmande språk. I motsats till känslan av att lyckas när de skrev på engelska, förknippade de skrivande på tyska (L3) med osäkerhet, frustration och missnöje. Resultaten visar elevernas olika sätt att handskas med dessa erfarenheter, till exempel genom att förlita sig på internetkällor eller genom att utveckla egna strategier. Lärande som får tillfälle att reflektera över sig själva och sitt skrivande kan dock öka sina kunskaper om skrivande, vilket i sin tur kan ha inflytande på deras texter.

**Implikationer**


Förutom det stöd som undervisningen ger behövs riktade skrivövningar för att förbättra textkvalitet och skrivflyt. En ytterligare slutsats är att en effektiv användning av online-källor i ett främmande språk kräver två saker. För det första måste elevernas språkfärdighet ha en hög nivå om de ska kunna bedöma tillförlitligheten hos dessa källor och använda sig av den information som ges på ett meningsfullt sätt. För det andra behöver de diskutera när och på vilket sätt digitala skrivverktyg kan ha en positiv effekt på lärande och skrivande.

Sammantaget visar denna avhandling att undervisning som fokuserar på metakognitiva reflektioner kring de skrivande själva, kring uppgiften, strategier och texter i kombination med skrivövningar, har en positiv inverkan på L3-skrivande. Detta gäller även om sådana aktiviteter endast förekommer under en kort och intensiv period.
Summary in Dutch

Schrijven in een derde taal
Een studie van teksten, schrijfprocessen en metacognitie van derdegraadsleerlingen

Achtergrond
Schrijvers staan voortdurend voor de uitdaging om allerlei keuzes te maken. Ze moeten immers verschillende verplichtingen tegelijkertijd vervullen, zoals een onderwerp kiezen, de tekst organiseren, grammatica- en woordregels toepassen en de geschikte woordkeuzes maken. Wie schrijft in een vreemde taal (L2) staat meestal voor nog grotere uitdagingen, onder meer omdat de kennis van grammatica en de beschikbare woordenschat beperkt is. In een derde vreemde taal (L3) is dat nog duidelijker het geval. Nochtans kan een tekst schrijven in een derde taal ook beschouwd worden als een avontuurlijke uitdaging. Het feit dat leerlingen meer talen beheersen, leidt er immers toe dat ze over een breder taalkundig repertorium beschikken, vertrouwd zijn met meer cross-linguïstische processen, een hoger meta-linguïstisch bewustzijn hebben en gebruik kunnen maken van een meer uitgebreide set aan leerstrategieën (Cenoz 2003; Gibson et al. 2001; Ransdell et al. 2006).

De eerste European Survey on Language Competence (Europese Commissie 2012), waarin zowel L2- als L3-taalvaardigheden van 15-jarigen in zestien EU-lidstaten getest werden, toonde aan dat deze voordelen echter zelden zichtbaar zijn in de L3-prestaties van leerlingen. De resultaten onthulden dat taalkundige L3-vaardigheden eerder beperkt blijven. Specifiek voor Zweedse studenten vertoonden de resultaten een duidelijk niveauverschil tussen hun L2- en L3-taalproductie. Een potentiële verklaring hiervoor is dat leerlingen onvoldoende gebruikmaken van hun vorige leerervaringen. Dit kan eventueel opgevangen worden door in de L3-lessen uitdrukkelijker stil te staan bij de ontwikkeling van schrijfvaardigheid en de leerlingen meer bewust te maken van hun schrijfervaringen, hun leerstrategieën en de nadruk te leggen op metacognitieve reflectie.

Onderzoeksdoel en onderzoekdesign
Het doel van deze doctoraatsthesis is te onderzoeken hoe onderwijsmethodes en schrijfstrategieën de L3-schrijfvaardigheid van studenten beïnvloeden en na te gaan of er een verband is met de mate waarin ze in staat zijn om over hun schrijfvaardigheden te reflecteren. Daarbij gaan we ervan uit dat als we in het onderwijs schrijven als een proces benaderen en het gebruik van schrijfstrategieën stimuleren, dit studenten moet helpen om beter om te gaan met hun beperkingen. Een dergelijke aanpak moet er ook toe leiden dat ze betere teksten gaan schrijven, ze bewuster hun
schrijfproces zullen coördineren en ze diepgaander zullen reflecteren over hun schrijfaanpak.

In het kader van deze studie kregen twee klassen van een Zweedse middelbare school gedurende twaalf weken les over schrijfvaardigheid in het Duits. Eén klas fungeerde als interventiegroep en werd onderwezen in het plannen en het schrijven van argumentatieve teksten. De andere klas werd onderwezen volgens het bestaande leerplan. De teksten die de leerlingen schreven, werden op drie tijdstippen verzameld. Zeven ‘focus-studenten’ van de interventieklas woonden bovendien een aantal aanvullende, individuele schrijfsessies bij (per student vier in het Duits en één in het Engels). De teksten die ze tijdens die sessies schreven, werden vastgelegd met een toetsaanslagprogramma en aanvullend vastgelegd met schermopnamesoftware. Elke schrijfsessie werd gevolgd door een gestimuleerd hardopdenkinterview.

De volgende onderzoeksvragen stonden centraal bij de interventie:

1. In welke mate wordt de kwaliteit van L3-Duitse teksten beïnvloed door de interventie?
2. Hoe evolueren de schrijfprocessen van de zeven focusstudenten?
3. Hoe kan de metacognitieve kennis van drie van de focusstudenten beschreven worden?

De studie gebruikte een mixed-method-benadering, waarbij we de schrijfvaardigheid vanuit drie verschillende perspectieven benaderden. In de analyse maakten we gebruik van de diversiteit aan data die via de verschillende methodes verzameld werden. Onvermijdelijk leidde dit tot een aantal pragmatische keuzes die samenhangen met de combinatie van kwalitatieve en kwantitatieve methodes in dit onderzoek (zie bijvoorbeeld: Coe 2012; Creswell 2013). De tekstkwaliteit werd analytisch beoordeeld door twee beoordelaars en holistisch door twee anderen. Schrijfprocessen, gedefinieerd als de interactie tussen tekstproductie en disruptieve schrijfactiviteiten, werden geanalyseerd met Inputlog, een toetsaanslagprogramma. De metacognitieve kennis werd onderzocht via een deductieve analyse van de hardopdenkprotocollen waarbij we gebruikmaakten van de voorgestelde categorieën in de literatuur over metacognitie.

Resultaten

De bevindingen suggereren dat de teksten van de zeven focusstudenten uit de interventiegroep een duidelijke verbetering in tekstkwaliteit vertoonden. De teksten van de andere leerlingen – uit zowel de interventie- als uit de non-interventieklas – toonden geen kwaliteitsverbeteringen. Bij een vergelijking van de eerste tot de laatste schrijfsessie, verbeterden dus de
teksten van de focusstudenten. Weliswaar met een relatieve terugval in de derde sessie. Het kwalitatief verschil met de Engelse tekst was initieel substantieel, maar daalde geleidelijk wat tekstinhoud betreft en organisatorische aspecten tijdens de interventie.

De schrijfprocesresultaten van de focusstudenten onthullen dat de schrijflotheid lichtjes toeneemt. In het bijzonder stellen we vast dat de tekstproductie vlotter verloopt en het aantal revisies stijgt. Het online-brongebruik daarentegen verminderde geleidelijk tijdens de observatieperiode. Ook hier stellen we vast dat de derde sessie afwijkt, net zoals bij de analyse van de tekstkwaliteit. De fluency-analyse toont bovendien aan dat de leerlingen systematisch vlotter schrijven in L2 Engels dan in L3 Duits.

De interviewprotocollen van de drie focusstudenten peilden de metacognitieve kennis. Het aantal metacognitieve reflecties over henzelf als leerling, de taak, de talen en de strategieën variëren tussen de studenten. Of dit verschil te wijten is aan hun capaciteiten om op dit niveau te reflecteren dan wel aan hun formuleervoordrigheden, vereist verder onderzoek. In het algemeen beklemtonen de beschrijvingen van de metacognitieve kennis van deze studenten de invloedrijke rol van de affectieve factoren in het leerproces om te schrijven in L3.

Schrijven in het Duits werd bijna exclusief geassocieerd met negatieve gevoelens, zoals onzekerheid, frustratie en ontevredenheid over de geleverde prestaties. Dit is vaak het resultaat van een directe vergelijking met meer succesvolle ervaringen bij hun L2-Engelse teksten. De bevindingen illustreren ook de diversiteit die de aanpak van de leerlingen kenmerkt. Bijvoorbeeld in de mate waarin ze online bronnen raadplegen of andere schrijfstrategieën ontwikkelen. Hoe dan ook, studenten die participeren in reflecties over zichzelf en hun schrijfstijl, kunnen zo hun schrijfkennis uitbreiden. Dit kan op zijn beurt een impact hebben op hun schrijfvaardigheid.

**Implicaties**

Daarom suggereer ik om in de eerste plaats meer gepersonaliseerde studie-activiteiten in te zetten, zoals reflectie op de leerproducten en -processen van (andere) leerlingen. Waarnemend leren (Braaksma et al., 2002; 2006) en peer-gébaseerde interventie (Lindgren et al., 2008) zijn twee voorbeelden van reflectieve studie-activiteiten. Deze zijn zeker ook toepasbaar in L3-klassen. Beide aanpakken stimuleren leerlingen om verder te bouwen op hun eerdere ervaringen met het leren van en schrijven in andere talen.

