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Considering Individual and Situational Variation in Modeling Writing Processes

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Writing processes vary individually and situationally. Writing process models that focus on *writing activities* cannot capture these variations. In this chapter, I present and discuss a new model which shifts the focus from activities during writing towards *factorial conditions* that influence *writing situations*. This way, the PROSIMS writing process model explicitly considers individual and situational variation in writing processes. It was developed within the scope of a research project of the same title (PROSIMS: Strategien und Routinen für **professionelles Schreiben in mehreren Sprachen**; Strategies and Routines for Professional Multilingual Writing). Based on 17 case studies with 13 multilingual students and four researchers, mainly at the University of Vienna, and tested in a survey, the model conceptualizes the writing process as a dynamic system with a certain range of influence factors on several levels. The chapter focuses on the theoretical background of the model while illustrating it with some examples from the case studies and providing additional insights from the survey, especially concerning the handling of language resources in writing.

Academic writing is a social and cognitive activity. It takes place in multiple contexts and implements a variety of genres and writing situations (Dengscherz, 2019). Scholars and students write to generate knowledge (Estrem, 2016) and/or to demonstrate knowledge, and to make research results, theories, and reflections accessible to their readers (Ehlich, 2018). Writers act against the background of their language and writing biographies, as well as of the traditions of institutions and discourse communities (Russell, 2010; Zenger and Pill, this volume) or instruction and reflection practices (see Anson in this volume, especially for digital contexts). They have to meet a broad variety of requirements and overcome several challenges (see also Castelló in this volume).

The complex act of writing has been described from various perspectives. Knorr (2019) suggests three categories of traditions in writing research: First, approaches from the angle of cognitive psychology, understanding writing mainly as a problem-solving activity (for example Beaugrande, 1984; Hayes, 2012; or Hayes & Flower, 1980). Second, approaches that focus on social contexts and discourse and describe writing as a situated activity in professional workplace contexts (like Beaufort, 2005; Beaufort & Iñesta, 2014; Jakobs 1997; or Pogner, 1997), and third, approaches that focus on writing development, competence and skills (e.g., Becker-Mrotzek and Schindler, 2007; Bereiter, 1980; Knappik, 2013; or Pohl, 2007; Steinhoff, 2007).

Each of these research traditions has provided valuable insights for the field. For covering the complexity of writing in a deeper, multi-faceted view on writing processes, intersections of these perspectives need to be integrated. Several studies may serve as successful examples for such integrations: Knappik (2018) combines a social perspective with a focus on writing development, Knorr (2019) has developed a “language-sensitive” model of writing competence in bundling together approaches from cognitive psychology, social discourse and writing development with a focus on the role of language in writing, and Adler-Kassner and Wardle (2015) give a multifaceted overview of insights into writing activities in their programmatic book on “threshold concepts” of writing, addressing writing from a variety of perspectives.

The PROSIMS writing process model described in this chapter is inspired by such intersecting viewpoints of writing. It is empirically based on 17 case studies on writing processes in multilingual academic contexts and, furthermore, has been tested in a quantitative survey at the Centre for Translation Studies (CTS) of the University of Vienna.

The model consists of three parts, each covering a specific perspective on writing situations occurring in the process. It seeks to apply multi-perspectivism and complexity by integrating cognitive and competence-oriented approaches as well as perspectives on writing as a situated activity. Additionally, it explicitly focuses on variation according to individual prerequisites, attitudes towards writing and personal preferences. The model focuses on academic text production in multilingual contexts and aims to conceptualize writing processes, with a special focus on individual and situational variation.

The PROSIMS writing process model is to some extent inspired by Dynamic Systems Theory (DST). Initially derived from natural science, DST addresses complex systems with a high number of interfering and interrelating factors (De Angelis & Jessner, 2012). In complex systems, changes are not predictable. Since the factors shaping the system interrelate, a change of one factor very likely leads to changes in other factors and so on. Since writing

processes can be regarded as complex systems in this sense (Jacobs & Perrin, 2014), individual behavior in text production cannot be forecasted (Risku & Windhager, 2015). The model addresses writing processes as dynamic systems by articulating and describing adjustments in specific situations.