Bovendien stel ik voor dat – naast de inductieve stelling – er behoefte is aan specifieke schrijfoefeningen om de tekstkwaliteit en de schrijfvreugde van de leerlingen te verbeteren. Daarbij kan bijvoorbeeld ook expliciet aandacht uitgaan naar een meer effectief gebruik van online bronnen. Ten eerste moeten leerlingen daarvoor beschikken over een vrij gevorderde taalvaardigheid om de betrouwbaarheid van informatie op het internet te beoordelen en om de informatie op een correcte manier te gebruiken. Ten tweede moeten ze aangezet worden om te discussiëren over hoe, waar en wanneer de digitale schrijfhulpmiddelen de meest positieve invloed hebben op hun leer- en schrijfgedrag.

Samengevat toont deze thesis aan dat – zelfs in een korte en intense periode – L3-lessen een positief effect genereren als ze de nadruk leggen op metacognitieve reflecties over schrijvers, taken, strategieën en teksten. In dit geval in combinatie met gerichte schrijfoefeningen.
Summary in German

Schreiben in einer Drittsprache
Eine Studie über Texte, Schreibprozesse und Metakognition einiger Lernender in der schwedischen Gymnasialschule

Hintergrund


Forschungsziel und Studiendesign

Vor dem Hintergrund der 12-wöchigen Intervention, welche sich auf Unterricht im Schreiben und Schreibstrategien fokussierte, werden folgende Forschungsfragen gestellt:

1. Wie wird die Qualität von Texten in der Drittsprache Deutsch beeinflusst?
2. Wie entwickelt sich der Schreibfluss der sieben Fokusschüler?
3. Wie lässt sich metakognitives Wissen von drei Fokusschülern beschreiben?


**Ergebnisse**

Die Ergebnisse deuten an, dass die Texte der Fokusschüler, welche sowohl an der Intervention teilnahmen als auch in den Einzelsitzungen Schreiben übten und darüber reflektierten, eine deutliche Qualitätsverbesserung aufzeigten. Die Texte der anderen Schüler in Interventions- und Nicht-Interventionsklasse zeigten keine Qualitätsverbesserungen. Zwischen der ersten und der vierten Schreibsitzung verbesserten sich die Texte der Fokusschüler, jedoch zeigte sich auch ein verhältnismäßiger Rückschritt in der dritten Sitzung. Der qualitative Unterschied zu den englischen Texten
war anfangs deutlich, verringerte sich jedoch in Bezug auf Textinhalt und -organisation im Verlauf der Intervention.


Folgerungen


In diesem Zusammenhang empfiehlt sich die Anwendung von personalisierten Lernaktivitäten sowie die Reflexion über Lernprodukte und -prozesse. Observational learning (Braaksma et al. 2002, 2006) und peer-

Insgesamt zeigt diese Dissertation, dass selbst innerhalb einer kurzen und intensiven Periode ein positiver Einfluss auf Drittsprachenschreiben ausgeübt werden kann, wenn Unterricht metakognitive Reflektionen über Schreibende, Schreibaufgabe, Strategien und Texte mit Schreibpraxis kombiniert.
References


Knospe, Y. (forthcoming) Metacognitive Knowledge about Writing in a Third Language – A Case Study. In Å. Haukås (Ed.), *Metacognition in Language Learning and Teaching*.


References


References


References


Appendix

Appendix A. Questionnaire I (Original in Swedish, see below for English translation)

Att lära sig tyska i Sverige

Umeå universitet
Institutionen för språkstudier
Yvonne Knospe
yvonne.knospe@sprak.umu.se

Den här enkätens mål är att erhållainformation om skrivande och om inlärning av främmande språk. Jag är intresserad av att få veta mer om hur du tänker kring skrivande och kring undervisning, särskilt tyskundervisning.

Alla frågor i den här enkäten beror dina erfarenheter i skolan och på fritiden.

Enkäten är ingen prov så det finns inga korrekta eller felaktiga svar. Jag är intresserad av din personliga och ärliga uppfattning. Om du behöver mer plats för att skriva dina svar kan du gärna använda lösa blad.

Utvärderingen av enkätsvaren kommer att göras helt anonymt.

Tack för din medverkan!

Kön:
Ålder:
Bostadsort:
Steg:
Modersmål/Förstaspåk (ett eller flera):

Först skulle jag vilja veta lite om dina tankar kring undervisning i allmänhet.

1. I undervisningen är det lärarens uppgift att ... (Ringa in det som stämmer. Skalan är: 1 stämmer inte alls – 4 stämmer helt)

<table>
<thead>
<tr>
<th>Uttryck</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
</tr>
</thead>
<tbody>
<tr>
<td>erbjuda mig ett utbud av uppgifter som jag kan välja bland.</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>ge mig råd om hur man lär sig bättre.</td>
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<td></td>
<td></td>
</tr>
<tr>
<td>tala om för mig vad jag ska lära mig och vad jag ska göra.</td>
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<td></td>
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<td></td>
</tr>
<tr>
<td>planera och utforma undervisningen tillsammans med eleverna.</td>
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2. I undervisningen vill jag ... (Ringa in det som stämmer. Skalan är: 1 stämmer inte alls – 4 stämmer helt)

<table>
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<tbody>
<tr>
<td>arbeta självständigt och individuellt.</td>
<td></td>
<td></td>
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</tr>
<tr>
<td>också iaktta min lärundervisningsprocess.</td>
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<tr>
<td>få mycket hjälp och anvisningar från läraren.</td>
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<tr>
<td>arbeta tillsammans med andra elever.</td>
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<td></td>
</tr>
<tr>
<td>vara med och bestämma vilka ämnen och innehåll vi ska behandla.</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>vara med och bestämma vilket material vi ska använda.</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>inte alls vara med och bestämma.</td>
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</tbody>
</table>
3. Vad betyder "elevautonomi", dvs. att vara självständig (autonom) i sitt lärande, för dig?

4. Är autonomt lärande viktigt för dig? Varför? Varför inte?

5. Vilka egenskaper har enligt din uppfattning en autonom inlärare?

„Nu fortsätter det med några frågor om textskrivande i skolan och på fritiden. Vad tycker du?“


<table>
<thead>
<tr>
<th>Uttryck</th>
<th>1</th>
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<tbody>
<tr>
<td>Det är roligt att skriva texter i skolan.</td>
<td></td>
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</tr>
<tr>
<td>Det är roligt att skriva texter på fritiden.</td>
<td></td>
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</tr>
<tr>
<td>Jag är bra på att skriva texter.</td>
<td></td>
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<td></td>
<td></td>
</tr>
<tr>
<td>Det är svårt för mig att skriva texter.</td>
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<td></td>
</tr>
<tr>
<td>Jag skriver texter bara när jag måste.</td>
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<td></td>
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</tr>
<tr>
<td>Det överstiger min förmåga att skriva texter.</td>
<td></td>
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<td></td>
<td></td>
</tr>
<tr>
<td>Jag hatar ett skriva texter i skolan.</td>
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</tr>
<tr>
<td>Jag hatar ett skriva texter på fritiden.</td>
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<td>Annat:</td>
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<tbody>
<tr>
<td>Jag är nöjd med resultatet.</td>
<td></td>
<td></td>
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<tr>
<td>Jag har alltid en känsla av att texten kan förbättras.</td>
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<tr>
<td>Jag är frustrerad.</td>
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<tr>
<td>Jag är glad att jag har det bakom mig.</td>
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<tr>
<td>Jag är motiverad att fortsätta skriva.</td>
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<tr>
<td>Jag känner mig osäker.</td>
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<td>Annat:</td>
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</tbody>
</table>

8. Vilken nytta ser du med att skriva texter? (Ringa in det som stämmer. Skalan är: 1 stämmer inte alls – 4 stämmer helt)

<table>
<thead>
<tr>
<th>Uttryck</th>
<th>1</th>
<th>2</th>
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</thead>
<tbody>
<tr>
<td>Att skriva texter har ingen nytta för mig.</td>
<td></td>
<td></td>
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<tr>
<td>Jag kan ordna mina tankar bättre.</td>
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<tr>
<td>Jag kan förmedla mina tankar till andra människor.</td>
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<tr>
<td>Jag kan visa vad jag kan.</td>
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<tr>
<td>I texter kan man använda sina grammatik kunskaper.</td>
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<tr>
<td>När man skriver kan man vara kreativ.</td>
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<td>Annat:</td>
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</table>
Tack för dina bidrag så här långt! De kommande frågorna handlar om dina erfarenheter av att lära sig ett främmande språk.

9. Vilka främmande språk har du lärt dig och håller du på och lär dig?

<table>
<thead>
<tr>
<th>Främmande språk</th>
<th>Från när – till när?</th>
<th>Var? (skola, familj, utland etc.)</th>
</tr>
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<tbody>
<tr>
<td>FS 1</td>
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<td>FS 2</td>
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<td>FS 4</td>
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<td></td>
</tr>
</tbody>
</table>


<table>
<thead>
<tr>
<th>Främmande språk</th>
<th>läsa</th>
<th>skriva</th>
<th>höra</th>
<th>tala</th>
</tr>
</thead>
<tbody>
<tr>
<td>FS 1</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>FS 2</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>FS 3</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>FS 4</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

11. Vilka främmande språk behöver du/ använder du även utanför undervisningen. Var och när? (TV, internet, resor, vänner, familj etc.)

12. Varför lär du dig främmande språk? (Ringa in det som stämmer. Skalan är: 1 stämmer inte alls – 4 stämmer helt)

| Att kunna flera främmande språk är en del av allmänbildningen. | 1 2 3 4 |
| Att lära sig främmande språk är berikande för hela livet. | 1 2 3 4 |
| Att lära sig främmande språk betyder alltid också att man har intresse för andra människor och kulturer. | 1 2 3 4 |
| Främmande språk lär man sig i skolan, men därefter har de nästan ingen betydelse. | 1 2 3 4 |
| Främmande språk lär man sig i huvudsak för att ha bättre jobbchanser. | 1 2 3 4 |
| Annat: | 1 2 3 4 |

13. Varför lär du dig tyska? (Ringa in det som stämmer. Skalan är: 1 stämmer inte alls – 4 stämmer helt)

| Jag intresserar mig för Tyskland/tyskspråkiga länder. | 1 2 3 4 |
| Jag vill gärna förstå tyskspråkig litteratur, konst och filmer på tyska bättre. | 1 2 3 4 |
| Jag vill gärna förstå kultur(er) i de tyskspråkiga länderna bättre och ta del av den/dem. | 1 2 3 4 |
| Jag vill gärna tala med tyskspråkiga personer på deras modersmål. | 1 2 3 4 |
| Jag har valt tyska på grund av meritpoängen. | 1 2 3 4 |
| Jag tror att jag behöver tyska i mitt framtidiga yrke. | 1 2 3 4 |
| Jag tror att jag kan imponera med min tyskkunskaper. | 1 2 3 4 |
| Jag tror att det är lätt att lära sig tyska eftersom det är så likt svenskan. | 1 2 3 4 |
| Annat: | 1 2 3 4 |
14. Vad tänker du om att lära dig tyska? (Ringa in det som stämmer. Skalan är: 1 stämmer inte alls – 4 stämmer helt)

| Jag tycker om att lära mig tyska. | 1 | 2 | 3 | 4 |
| Jag tycker inte om att lära mig tyska. | 1 | 2 | 3 | 4 |
| Jag skulle hellre använda min tid på annat sätt. | 1 | 2 | 3 | 4 |
| Det är som vilket ämne om helst i skolan, inte mer. | 1 | 2 | 3 | 4 |
| Jag skulle gärna lära mig mer tyska. | 1 | 2 | 3 | 4 |
| Jag skulle hellre lära mig ett annat språk. | 1 | 2 | 3 | 4 |
| Annat: | 1 | 2 | 3 | 4 |

Nu kommer frågor som handlar om att skriva texter i skolan, på fritiden och på/via internet. Kom ihåg att skilja mellan svenska, engelska och tyska.


<table>
<thead>
<tr>
<th>svenska</th>
<th>engelska</th>
<th>tyska</th>
</tr>
</thead>
<tbody>
<tr>
<td>Jag anses vara en god skribent.</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>Jag skriver gärna texter på fritiden.</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>Jag skriver gärna texter i skolan.</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>Jag vet precis hur jag ska skriva en text.</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>Jag har strategier för att skriva en bra text.</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>Jag planerar mina texter.</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>Jag rättar mina texter.</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>Annat:</td>
<td>1</td>
<td>2</td>
</tr>
</tbody>
</table>

16. Vilka textsorter har du redan skrivit? (Ringa in det som stämmer: 1 - aldrig   2 - sällan   3 - ofta   4 - mycket ofta)

<table>
<thead>
<tr>
<th>Beskrivning</th>
<th>svenska</th>
<th>engelska</th>
<th>tyska</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dialog</td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>Argumentation</td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>Berättelse</td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>Brev</td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>Annat:</td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
</tbody>
</table>

17. Hur väl känner du till vad som kännetecknar dessa textsorter? (Ringa in det som stämmer: 1 - inte alls   2 - något   3 - bra   4 - mycket bra)

<table>
<thead>
<tr>
<th>Beskrivning</th>
<th>svenska</th>
<th>engelska</th>
<th>tyska</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dialog</td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>Argumentation</td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>Berättelse</td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>Brev</td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>Annat:</td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
</tbody>
</table>
18. Vad är svårt för dig när du skriver? (Ringa in det som stämmer: 1 - inte alls   2 - något   3 - bra   4 - mycket bra)

<table>
<thead>
<tr>
<th></th>
<th>svenska</th>
<th>engelska</th>
<th>tyska</th>
</tr>
</thead>
<tbody>
<tr>
<td>Att uttrycka min egen åsikt.</td>
<td>1 2 3 4</td>
<td>1 2 3 4</td>
<td>1 2 3 4</td>
</tr>
<tr>
<td>Att uttrycka komplexa tankar och sammanhang.</td>
<td>1 2 3 4</td>
<td>1 2 3 4</td>
<td>1 2 3 4</td>
</tr>
<tr>
<td>Att alltid använda korrekt grammatik.</td>
<td>1 2 3 4</td>
<td>1 2 3 4</td>
<td>1 2 3 4</td>
</tr>
<tr>
<td>Att organisera den totala skrivprocessen.</td>
<td>1 2 3 4</td>
<td>1 2 3 4</td>
<td>1 2 3 4</td>
</tr>
<tr>
<td>Att tänka på textsort (brev, beskrivning, berättelse etc.).</td>
<td>1 2 3 4</td>
<td>1 2 3 4</td>
<td>1 2 3 4</td>
</tr>
<tr>
<td>Att finna de passande orden.</td>
<td>1 2 3 4</td>
<td>1 2 3 4</td>
<td>1 2 3 4</td>
</tr>
</tbody>
</table>

Annan:

19. Vad gör du innan du börjar skriva? (Ringa in det som stämmer: 1 - inte alls   2 - något   3 - bra   4 - mycket ofta)

<table>
<thead>
<tr>
<th></th>
<th>svenska</th>
<th>engelska</th>
<th>tyska</th>
</tr>
</thead>
<tbody>
<tr>
<td>Jag tänker noga igenom vilken uppgiften är.</td>
<td>1 2 3 4</td>
<td>1 2 3 4</td>
<td>1 2 3 4</td>
</tr>
<tr>
<td>Inget, jag börjar helt enkelt skriva.</td>
<td>1 2 3 4</td>
<td>1 2 3 4</td>
<td>1 2 3 4</td>
</tr>
<tr>
<td>Jag tänker i förväg ungefär ut vad jag vill skriva.</td>
<td>1 2 3 4</td>
<td>1 2 3 4</td>
<td>1 2 3 4</td>
</tr>
<tr>
<td>Jag planerar exakt vad jag vill skriva.</td>
<td>1 2 3 4</td>
<td>1 2 3 4</td>
<td>1 2 3 4</td>
</tr>
<tr>
<td>Jag gör noggranna anteckningar innan jag börjar författa texten.</td>
<td>1 2 3 4</td>
<td>1 2 3 4</td>
<td>1 2 3 4</td>
</tr>
<tr>
<td>Jag skriver bara ner några nyckelord innan jag börjar skriva.</td>
<td>1 2 3 4</td>
<td>1 2 3 4</td>
<td>1 2 3 4</td>
</tr>
<tr>
<td>Jag tänker efter vem den möjliga läsaren/de möjliga läsarna är.</td>
<td>1 2 3 4</td>
<td>1 2 3 4</td>
<td>1 2 3 4</td>
</tr>
</tbody>
</table>

Annan:

19.1. Om du gör något (till exempel mind map) innan du börja skriva beskriva det utförligt.

20. Vad gör du medan du skriver? (Ringa in det som stämmer: 1 - inte alls   2 - något   3 - bra   4 - mycket ofta)

<table>
<thead>
<tr>
<th></th>
<th>svenska</th>
<th>engelska</th>
<th>tyska</th>
</tr>
</thead>
<tbody>
<tr>
<td>Jag skriver texten från början till slut utan att rätta.</td>
<td>1 2 3 4</td>
<td>1 2 3 4</td>
<td>1 2 3 4</td>
</tr>
<tr>
<td>Jag tänker genom varje mening.</td>
<td>1 2 3 4</td>
<td>1 2 3 4</td>
<td>1 2 3 4</td>
</tr>
<tr>
<td>Jag tänker genom varje stycke.</td>
<td>1 2 3 4</td>
<td>1 2 3 4</td>
<td>1 2 3 4</td>
</tr>
<tr>
<td>Jag läser igenom det jag redan skrivit för att få idéer om hur jag ska fortsätta.</td>
<td>1 2 3 4</td>
<td>1 2 3 4</td>
<td>1 2 3 4</td>
</tr>
</tbody>
</table>

Annan:

<table>
<thead>
<tr>
<th>Sådana Sådana Sådana</th>
<th>svenska</th>
<th>engelska</th>
<th>tyska</th>
</tr>
</thead>
<tbody>
<tr>
<td>Jag tänker efter länge.</td>
<td>1 2 3 4</td>
<td>1 2 3 4</td>
<td>1 2 3 4</td>
</tr>
<tr>
<td>Jag hoppar över det.</td>
<td>1 2 3 4</td>
<td>1 2 3 4</td>
<td>1 2 3 4</td>
</tr>
<tr>
<td>Jag förenklar det så mycket att jag kan uttrycka det.</td>
<td>1 2 3 4</td>
<td>1 2 3 4</td>
<td>1 2 3 4</td>
</tr>
<tr>
<td>Jag återkommer till det senare.</td>
<td>1 2 3 4</td>
<td>1 2 3 4</td>
<td>1 2 3 4</td>
</tr>
<tr>
<td>Annat:</td>
<td>1 2 3 4</td>
<td>1 2 3 4</td>
<td>1 2 3 4</td>
</tr>
</tbody>
</table>