Another important aspect in the PROSIMS project is multilingualism and the handling of language resources in the writing process. Language is central to all writing. However, the crucial role of language resources becomes especially obvious when it comes to writing in multilingual contexts: Writers might use their multilingual repertoires strategically as resources in the writing process. But how do they do that? How do they apply their language resources strategically to address heuristic and rhetorical requirements and challenges in writing situations? These are important research questions in the PROSIMS project. The PROSIMS writing process model aims at supporting the analysis of factors that contribute to individual multilingual writing behavior and the functional use of language resources in the writing process.

In this chapter, I first set out the theoretical and empirical background and provide information about the case studies and the survey conducted in the project. Then, the three parts of the PROSIMS writing process model are described in more detail. The first part of the model describes the general holistic view of the writing process, the second part zooms into a writing situation and focuses on factors shaping that specific situation, while the third part focuses on interrelations between the conditions of the situation and the strategies and routines applied by the writers, as well as their handling of language resources. Further, I present and discuss the quantitative results of the project, first in their relevance for testing the model, and, second, in eliciting additional information about the quantitative distribution of writing behavior that could be observed in the case studies, especially concerning the handling of language resources in multilingual writing settings. Limitations and desiderata for further research will be addressed in the closing section, along with scopes of application of the model.

The PROSIMS Project: Aims, Methodology, and Database

The PROSIMS project was conducted from May 2014 to October 2019 at the Centre for Translation Studies (CTS) of the University of Vienna and was third-party funded by the Austrian Science Fund FWF. PROSIMS is an acronym of the German project title “Strategien und Routinen für **Professionelles Schreiben in mehreren Sprachen**” (Strategies and Routines for Professional Multilingual Writing). The project refers to “professional writing” in multiple senses: First, it aims at writing tasks that simulate writing at the workplace

in focusing on audience awareness and various communication situations that might occur in workplace-settings. At the CTS, the students fulfil a broad range of short writing tasks during their studies that simulate order-specific writing, and, they engage with various genres (for example journalistic reports or commentaries, blog-texts, business letters, etc.). Second, “professional” in a broad sense includes academic writing in the job, not only in a narrow sense referring to research articles, monographs, and related genres but also to “supporting genres” (Swales & Feak, 2011) such as project reports. Third, “professional writing” refers to kinds of writing that afford extended writing expertise (for a detailed discussion see Dengscherz, 2019, pp. 37-86).

The PROSIMS project carried out an exploratory research study on authentic writing in multilingual academic contexts, and pursued several goals: Mainly, it aimed at a “thick description” (Geertz, 1973) of the writing behavior and the application of language resources by multilingual academic writers. It focused on individual challenges in writing and writer’s strategic ways in which they respond to these challenges. The empirical data were mainly elicited in case studies, applying screen-capturing and retrospective interviews. The data from the case studies were supplemented by an antecedent analysis of CTS students’ statements about their approaches to writing (Dengscherz & Steindl, 2016) and a final quantitative questionnaire screening with teachers, researchers and students at the CTS.

Theory Building, Modeling, and Methodological Background

The process of theory building in the PROSIMS project is inspired by Grounded Theory Methodology (GTM). The empirical base for the “grounded theory” in the PROSIMS project consists of 17 case studies. A “thick description” (Geertz, 1973) of the observations in the case studies was deeply interlinked with theory building. Since case studies are focused on the exploratory analysis of highly diverse authentic material, a declared inductive data processing of GTM is supposed to ensure a certain openness for even unexpected findings. Nevertheless, instead of applying the pure strain of GTM described by Glaser and Strauss (1967), it seemed more appropriate for the aims of the project to follow the more recent suggestions of Charmaz (2006) and Breuer (2009). While Glaser and Strauss (1967) recommend to largely exclude academic discourse and former findings from the current analysis, Charmaz (2006) and Breuer (2009) interpret the objective of openness in a more moderate way. Glaser and Strauss argue for a fundamental openness without being distracted by existing theories, models and claims of other researchers, whereas Charmaz and Breuer point out that it is not realistic

and would not even be desirable for a current analysis to ignore pre-existing knowledge of the field.