22. Vad gör du när du inte hittar det passande ordet på en gång? (Ringa in det som stämmer: 1 - inte alls 2 - något 3 - bra 4 - mycket ofta)

<table>
<thead>
<tr>
<th>Sådana Sådana Sådana</th>
<th>svenska</th>
<th>engelska</th>
<th>tyska</th>
</tr>
</thead>
<tbody>
<tr>
<td>Jag hittar alltid passande ord.</td>
<td>1 2 3 4</td>
<td>1 2 3 4</td>
<td>1 2 3 4</td>
</tr>
<tr>
<td>Då väljer jag ett liknande ord.</td>
<td>1 2 3 4</td>
<td>1 2 3 4</td>
<td>1 2 3 4</td>
</tr>
<tr>
<td>Jag gör en notering och slår upp det senare.</td>
<td>1 2 3 4</td>
<td>1 2 3 4</td>
<td>1 2 3 4</td>
</tr>
<tr>
<td>Jag slår upp det på en gång i en ordbok.</td>
<td>1 2 3 4</td>
<td>1 2 3 4</td>
<td>1 2 3 4</td>
</tr>
<tr>
<td>Jag ber någon om hjälp.</td>
<td>1 2 3 4</td>
<td>1 2 3 4</td>
<td>1 2 3 4</td>
</tr>
<tr>
<td>Annat:</td>
<td>1 2 3 4</td>
<td>1 2 3 4</td>
<td>1 2 3 4</td>
</tr>
</tbody>
</table>

23. Vad gör du efter att du skrivit? (Ringa in det som stämmer: 1 - inte alls 2 - något 3 - bra 4 - mycket ofta)

<table>
<thead>
<tr>
<th>Sådana Sådana Sådana</th>
<th>svenska</th>
<th>engelska</th>
<th>tyska</th>
</tr>
</thead>
<tbody>
<tr>
<td>Jag läser igenom texten en gång och rättar allt jag upptäcker.</td>
<td>1 2 3 4</td>
<td>1 2 3 4</td>
<td>1 2 3 4</td>
</tr>
<tr>
<td>Jag läser igenom texten flera gånger och fokuserar på olika saker varje gång.</td>
<td>1 2 3 4</td>
<td>1 2 3 4</td>
<td>1 2 3 4</td>
</tr>
<tr>
<td>Jag ändrar inget i texten när jag väl skrivit den.</td>
<td>1 2 3 4</td>
<td>1 2 3 4</td>
<td>1 2 3 4</td>
</tr>
<tr>
<td>Jag kollar särskilt grammatik och ordföråd.</td>
<td>1 2 3 4</td>
<td>1 2 3 4</td>
<td>1 2 3 4</td>
</tr>
<tr>
<td>Jag kollar framför allt innehållet i texten.</td>
<td>1 2 3 4</td>
<td>1 2 3 4</td>
<td>1 2 3 4</td>
</tr>
<tr>
<td>Jag kollar framför allt struktur och sammanhang i texten.</td>
<td>1 2 3 4</td>
<td>1 2 3 4</td>
<td>1 2 3 4</td>
</tr>
<tr>
<td>Jag tänker efter om texten stämmer överens med uppgiftsformuleringen/ syftet.</td>
<td>1 2 3 4</td>
<td>1 2 3 4</td>
<td>1 2 3 4</td>
</tr>
<tr>
<td>Annat:</td>
<td>1 2 3 4</td>
<td>1 2 3 4</td>
<td>1 2 3 4</td>
</tr>
</tbody>
</table>

24. Om du har ytterligare tankar kring de ämnen som finns i enkäten (autonomi, skrivande, undervisning i främmande språk) kan du gärna skriva dem här.

Slut på enkäten. Tack för din medverkan!
Additional questions in questionnaire II after intervention

F Nu kommer frågor som handlar om undervisningen de senaste veckorna i att skriva argumenterande text på tyska.

25. Vad tycker du allmänt om skrivkursen?

26. Var det något du tyckte var särskilt bra?

27. Var det något du tyckte var mindre bra?

28. Skrivkursen ... (Ringa in det som stämmer. Skalan är: 1 stämmer inte alls – 4 stämmer helt)

29. Efter skrivkursen ... (Ringa in det som stämmer. Skalan är: 1 stämmer inte alls – 4 stämmer helt)
Appendix

30. Hur givande tyckte du följande moment i skrivkursen var: (Ringa in det som stämmer:
1 - inte alls   2 - något   3 - bra   4 - mycket bra)

<table>
<thead>
<tr>
<th>Moment 1: Problem och strategier när man skriver på främmande språk.</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
</tr>
</thead>
<tbody>
<tr>
<td>Moment 2: Texttypen “Argumentation” och användbara fraser på tyska.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>Moment 3: Att planera texter (mind map och disposition).</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>Moment 4: Att skriva texter/ Online-resurser.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>Moment 5: Att korrigera texter/ grammatik.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
</tbody>
</table>

31. På vilket sätt hade skrivkursen positiv inverkan på följande aspekter i dina texter? (Ringa in det som stämmer: 1 - inte alls   2 - något   3 - bra   4 - mycket bra)

<table>
<thead>
<tr>
<th>Allmänt.</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
</tr>
</thead>
<tbody>
<tr>
<td>Struktur.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>Sammanhang.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>Innehåll.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>Grammatik.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>Uttryckssätt.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
</tbody>
</table>

32. Vad jag tyckte var bra i undervisningen var ...  (Ringa in det som stämmer: 1 - inte alls   2 - något   3 - bra   4 - mycket bra)

<table>
<thead>
<tr>
<th>Lärarens förklaringar.</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
</tr>
</thead>
<tbody>
<tr>
<td>Grupperbeteck.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>Arbetsmaterialet.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>Kontakt lärare – elever.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>Annet ”att skriva”.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
</tbody>
</table>

33. Vad skulle du också ha velat lära dig/träna?

34. Om du har ytterligare tankar kring de ämnen som finns i enkäten kan du gärna skriva dem här.

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Questionnaire I (English translation)

Learning German in Sweden

Umeå University
Department for Language Studies

Yvonne Knospe
yvonne.knospe@sprak.umu.se

This questionnaire is about writing and learning foreign languages. I am interested in your thoughts about writing and tuition, particularly in German. All questions of this questionnaire concern your experiences at school and in your free time. This questionnaire is no test, so there are no right or wrong answers. I am interested in your personal and honest opinions. If you need more space to write down your answers, please use lose sheets of paper.

The evaluation of the questionnaire answers will be carried out anonymously.

Thank you for your cooperation!

Sex: 
Age: 
Place of residence: 
Level: 
Mother tongue/First language (one or several):

At first I would like to know a bit more about your thoughts regarding tuition in general.

1. In the lessons, it is the teacher’s task to ... (Circle what you think is right. The scale is: 1 do not agree at all – 4 agree completely)

| Offer me a range of exercises to choose from. | 1 | 2 | 3 | 4 |
| Plan the teaching in detail. | 1 | 2 | 3 | 4 |
| Give me advice how to learn better. | 1 | 2 | 3 | 4 |
| Tell me what to learn and what to do. | 1 | 2 | 3 | 4 |
| Plan and organise the lessons together with the students. | 1 | 2 | 3 | 4 |
| Other: | 1 | 2 | 3 | 4 |

2. In the lessons I would like to... (Circle what you think is right. The scale is: 1 do not agree at all – 4 agree completely)

| Work independently and individually. | 1 | 2 | 3 | 4 |
| Monitor my learning process, too. | 1 | 2 | 3 | 4 |
| Get a lot of help and instructions from the teacher. | 1 | 2 | 3 | 4 |
| Work together with other students. | 1 | 2 | 3 | 4 |
| Be involved in deciding the topics and content, which we go through. | 1 | 2 | 3 | 4 |
| Be involved in deciding the material, which we use. | 1 | 2 | 3 | 4 |
| Not be involved in deciding at all. | 1 | 2 | 3 | 4 |
| Other: | 1 | 2 | 3 | 4 |
3. What does "learner autonomy", that is to be autonomous in one’s learning, mean to you?

4. Is autonomous learning important to you? Why? Why not?

5. According to you, which characteristics does an autonomous learner have?

Now we continue with a few questions regarding writing texts at school and in your free time. What is your opinion?

6. What do you think about writing? (Circle what you think is right. The scale is: 1 do not agree at all – 4 agree completely)

<table>
<thead>
<tr>
<th>Opinión</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
</tr>
</thead>
<tbody>
<tr>
<td>It is fun to write texts at school.</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>It is fun to write texts in my free time.</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>I am good at writing texts.</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>It is difficult for me to write texts.</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>I only write texts if I have to.</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>It exceeds my capacities to write texts.</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>I hate to write texts at school.</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>I hate to write texts in my free time.</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Other:</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

7. How do you feel after writing a text? (Circle what you think is right. The scale is: 1 do not agree at all – 4 agree completely)

<table>
<thead>
<tr>
<th>Opinión</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
</tr>
</thead>
<tbody>
<tr>
<td>I am satisfied with the result.</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>I always think the text could be improved.</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>I am frustrated.</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>I am happy to be finished with it.</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>I am motivated to continue writing.</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>I feel insecure.</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Other:</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

8. Which benefits does writing have for you? (Circle what you think is right. The scale is: 1 do not agree at all – 4 agree completely)

<table>
<thead>
<tr>
<th>Beneficio</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
</tr>
</thead>
<tbody>
<tr>
<td>Writing does not have any benefits.</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>I can organise my thoughts.</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>I can explain my thoughts to other people.</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>I can show my abilities.</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>In texts one can use one’s grammar knowledge.</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>In writing one can show one’s creativity.</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Other:</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Thank you for your contribution so far! The next questions concern your experiences regarding learning a foreign language.