To avoid the risk of re-inventing the wheel in the case study analysis, it seems quite fortunate and necessary to draw on previous research and discussions in writing research discourse. Nevertheless, the claim for inductive openness is not to be neglected either. As a method for combining both aims, openness and theoretical awareness, Kruse (2015) suggests a stereoscopic “squinting hermeneutics” (“schielende Hermeneutik,” p. 363): The data can be viewed by one eye remaining as unprejudiced as possible, while the other eye scans it against the background of former research in the field (or categories developed in former phases of the analysis). Kruse focuses on interview analysis, but his suggestion of a “squinting” analysis proved to be useful for the entire case study analysis: Theory building evolved together with the analysis of the empirical data *and* in-depth investigation of the discourse of the field. For example, research on individual differences in writing behavior (Chandler, 1995; Keseling, 2004; Ortner, 2000; Wyllie, 2000) influenced the analysis of the case studies in that *differences* in writing processes were at the core of the analysis. Nevertheless, openness for similarities in writing processes was required as well.

The Empirical Data: Case Studies and a Survey

The empirical data relevant for the PROSIMS writing process model consist of case studies and a survey. While the case studies provided the base for the *development* of the model, the survey was used for *testing* the model. Seventeen multilingual writers (13 students and four researchers) participated in the case studies. The participants were chosen by theoretical sampling (Glaser & Strauss, 1967). The aim of the case studies was to gain insights into a broad range of writing situations in German, English, French, and Hungarian (see also the remarks on professional writing above). The participants were chosen subsequently according to their current writing projects and working languages. Another important aspect was their willingness to participate in the study. Since the participants allowed us to watch over their shoulders during writing and provided deep insights into their writing behavior, the participation in the study was also a question of trust. Most of the student participants (all from the University of Vienna, studying at the CTS, the German Department or the Institute for Culture and Social Anthropology) knew me from institutional contacts and lectures at the CTS and the German Department, the researchers (three from the CTS, another from a German academic institution) knew me as a colleague (for an overview over all participants in

the case studies and their institutional background as well as language biographies see Dengscherz, 2019, pp. 259-278).

The participants recorded their writing processes, or parts thereof, with the screen capturing software Snagit (Techsmith). The number and length of the screen capturing videos differ between the case studies: The shortest covers just a single half-hour video, while the most extensive one contains 25 videos adding up to 24 hours of writing process. All in all, 111 hours of screen capturing videos were analyzed in the project. The case studies focus on authentic writing assignments. In other words, the participants were working on texts that were independent from their participation in the project.

Therefore, the case studies cover a broad range of writing tasks and genres which can be clustered into four categories: first, *voluminous academic texts* such as term papers, research articles or a master's thesis; second, *short academic texts* like abstracts or components for a project report; third, *short texts with professional requirements*, for example commentaries or glosses; and fourth, *other texts* that draw on specific competences needed for academic writing, for example summaries or reflections. The case studies focused on individual writing. However, forms of collaboration could be observed in some of the cases (for detailed information on the writing tasks see Dengscherz, 2019, pp. 299-350). The case studies focus on text production in various genres that are demanding in a rhetorical and/or heuristic dimension. The writing tasks have in common, that they are all based on "focused writing" in the sense of Hicks and Perrin (2014) and not just on "writing by the way" (p. 237). The case studies explore writing with requirements that might lead to challenges for the writers.

The perception of specific demands and challenges varies between both writers and writing situations over the writing process (Dengscherz, 2019). An important focus of the PROSIMS project is the exploratory analysis of circumstances and influence factors on the perception of requirements that might lead to challenges—and of routines and strategies¹ (including the application of—multilingual—language resources) that address those requirements and challenges. The case study methodology was used to explore the interrelations of writing behavior, writing tasks, language and writing biogra-

1 I understand routines and strategies as partial activities or procedures in the writing process. While strategies explicitly and consciously focus on a specific problem/challenge that has to be solved/overcome or a goal that is to be achieved, routines are mainly habituated, often unconscious and less focused: they are rather forms of writing behavior that (seem to) have proven useful in the past and thus became individual habit. The distinction between routines and strategies is not a rigid one, though. To which extent an activity/a procedure in the writing process can be interpreted as a routine or a strategy, depends on the interrelation between the writer, the activity/procedure and its function in the writing process (Dengscherz, 2019).

phies, situational factors, etc. in specific writing situations. Therefore, a broad variety of writing tasks and genres is a crucial factor for the analysis—and not an obstacle. Though, such variety makes it necessary to forgo direct comparability between the individual writing behavior in the processes observed, it allows the analysis of individual *and* situational variation in the writing process.

Diversity in genres entails diversity in requirements in rhetorical and heuristic dimensions. Additionally, writers differ in their perception of requirements, their writing habits and their individual needs and abilities. The exploratory design of the case studies makes it possible to observe a broad range of writing situations with a broad variety of influence factors and interrelations.

The screen capturing videos are a rich data source. However, additional background information is needed for triangulation and for the interpretation of these data. A deeper understanding of writers' (choices of) acting in specific writing situations requires insights into their personal language and writing biographies, their attitudes towards writing in general and the specific writing tasks in particular, etc. To gain information about these aspects, we conducted interviews with a multiple focus: We addressed the writing processes observed in the screen capturing videos as well as the contexts of these writing processes, including language and writing biographies, individual attitudes towards writing and writing habits, institutional background, the specifics of the particular writing tasks and possible challenges perceived. By these means, writing behavior in situ (“Aktualverhalten”) could be interpreted against the background of the participants' writing habits (“Habitualverhalten,” Ortner, 2000).

In the analysis of the case studies, the interviews proved important for the interpretation of the screen capturing videos (Dengscherz, 2017). One example can be illustrative: Daniel (CS₂) centered his writing very close to the source texts. This could have misled a researcher to the conclusion that he found it difficult to develop his own ideas in a text. But the opposite was the case: Actually, Daniel loves to write poems and other genres in literature (in his L₁ Spanish as well as in his L₂ German).² He is quite a successful

2 Categorizing language repertoires into L₁ and L₂ is quite problematic since the categories mainly mirror views on multilingualism that are based on a monolingual paradigm (Canagarajah, 2012). Such categories cannot cover the diversity and complexity of individual language biographies (Blommaert, 2010; García & Kleyn, 2016; García & Wei, 2014). Nevertheless, those categories provide at least first proximations to the role that language resources play in the repertoire of a writer. For these reasons, I chose to use the terms L₁ and L₂ in this chapter—while, however, pointing to problems arising along those ways of categorizing (for an extensive analysis and discussion of “named languages” for language biographies and repertoires of the participants in the PROSIMS project see Dengscherz, 2019, pp. 523–568)

young writer—albeit outside university. However, for his homework texts in a course, he often gets the feedback that he exceeds the topic, misinterprets the task, or maybe does not even understand the source text. Daniel's efforts to rely closely on the source texts can be interpreted as a strategy to hold back his overwhelming fantasy and creativity. This, additionally, affects the revision of his texts: In the interview, Daniel talked a lot about revising his literary texts, whereas a "university text," once drafted, is pretty much a finished product for Daniel, and his attention shifts straight away to writing tasks more motivating for him: literature. Without this background information from the interview, the analysis of the screen capturing videos might have elicited inappropriate interpretations (Dengscherz, 2017).

During the analysis of the screen capturing videos together with the interviews, a second means for reconciliation and quality control was implemented. The data was analyzed in single case studies first, and these written case studies (32-150 pages long) were sent to the participants with a request for their opinion on the analysis of their writing behavior and their approaches to writing. Additionally, the participants were asked to answer questions that had arisen during the case study analysis. Sixteen of the 17 case studies were read and commented on by the participants. This step exceeds usual forms of quality control: The participants were integrated as partners in the research process, and the data could be refined recursively in repeated comparison of the single case studies integrating additional information from the participants, if needed, also during the data analysis. In a next and final step of the case study research, the single case studies were integrated in a cross-case analysis focused on systematic theory building.

At the end of the project, in October 2019, a quantitative survey with additional participants was carried out. On one hand, the questionnaire was used for testing the PROSIMS writing process model. On the other hand, it elicits information about the quantitative distribution of writing strategies that could be observed in the qualitative case studies. The questionnaire especially focuses on the handling of language(s) during the writing process and on the strategic use of multilingual resources.

The HRRC Concept: Insights into the Process of Integrated Analysis and Theory Building

While the survey was a separate step in the project, theory building and case study analysis were strongly interlinked. The development of the HRRC concept, which is a central theory component of the PROSIMS writing process model, may serve as an example for this interwoven process of theory build-

ing and analysis. The concept points to a double distinction: first, between (task-oriented) requirements and (writer- and process-oriented) challenges, and, second, between a heuristic and rhetorical level.