9. Which foreign languages have you learned and are you learning?

<table>
<thead>
<tr>
<th>Foreign language</th>
<th>From – to?</th>
<th>Where? (school, family, abroad etc.)</th>
</tr>
</thead>
<tbody>
<tr>
<td>FL 1:</td>
<td></td>
<td></td>
</tr>
<tr>
<td>FL 2:</td>
<td></td>
<td></td>
</tr>
<tr>
<td>FL 3:</td>
<td></td>
<td></td>
</tr>
<tr>
<td>FL 4:</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

10. How do you judge your skills in these foreign languages? (Use the following scale: 1 - very poor; 2 - not that good; 3 – average; 4 – good; 5 – excellent)

<table>
<thead>
<tr>
<th>Foreign language</th>
<th>reading</th>
<th>writing</th>
<th>listening</th>
<th>speaking</th>
</tr>
</thead>
<tbody>
<tr>
<td>FS 1</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>FS 2</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>FS 3</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>FS 4</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

11. Which foreign languages do you use outside the classroom, too? Where and when? (TV, internet, travel, friends, family, etc.)

12. Why do you learn foreign languages? (Circle what you think is right. The scale is: 1 do not agree at all – 4 agree completely)

<table>
<thead>
<tr>
<th>Reason</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
</tr>
</thead>
<tbody>
<tr>
<td>To know several foreign languages is part of general education.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>To learn foreign languages enriches one’s life.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>To learn foreign languages also means that one is interested in other people and cultures.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>Foreign languages are learnt at school, but afterwards they are hardly of any use.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>Better job opportunities are the main reason to learn foreign languages.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>Other:</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
</tbody>
</table>

13. Why do you learn German? (Circle what you think is right. The scale is: 1 do not agree at all – 4 agree completely)

<table>
<thead>
<tr>
<th>Reason</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
</tr>
</thead>
<tbody>
<tr>
<td>I am interested in Germany/ German-speaking countries.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>I would like to better understand German literature, art and movies.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>I would like to understand the culture(s) of German-speaking countries and participate in it/them.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>I would like to talk to native German-speaking people in their mother tongue.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>I chose German because of the credit points at school.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>I think I will need German in my future profession.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>I think I can impress people with knowledge of German.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>I think it is easy to learn German due to the similarity to Swedish.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>Other:</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
</tbody>
</table>
14. How do you like learning German? (Circle what you think is right. The scale is: 1 do not agree at all – 4 agree completely)

<table>
<thead>
<tr>
<th>Description</th>
<th>Swedish</th>
<th>English</th>
<th>German</th>
</tr>
</thead>
<tbody>
<tr>
<td>I like to learn German.</td>
<td>1 2 3 4</td>
<td></td>
<td></td>
</tr>
<tr>
<td>I do not like to learn German.</td>
<td>1 2 3 4</td>
<td></td>
<td></td>
</tr>
<tr>
<td>I would rather spend my time on something else.</td>
<td>1 2 3 4</td>
<td></td>
<td></td>
</tr>
<tr>
<td>It is just like any other subject at school, nothing more.</td>
<td>1 2 3 4</td>
<td></td>
<td></td>
</tr>
<tr>
<td>I would like to learn more German.</td>
<td>1 2 3 4</td>
<td></td>
<td></td>
</tr>
<tr>
<td>I would prefer to learn another language.</td>
<td>1 2 3 4</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Other:</td>
<td>1 2 3 4</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<Now a few questions regarding writing texts at school, in your free time and on the Internet will follow. Remember to differentiate between Swedish, English and German.>

15. How would you describe your writing? Circle what you think is right. The scale is: 1 do not agree at all – 4 agree completely

<table>
<thead>
<tr>
<th>Description</th>
<th>Swedish</th>
<th>English</th>
<th>German</th>
</tr>
</thead>
<tbody>
<tr>
<td>I consider myself a good writer.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>I like to write texts in my free time.</td>
<td>1 2 3 4</td>
<td>1 2 3 4</td>
<td>1 2 3 4</td>
</tr>
<tr>
<td>I like to write texts at school.</td>
<td>1 2 3 4</td>
<td>1 2 3 4</td>
<td>1 2 3 4</td>
</tr>
<tr>
<td>I know exactly how to write a text.</td>
<td>1 2 3 4</td>
<td>1 2 3 4</td>
<td>1 2 3 4</td>
</tr>
<tr>
<td>I have strategies to write a good text.</td>
<td>1 2 3 4</td>
<td>1 2 3 4</td>
<td>1 2 3 4</td>
</tr>
<tr>
<td>I plan my texts.</td>
<td>1 2 3 4</td>
<td>1 2 3 4</td>
<td>1 2 3 4</td>
</tr>
<tr>
<td>I revise my texts.</td>
<td>1 2 3 4</td>
<td>1 2 3 4</td>
<td>1 2 3 4</td>
</tr>
<tr>
<td>Other:</td>
<td>1 2 3 4</td>
<td>1 2 3 4</td>
<td>1 2 3 4</td>
</tr>
</tbody>
</table>

16. Which text types have you already written? (Circle what is correct: 1 - never   2 - seldom   3 - often   4 - very often)

<table>
<thead>
<tr>
<th>Description</th>
<th>Swedish</th>
<th>English</th>
<th>German</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dialogue</td>
<td>1 2 3 4</td>
<td>1 2 3 4</td>
<td>1 2 3 4</td>
</tr>
<tr>
<td>Argumentation</td>
<td>1 2 3 4</td>
<td>1 2 3 4</td>
<td>1 2 3 4</td>
</tr>
<tr>
<td>Narrative</td>
<td>1 2 3 4</td>
<td>1 2 3 4</td>
<td>1 2 3 4</td>
</tr>
<tr>
<td>Letter</td>
<td>1 2 3 4</td>
<td>1 2 3 4</td>
<td>1 2 3 4</td>
</tr>
<tr>
<td>Other</td>
<td>1 2 3 4</td>
<td>1 2 3 4</td>
<td>1 2 3 4</td>
</tr>
</tbody>
</table>

17. How well do you know the characteristics of these text types? (Circle what is correct: 1 - not at all   2 - a little   3 - good   4 - excellent)

<table>
<thead>
<tr>
<th>Description</th>
<th>Swedish</th>
<th>English</th>
<th>German</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dialogue</td>
<td>1 2 3 4</td>
<td>1 2 3 4</td>
<td>1 2 3 4</td>
</tr>
<tr>
<td>Argumentation</td>
<td>1 2 3 4</td>
<td>1 2 3 4</td>
<td>1 2 3 4</td>
</tr>
<tr>
<td>Narrative</td>
<td>1 2 3 4</td>
<td>1 2 3 4</td>
<td>1 2 3 4</td>
</tr>
<tr>
<td>Letter</td>
<td>1 2 3 4</td>
<td>1 2 3 4</td>
<td>1 2 3 4</td>
</tr>
<tr>
<td>Other</td>
<td>1 2 3 4</td>
<td>1 2 3 4</td>
<td>1 2 3 4</td>
</tr>
</tbody>
</table>
18. What is difficult for you when you write? (Circle what is correct: 1 - not at all  2 - a little  3 - good  4 - excellent)

<table>
<thead>
<tr>
<th>To express my own opinion.</th>
<th>Swedish</th>
<th>English</th>
<th>German</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>1 2 3 4</td>
<td>1 2 3 4</td>
<td>1 2 3 4</td>
</tr>
<tr>
<td>To express complex thoughts and relationships.</td>
<td>1 2 3 4</td>
<td>1 2 3 4</td>
<td>1 2 3 4</td>
</tr>
<tr>
<td>To use correct grammar.</td>
<td>1 2 3 4</td>
<td>1 2 3 4</td>
<td>1 2 3 4</td>
</tr>
<tr>
<td>To organise the entire writing process.</td>
<td>1 2 3 4</td>
<td>1 2 3 4</td>
<td>1 2 3 4</td>
</tr>
<tr>
<td>To consider text type (letter, description, narrative etc.).</td>
<td>1 2 3 4</td>
<td>1 2 3 4</td>
<td>1 2 3 4</td>
</tr>
<tr>
<td>To find the right words.</td>
<td>1 2 3 4</td>
<td>1 2 3 4</td>
<td>1 2 3 4</td>
</tr>
<tr>
<td>Other:</td>
<td>1 2 3 4</td>
<td>1 2 3 4</td>
<td>1 2 3 4</td>
</tr>
</tbody>
</table>

19. What do you do before you start writing? (Circle what is correct: 1 - not at all  2 - seldom  3 - often  4 - very often)