The HRRC concept was developed quite early in the project, mainly during the analysis of some single case studies (Dengscherz, 2018), especially the ones of the researchers Kerstin (CS12) and Lajos (CS5) and the student Andrea (CS1). The cases of Kerstin, Lajos, and Andrea illustrate that is useful to distinguish between requirements and challenges, and between a heuristic and a rhetorical level.

Kerstin had to write a 700-character abstract for a project proposal. When she started to draft her texts, she knew already exactly what she wanted to say. The heuristic challenges were quite low, because she had met them before, in a former writing process: while writing the proposal. The only challenge for her was to put her thoughts elegantly and eloquently into 700 characters which required a high-density text. Thus, the challenge Kerstin had to meet was merely a rhetorical one.

A similar pattern occurred in the case study with Lajos (CS5): He writes abstracts for planned conference contributions, in re-using material from his doctoral thesis. In the interview, he explicitly addresses the low heuristic demands of those texts for him and calls this writing “Verwurstelung” (stuffing, re-using like bits of meat in a sausage).

Andrea (CS1), in turn, met high challenges with a text that might be a routine genre for many experienced writers: a book review for an academic journal. She engaged with this genre for the first time in her life and perceived it as extremely challenging (to some extent because the text was to be published).

These examples show more than just differences between experienced and novice writers. In a closer look, they illustrate the importance of *task-related* preliminary work for the perception of challenges. The HRRC concept (and the entire PROSIMS writing process model) takes such task-related preliminary work into account. For later³ case studies, the HRRC concept provided already useful categories for analysis. Nevertheless, following the “squinting hermeneutics” described above, we tried to remain unprejudiced and open for new categories and refinements during the entire analysis. This way, step by step, the whole picture of the model was completed during the cross-case analysis.

3 The chronological numbering of the case studies refers to their first delivery of a screen capturing video, not to the time when a case study was completed. In fact, CS12 was already the second case study that could be completed (after CS2). Some of the participants delivered screen capturing videos over a long time (for example Andrea, CS1, over a year), others over a few days (for example Kerstin, CS12, or Teréz, CS17).

The PROSIMS Writing Process Model

To produce functional texts, writers address several requirements during the writing process. They develop ideas, reflect on connections between them, and (virtually) communicate with their readers about those ideas and connections. They find out what they want to say and put it in a linear macrostructure. They refine ideas in language(s) and juggle with interrelations between all those aims and aspects thereof. Writers carry out various activities during the writing process to meet the aims described.

Several models have focused on these mental and physical activities. Overviews of writing process models have been provided by Molitor-Lübbert (1996), Alamargot and Chanquoy (2001), Göpferich (2002), Heine (2010), Girgensohn and Sennewald (2012) or Heine (2021), each following different selection criteria and thus come to different selection of models. Some models have become quite influential for further research. Among these are the models of Hayes and Flower (1980), Bereiter and Scardamalia (1987), Baer et al. (1995), Hayes (1996 and 2012) or Göpferich (2002). While the respective focus of writing process models differs, they have (at least) one aspect in common: They aim to cover *supra-individual commonalities* of writing and the sequencing of activities.⁴

Other approaches (like Bridwell-Bowles et al., 1987; Chandler, 1995; Keseling 2004; Lange 2012; Ortner 2000; or Wyllie 2000) shift the focus to *individual differences* in writing processes concerning activities, strategies applied, and the role and succession of these strategies during the writing process. These approaches, again, have in common that they point out individual variation—and refrain from designing writing process *models*.

The PROSIMS writing process model, in turn, tries to cover both aims: It takes individual differences and situational variation into consideration *and* it aims to process them in a model. To make this possible, the model shifts the focus from labeling writing *activities* to exploring specific *contextual and situational conditions*. Writing activities, then, can be analyzed in interrelation with those situational conditions and other (biographical, institutional, etc.) contexts. In the following subsections, the three parts of the PROSIMS writing process model are described in detail.

4 Writing process models sometimes have been misunderstood concerning the sequencing of the activities concerned. For example, in German speaking countries, the Hayes & Flower (1980) model was whispered down from academic discourse to curricula until the activities of planning, translating and reviewing were interpreted as “phases” of the writing process (see Baurmann, 1995, p. 52).