<table>
<thead>
<tr>
<th>I think about the task thoroughly.</th>
<th>Swedish</th>
<th>English</th>
<th>German</th>
</tr>
</thead>
<tbody>
<tr>
<td>Nothing, I just start writing.</td>
<td>1 2 3 4</td>
<td>1 2 3 4</td>
<td>1 2 3 4</td>
</tr>
<tr>
<td>I think about what I am going to write roughly.</td>
<td>1 2 3 4</td>
<td>1 2 3 4</td>
<td>1 2 3 4</td>
</tr>
<tr>
<td>I plan exactly what I’m going to write.</td>
<td>1 2 3 4</td>
<td>1 2 3 4</td>
<td>1 2 3 4</td>
</tr>
<tr>
<td>I prepare comprehensive written notes before I start writing the text.</td>
<td>1 2 3 4</td>
<td>1 2 3 4</td>
<td>1 2 3 4</td>
</tr>
<tr>
<td>I write down a few keywords before I start to write.</td>
<td>1 2 3 4</td>
<td>1 2 3 4</td>
<td>1 2 3 4</td>
</tr>
<tr>
<td>I consider the possible reader/readership of the text.</td>
<td>1 2 3 4</td>
<td>1 2 3 4</td>
<td>1 2 3 4</td>
</tr>
<tr>
<td>Other:</td>
<td>1 2 3 4</td>
<td>1 2 3 4</td>
<td>1 2 3 4</td>
</tr>
</tbody>
</table>

19.1. If you so something (such as mind map) before you start writing, please describe it in detail.

20. What do you do while you are writing? (Circle what is correct: 1 - not at all  2 - seldom  3 - often  4 - very often)

<table>
<thead>
<tr>
<th>I write texts from the beginning to the end without revisions.</th>
<th>Swedish</th>
<th>English</th>
<th>German</th>
</tr>
</thead>
<tbody>
<tr>
<td>I think about every sentence.</td>
<td>1 2 3 4</td>
<td>1 2 3 4</td>
<td>1 2 3 4</td>
</tr>
<tr>
<td>I think about every clause.</td>
<td>1 2 3 4</td>
<td>1 2 3 4</td>
<td>1 2 3 4</td>
</tr>
<tr>
<td>I read through what I have already written to get ideas about how to continue.</td>
<td>1 2 3 4</td>
<td>1 2 3 4</td>
<td>1 2 3 4</td>
</tr>
<tr>
<td>Other:</td>
<td>1 2 3 4</td>
<td>1 2 3 4</td>
<td>1 2 3 4</td>
</tr>
</tbody>
</table>
21. What do you do if you cannot express what you want to say? (Circle what is correct: 1 - not at all  2 - seldom  3 - often  4 - very often)

<table>
<thead>
<tr>
<th></th>
<th>Swedish</th>
<th>English</th>
<th>German</th>
</tr>
</thead>
<tbody>
<tr>
<td>I think about it for a while.</td>
<td>1 2 3 4</td>
<td>1 2 3 4</td>
<td>1 2 3 4</td>
</tr>
<tr>
<td>I leave it out.</td>
<td>1 2 3 4</td>
<td>1 2 3 4</td>
<td>1 2 3 4</td>
</tr>
<tr>
<td>I simplify it until I can express it.</td>
<td>1 2 3 4</td>
<td>1 2 3 4</td>
<td>1 2 3 4</td>
</tr>
<tr>
<td>I return to it later.</td>
<td>1 2 3 4</td>
<td>1 2 3 4</td>
<td>1 2 3 4</td>
</tr>
<tr>
<td>Other:</td>
<td>1 2 3 4</td>
<td>1 2 3 4</td>
<td>1 2 3 4</td>
</tr>
</tbody>
</table>

22. What do you do if you do not find the right word immediately? (Circle what is correct: 1 - not at all  2 - seldom  3 - often  4 - very often)

<table>
<thead>
<tr>
<th></th>
<th>Swedish</th>
<th>English</th>
<th>German</th>
</tr>
</thead>
<tbody>
<tr>
<td>I always find the right words.</td>
<td>1 2 3 4</td>
<td>1 2 3 4</td>
<td>1 2 3 4</td>
</tr>
<tr>
<td>I choose a similar word.</td>
<td>1 2 3 4</td>
<td>1 2 3 4</td>
<td>1 2 3 4</td>
</tr>
<tr>
<td>I make a note and look it up later.</td>
<td>1 2 3 4</td>
<td>1 2 3 4</td>
<td>1 2 3 4</td>
</tr>
<tr>
<td>I look it up in a dictionary immediately.</td>
<td>1 2 3 4</td>
<td>1 2 3 4</td>
<td>1 2 3 4</td>
</tr>
<tr>
<td>I ask someone for help.</td>
<td>1 2 3 4</td>
<td>1 2 3 4</td>
<td>1 2 3 4</td>
</tr>
<tr>
<td>Other:</td>
<td>1 2 3 4</td>
<td>1 2 3 4</td>
<td>1 2 3 4</td>
</tr>
</tbody>
</table>

23. What do you do after having written a text? (Circle what is correct: 1 - not at all  2 - seldom  3 - often  4 - very often)

<table>
<thead>
<tr>
<th></th>
<th>Swedish</th>
<th>English</th>
<th>German</th>
</tr>
</thead>
<tbody>
<tr>
<td>I read through the text once and revise everything I detect.</td>
<td>1 2 3 4</td>
<td>1 2 3 4</td>
<td>1 2 3 4</td>
</tr>
<tr>
<td>I read through the text several times and focus on different aspects.</td>
<td>1 2 3 4</td>
<td>1 2 3 4</td>
<td>1 2 3 4</td>
</tr>
<tr>
<td>I do not change anything in the text.</td>
<td>1 2 3 4</td>
<td>1 2 3 4</td>
<td>1 2 3 4</td>
</tr>
<tr>
<td>I focus on grammar and words.</td>
<td>1 2 3 4</td>
<td>1 2 3 4</td>
<td>1 2 3 4</td>
</tr>
<tr>
<td>I focus on the content of the text.</td>
<td>1 2 3 4</td>
<td>1 2 3 4</td>
<td>1 2 3 4</td>
</tr>
<tr>
<td>I consider whether the text is in line with the task requirements.</td>
<td>1 2 3 4</td>
<td>1 2 3 4</td>
<td>1 2 3 4</td>
</tr>
<tr>
<td>Other:</td>
<td>1 2 3 4</td>
<td>1 2 3 4</td>
<td>1 2 3 4</td>
</tr>
</tbody>
</table>

24. If you have further thoughts regarding the topics of this questionnaire (autonomy, writing, tuition in foreign languages), please write below.

*End of questionnaire. Thank you for your contribution!*
Additional questions in questionnaire II after intervention

Now a few questions regarding the tuition about writing argumentative texts in German during the last weeks will follow.

25. What do you think about the writing course?

26. Was there anything that you especially liked?

27. Was there anything that you did not like that much?

28. The writing course ... (Circle what is correct. The scale is: 1 do not agree at all – 4 agree completely)

<table>
<thead>
<tr>
<th></th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
</tr>
</thead>
<tbody>
<tr>
<td>was useful.</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>was fun.</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>was interesting.</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>was boring.</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>contained a lot information.</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>was frustrating.</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>was motivating.</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Other:</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

29. After the writing course ... (Circle what is correct. The scale is: 1 do not agree at all – 4 agree completely)

<table>
<thead>
<tr>
<th></th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
</tr>
</thead>
<tbody>
<tr>
<td>I write better argumentative texts in German.</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>I write better argumentative texts in general.</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>I write better texts.</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>I know more about writing.</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>I know more about learning foreign languages.</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>I am better in German.</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>I am more motivated to learn German.</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>I know more about different text types.</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>I know more about writing strategies.</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>I do not know/can not do more than before.</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Other:</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
30. How useful were the following parts of the writing course for you: (Circle what is correct: 1 - not at all 2 - a little 3 - good 4 - excellent)

| Part 1: Problems and strategies when writing in a foreign language. | 1 | 2 | 3 | 4 |
| Part 2: Text types “argumentation” and applicable phrases in German. | 1 | 2 | 3 | 4 |
| Part 3: Planning texts (mind map and outline). | 1 | 2 | 3 | 4 |
| Part 4: Writing texts/ Online sources. | 1 | 2 | 3 | 4 |
| Part 5: Revising texts/ grammar. | 1 | 2 | 3 | 4 |
| Other: | 1 | 2 | 3 | 4 |

31. In which aspect did the writing course have a positive influence on your texts? (Circle what is correct: 1 - not at all 2 - a little 3 - good 4 - excellent)

| In general | 1 | 2 | 3 | 4 |
| Organisation | 1 | 2 | 3 | 4 |
| Coherence | 1 | 2 | 3 | 4 |
| Content | 1 | 2 | 3 | 4 |
| Grammar | 1 | 2 | 3 | 4 |
| Style | 1 | 2 | 3 | 4 |
| Other | 1 | 2 | 3 | 4 |

32. What I liked about the course was ... (Circle what is correct: 1 - not at all 2 - a little 3 - good 4 - excellent)

| The teacher’s explanations. | 1 | 2 | 3 | 4 |
| Group work | 1 | 2 | 3 | 4 |
| Working material | 1 | 2 | 3 | 4 |
| Contact teacher – student | 1 | 2 | 3 | 4 |
| ‘The topic ‘writing’. | 1 | 2 | 3 | 4 |
| Feedback by the teacher. | 1 | 2 | 3 | 4 |
| Other | 1 | 2 | 3 | 4 |

33. What would you have liked to learn/practise, too?

34. If you have further thoughts regarding this questionnaire, please write below.
Appendix B. Description of the intervention

Session one
In the first session I introduced the project and myself. I had planned to ask the students to fill in the questionnaires and to write the first text C1 (topic: Mobile phones and computer should be forbidden at school, because they distract students from learning.) It turned out that not everything could be completed within that lesson. For this reason, the students could finish their texts at home and upload them on the school’s online platform.

Session two
In the second session the actual teaching started and the main goal was to explain to the students what the purpose of the project was. In the beginning I showed several pictures of people in different writing situations. Their body language and facial expressions indicated that some were successful, others were less successful in writing. The students were asked to describe the situations and anticipate what problems the people in the pictures might face.

The students’ answers made it obvious that they knew well what problems writers are confronted with. This represented the transition to the explanation of the project. I talked about the topic of my dissertation, what their role in this project was and what aspects would be different in the coming weeks. These aspects concerned the classroom arrangement, the use of computers and a number of learning routines.

Then the students received a worksheet with questions about their writing. For example, they were asked when they had written a text the last time, why writing might be important, what they considered easy and what difficult. They asked and answered these questions in pairs, filled in the sheets and we compared the results in plenum. Afterwards the students were allocated to different groups and asked to collect ideas on a poster about what to consider when writing a text. When finished, they put all posters on a wall and commented on their results. Before that I had given each student a worksheet with an illustration of the writing process (see Figure 39). While the students were listening to their peers, they completed the worksheet with the new knowledge. We compared the results at the end of the exercise.
At the end of this lesson, the term *strategy* was highlighted. Solving problems in writing strategically had been mentioned on the worksheet illustrated in Figure 39, but we picked up the idea again. On another sheet, the students were asked to activate their previous knowledge about what strategies are, what other terms are used for these kinds of learning activities and which ones they had been using before. This exercise was intended to show the students that they probably already knew and used strategies, but in a less conscious way. Against the background of problems in writing, the aim was to make students aware of the fact that it is possible to organise and thus regulate the writing process to a certain degree and that they were already doing so to various degrees.

**Session three**
At the beginning of the third lesson we revised the content of the previous lesson. Generally, the willingness to do these kinds of oral exercises in front of the class was not very high and hardly improved throughout the intervention. Therefore, it was often me who summarised what had been discussed so far in order to activate the students’ knowledge and continue.

The first exercise for the students was to form four groups and look at three different texts: a description, a narrative, and an argumentation. The task was to look for specific characteristics of the respective text type and define commonalities and differences without necessarily understanding the content of the texts completely. In order to structure their results, the students received two worksheets. One contained a table with the terms “description”, “narrative” and “argumentation”, the other one was a list of
random characteristics, which they were supposed to allocate to the terms. This activity was performed in groups.

Subsequently, I explained that our project would only focus on argumentative texts. Again the students were given posters on which they were asked to collect their previous knowledge about argumentative texts (see Figure 40). This exercise revealed that the students were able to activate previous knowledge about the main features of this text type.

After that I distributed a summary about argumentative texts, which included the communicative goal, organisation and linguistic markers. In order to apply this knowledge, the students were given an argumentative text written by a learner of German as a foreign language. They were asked to identify the organisation of the text using the specific terms, to underline the linguistic markers used and to look for missing text structures.

Session four
In the fourth lesson we initially revised the content of the previous session with the help of a power point presentation. After this, I wanted to compare the students’ homework. It turned out that only five students had completed it, which was the reason why it was turned into an exercise. The class was split into five groups and those five students, who had worked on this exercise at home, became group leaders. They explained to their groups what they had done and what the results were. The entire group had the task to transfer the results to a transparency. I had printed the argumentation on the transparency and they were asked to mark organisation, key words and

![Figure 40. First ideas about the features of argumentative texts.](image)
Appendix

Figure 4. Students' analysis of an argumentative text.

linguistic markers in German. Each group then presented their results in plenum. One example of these transparencies is illustrated in Figure 41.

The fourth session was dedicated to learning about ways to plan an argumentative text. At first, I presented some results from the questionnaire to the students, which they had filled out in session one. It became clear that they were planning their texts in their L3 much less than in their mother tongue. This result was discussed critically and became the rationale for practising text planning in the lesson. First, the students collected ideas about what types of planning methods they knew. Then three practices were chosen: brainstorming, mind mapping and outlining. In this sequence, the students were shown what these planning methods looked like, how they could be characterised and what their advantages and disadvantages were. For example, brainstorming was explained as a practical way to collect first ideas while the outline was a more time consuming, but feasible help to plan
a text in a structured way. After each explanation, the students had time to prepare a planning draft on the given topic “Too much TV makes people stupid”.

Session five
The fifth session also began with a short oral repetition of the previous session. The students repeated what they had learned about text types during the last lesson, with a focus on argumentative texts.

Then the groups were told to compare, improve and complete the outlines, which they had prepared in the previous session. This outline was then used in a writing exercise. This exercise was planned to last 30 minutes only and mainly served the purpose of testing the applicability of the prepared outlines in L3 writing. The students were to find out, if their outline was of any help and what it felt like to write when having planned the text content beforehand.

During the last ten minutes of that lesson the groups received worksheets with key words, such as “ideas”, “pause”, “time”, “Internet”, “outline”, which were meant to help them evaluate the writing exercise on that day.

Session six
In session six the learning goal was to think about the formulation process, that is the actual translation and transcription period in writing. I had already observed that students continuously use online dictionaries during the lessons. Thus I had made the decision to include this activity in the intervention and make the students think about appropriate search strategies and potential pitfalls of online sources.

The beginning of the lesson was dedicated to repetition. We finished with a presentation of the worksheets that had been filled out at the end of the previous lesson. They could read about their experiences in writing with an outline. Then the students received their written texts from the previous lesson, and compared and improved them in pairs.

After this group work, we continued in plenum and I intended to lead the students to the controversy about the use of online sources. First, I read aloud two short descriptions of writers, which I had taken from Macaro (2001: 136) and translated to German. These two short texts describe one writer, who does different activities of the writing process (generate ideas, translate, transcribe, revise) simultaneously and another one, who does everything consecutively. The students were asked which they identified with more and it was revealed that most of them considered themselves similar to the first writer.

In the next step, I again presented some results from the questionnaire to the students, in which they referred to the lack of vocabulary in writing in German.
Finally, one screen recording of one focus student was shown to the class\textsuperscript{47}. The file showed two minutes of intensive search for vocabulary on the Internet. It was meant to become clear that the time spent on the Internet does not always stand in a reasonable relation to the final benefit in writing the text.

These three steps were aimed to make students reflect on their own writing habits in German, that is doing a number of writing-related activities at the same time and moreover, continuously interrupting the writing process for search related activities on the Internet. Then ideas about what writers can do alternatively when they lack linguistic resources were collected. Suggestions were, for example, simplification, circumlocution, and finally, using a dictionary. I explained to the students that the writing process and the required cognitive attention get interrupted when words are looked up frequently, which might result in lower text quality. However, the possibilities offered by the Internet were discussed as a valuable writing assistance when running out of other compensation strategies, even though it needs to be treated with care. Finally, an exercise regarding online sources was carried out. From the previous lessons it had become clear which specific sources the students used repeatedly. A number of randomly chosen words in Swedish were searched for in the various online sources. I completed the entire exercise once before the lesson and showed my results to the students (see Figure 42).

Then the students themselves received the same task, that is, looking up a number of randomly chosen Swedish words. The aim was for them to realise how much the results differed regarding translation and other information like grammar and context. Additionally, I presented further monolingual German Internet sources to the students, where they could obtain correct and comprehensive grammatical information, frequent word combinations and collocations for German words.

\textit{Session seven}

In session seven the students wrote text C2. They used their computer, spent the entire session writing and handed in the text. The topic was “Bye-bye Hotel Mum! At the age of 18 ‘kids’ have become grown-ups, should move out and become independent”. On the task sheet, a short checklist had been written which reminded the students about possible activities before, while and after writing.

\footnote{\textsuperscript{47}The specific student had agreed beforehand.}
Appendix

Figure 42. Exercise on looking up words in online sources.

Session eight

The eighth session started out with an overview of where we were in the writing intervention, that is, what we had already dealt with and what was left. It became clear that we had not talked about the revision process yet. First, the students were reminded of their writing experience in the last session and were asked, how they had corrected their texts. Then they worked in pairs and received a selection of sentences, which stemmed from different student texts and contained different types of errors. They were asked to correct them as well as possible. The results were collected on a transparency for the whole class in order for everyone to see what had been wrong in the sentences.

It turned out that the students had found different mistakes and that one revision only hardly suffices to recognise several types of errors. The focus was then put on the three main grammatical errors that had been identified in the correction exercise: subject-verb-agreement, negation in German and the use of conjunctions. These three aspects were repeated using worksheets, before the students continued to work on their own texts. For each student a collection of all so-far written texts had been prepared, which were supposed to demonstrate to them, what they had already produced and what the texts
looked like in comparison to each other. In addition, the students were asked to revise the texts in several steps with a focus on the grammatical aspects that we had dealt with. This procedure was meant to make the students understand that focusing on single aspects during one proofreading round can make revision easier, but that therefore several rounds are needed. At the end of the lesson corrected versions of text C2 were handed back.

**Session nine**

During session nine the entire writing intervention was revisited. In order to do so, a PowerPoint presentation was used to illustrate the different stages of the intervention, which contained a few short repetition exercises. The most important learning goals were recalled once again. First, two student argumentations were cut into snippets according to their organisation of the text. Pairs of students were asked to find the right order of the text snippets and then compare the results.

The second exercise consisted in writing an outline on the topic “School uniforms are useful and should become obligatory”. Finally, we discussed that the students often tried to produce overly complicated sentences in

![Figure 43. Exercise on simplification of sentences.](image)
German, which often leads to faulty structures. For that reason, I prepared a compilation of sentences, which reflected this problem in an obvious way. The students’ task was to try and simplify the sentences to a certain degree without losing the message (see Figure 43).

Session ten
The last session was not the same for all students but was distributed across three days. Due to different events in the school at the end of the school year, for example tests, this was the only way that a large number of texts could be collected. The task was to write a final argumentative text C3 about the topic “The internet - the best thing since the invention of the television” and at the end of the session the students handed in their texts.
Appendix C. Written consent form for the students

Att lära sig tyska i Sverige – information till elever

Sedan hösten 2012 är jag doktorand vid Umeå universitet och arbetar med ett projekt som handlar om språkinlärning, särskilt skrivande på tyska. Projektet heter *Att främja självständighet i språkklassrummet. Strategibaserad skrivundervisning i tyska som främmande språk i Sverige?*

Din skola har visat intresse för att delta i projektet och jag vänder mig nu till dig som elev för att informera dig och fråga om du har möjlighet att delta. Jag kommer att berätta mer om projektet när jag kommer till skolan. Om du vill vara med kommer du att skriva totalt tre texter på tyska vilka ingår i undersökningen.


Du kommer att ha dina vanliga tysklektioner förutom några, där jag dels kommer att gå igenom vissa saker vad gäller att skriva, dels där du skriver texter. Efter att studien är klar kommer jag att berätta om resultaten för dig.

 Alla svar och resultat kommer att behandlas så att inte obehöriga får tillgång till dem. All data som samlas in kodas. Det betyder att ditt namn och andra personuppgifter inte förekommer i några sammanhang och att bara jag som forskare vet vem som har skrivit en viss text. Vid rapportering i vetenskapliga tidskrifter eller motsvarande kan exempel från texterna förekomma.

Det är helt frivilligt att delta i studien och man kan när som helst under projektets gång avbryta sitt deltagande. Fyll i samtyckesblanketten och lämna den till din lärare.


Hälsningar

Yvonne Knospe
Doktorand

Kirk Sullivan
Projektledare

258
Samtycke

Jag har tagit del av information om forskningsprojektet Att främja självständighet i språkklassrummet. Strategibaserad skrivundervisning i tyska som främmande språk i Sverige? samt fått tillfälle att ställa frågor och få svar om projektet.

☐ JA, jag samtycker till att delta i projektet och att det material som samlas in får användas för forskningssyften i projektet.

☐ NEJ, jag vill inte delta i projektet.

_________________________  _________________________
Ort och datum              Underskrift

_________________________
Namnfördtydligande
Appendix D. Written consent form for the teacher

Att lära sig tyska i Sverige – information till lärare
Sedan hösten 2012 är jag doktorand vid Umeå universitet och arbetar med ett projekt som handlar om språkinlärning, särskilt skrivande på tyska. Projektet heter Att främja självständighet i språkklassrummet. Strategibaserad skrivundervisning i tyska som främmande språk i Sverige?

Er skola har visat intresse för att delta i projektet och jag vänder oss nu till dig som lärare för att informera dig och fråga om du har möjlighet att delta. Din klass kommer även att få muntlig information i skolan. Eleverna kommer att skriva totalt tre texter på tyska.

De utvalda “intensivdeltagarna” skriver dessutom tre texter på dator med ett program som också spelar in hela skrivandet. Detta märks inte när man skriver men ger mig möjlighet att studera hur texternas utvecklas. Både loggfiler och de färdiga texterna ingår i undersökningen. Före och efter skrivandet av texterna kommer jag att be eleverna fylla i enkäter som handlar om deras inställning till språkinlärning i allmänhet, till tyska och till att skriva, både i allmänhet och på tyska.


Alla svar och resultat kommer att behandlas så att inte obehöriga kan få tillgång till dem. All data som samlas in är kodad för att undvika hantering av namn. Vid rapportering i vetenskapliga tidskrifter eller motsvarande kan exempel från intervjuerna förekomma.

Det är helt frivilligt att delta i studien och man kan när som helst under projektets gång avbryta sitt deltagande. Fyll i samtyckesblanketten och lämna den till mig.


Hälsningar

Yvonne Knospe
Doktorand

Kirk Sullivan
Projektledare
Samtycke

Jag har tagit del av information om forskningsprojektet Att främja självständighet i språkklassrummet. Strategibaserad skrivundervisning i tyska som främmande språk i Sverige? samt fått tillfälle att ställa frågor och få svar om projektet.

☐ JA, jag samtycker till att delta i projektet och att det material som samlas in får användas för forskningssyften i projektet.

☐ NEJ, jag vill inte delta i projektet.

________________   __________________
Ort och datum              Underskrift

________________
Namnförtydligande
<table>
<thead>
<tr>
<th>[A] Introduction</th>
<th>absent</th>
<th>0</th>
<th>included, little developed</th>
<th>1</th>
<th>included, well developed</th>
<th>2</th>
</tr>
</thead>
<tbody>
<tr>
<td>(may contain reference to the given thesis, background information, own position)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>[B] Arguments</td>
<td>absent or presented in form of a list of unelaborated ideas</td>
<td>0</td>
<td>one elaborated argument (may include explanation and/or example/s) (the rest may be a list)</td>
<td>1</td>
<td>two or more elaborated arguments (may include explanation/s and/or example/s) (the rest may be a list)</td>
<td>2</td>
</tr>
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<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>[C] Counter arguments</td>
<td>absent or only mentioned without further elaboration</td>
<td>0</td>
<td>one elaborated counter argument (may include explanation and/or example/s)</td>
<td>1</td>
<td>two or more elaborated counter arguments (may include explanation/s and/or example/s)</td>
<td>2</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>[E] Ideas</td>
<td>none</td>
<td>0</td>
<td>partly</td>
<td>1</td>
<td>mostly</td>
<td>2</td>
</tr>
<tr>
<td>Are the presented ideas in the arguments relevant in relation to the theme of the thesis?</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>[F] Text structure</td>
<td>no</td>
<td>0</td>
<td>Sporadically</td>
<td>1</td>
<td>Mostly</td>
<td>2</td>
</tr>
<tr>
<td>Is the text structure clearly recognizable through linguistic markers? (Das erste Argument ist, erstens, Zunächst, Außerdem, Letztendlich)</td>
<td></td>
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</tbody>
</table>

1 possible limitations are mentioned within the argument +1
2 possible limitations are mentioned within the counter argument +1

3 consistently
<table>
<thead>
<tr>
<th>Column 1</th>
<th>Column 2</th>
<th>Column 3</th>
<th>Column 4</th>
</tr>
</thead>
<tbody>
<tr>
<td>[G] Coherence</td>
<td>Did the writer succeed to make the text coherent, through linguistic markers (connectors, subjunctions)?</td>
<td>no</td>
<td>0</td>
</tr>
<tr>
<td>[H] Conclusion</td>
<td>(may contain brief summary, concluding statement and own opinion)</td>
<td>absent</td>
<td>0</td>
</tr>
<tr>
<td>[I] Persuasion</td>
<td>Has it become clear how the writer positions him/herself to the thesis?</td>
<td>no</td>
<td>0</td>
</tr>
<tr>
<td>[J] Persuasion</td>
<td>Is the final position of the writer in accordance with/comprehensible in relation to his/her choice of arguments?</td>
<td>no</td>
<td>0</td>
</tr>
</tbody>
</table>
Appendix F. Holistic rating instruction

Holistisches Textbewertungsverfahren

<table>
<thead>
<tr>
<th>Text A</th>
<th>Text B</th>
<th>Text C</th>
</tr>
</thead>
<tbody>
<tr>
<td>Weist ein Text nur eine halb so gute Qualität auf wie Text B, erhält er</td>
<td>Benchmark-Text, d.h. Beispiel für einen durchschnittlichen Text, der bewertet wird mit 5 Punkte.</td>
<td>Weist ein Text doppelt so gute Qualität auf wie Text B, erhält er 10 Punkte.</td>
</tr>
</tbody>
</table>

Es können durchaus auch Punkte unter 5 oder über 20 vergeben werden, d.h. wenn ihr der Meinung seid, dass ein Text viermal so gut ist wie Text B, dann gebt ihr 40 Punkte. Tragt eure Bewertung bitte in die nachfolgende Tabelle ein. Falls Euch bei einer Bewertung etwas auffällt, was ihr später diskutieren wollt, um eventuell die Bewertung zu revidieren, dann macht euch bitte Notizen.
Tschüß Hotel Mama


**Skrifter från moderna språk (2001–2006)**
Published by the Department of Modern Languages, Umeå University


**PHONUM (1990–2005)**

2. Eva Strangert, Mattias Heldner & Peter Czigler (eds.), Studies Presented
to Claes-Christian Elert on the Occasion of his Seventieth Birthday.
1993.