The Situations-Sequence Model

The situation-sequence model (Figure 6.1) conceptualizes the writing process as a sequence of *writing situations*, each shaped by specific heuristic and rhetorical requirements and challenges (HRRC)—instead of addressing a sequence of specific writing activities. Writing *activities* come into play where the writing situations are linked together: Through applying strategies and routines, writers change the current writing situation and shape those that follow. Whatever a writer does in a specific writing situation alters the conditions of the situation and creates a new one. Therefore, writing processes can be considered as a succession of altering writing situations, which are linked by writers' acting. The dynamics of writing vary from writer to writer and from writing process to writing process. The PROSIMS writing process model focuses on task-driven and *successful* writing with the objective to lead to an effective text at the end of the writing process. (This does not mean that every writing process reaches this end, and that every text at the end is a high-quality text that meets all requirements it should. However, the writing process *aims* at this goal, and writing situations are geared for it.)

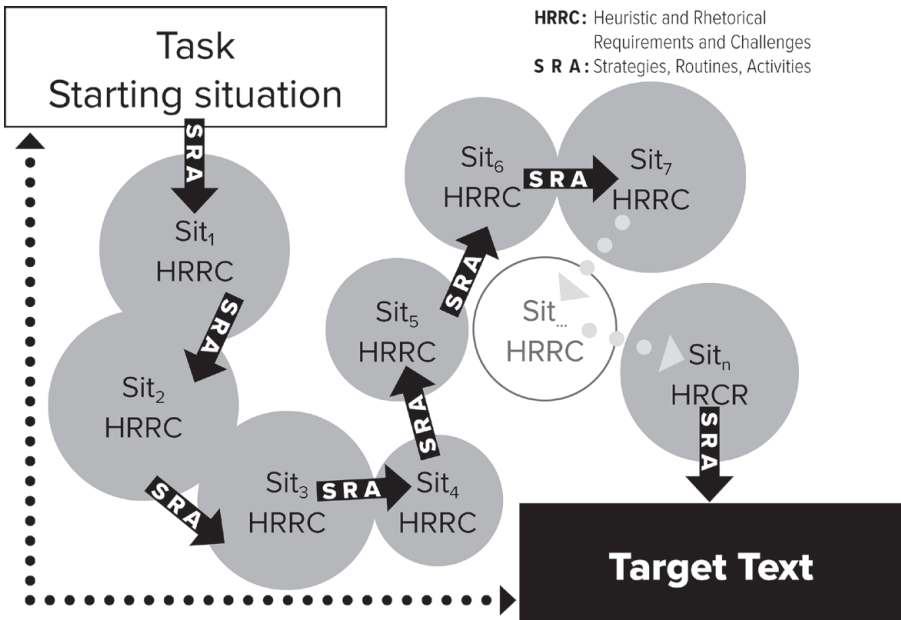


Figure 6.1. PROSIMS writing process model part 1—the situations-sequence model.⁵

⁵ A German version of the model was initially published in Dengerschz (2019). In

From the perspective of writing success and efficacy, functional writing routines and strategies can be considered as activities that alter a specific writing situation in a direction the writer is comfortable with. In other words, successful, efficient writing means creating writing situations the writer *likes* to enter and to deal with. From this perspective, processual success means that the writer shapes situations in a way (s)he is fine with, and this way navigates through the writing process. The criteria that distinguish a *welcome* situation from a situation from an *unwelcome* one differ individually, and, the activities that lead to the respective next situation differ situationally. The model deliberately does not answer the question *which* situations are convenient to enter or *which* activities are carried out during writing. Situational preferences vary individually, and activities vary according to the conditions of the writing situations and the aims, experience and needs of individual writers.

The situations-sequence model determines neither specific writing activities nor the number of writing situations in a writing process. It addresses the writing process in a very general manner. To learn more about the conditions of writing situations and their respective interrelating influence factors, we need to zoom into the situation. And this is what the situation-zoom model does.

The Situation-zoom Model

The situation-zoom model (Figure 6.2) focuses on the influence factors that shape the conditions of a writing situation. At the core of the situation are heuristic and/or rhetorical requirements and/or challenges (HRRC). Task requirements and other factors have an impact on these HRRC. Further environmental conditions frame the situation and its conditions.

We met the HRRC concept already with the examples of Kerstin, Lajos, and Andrea (in the section “The HRRC Concept: Insights into the Process of Integrated Analysis and Theory Building”). Its double distinction between a heuristic and a rhetorical dimension and between requirements and challenges is a core concept for all three parts of the PROSIMS writing process model. Therefore, the concept will be discussed in detail now.

The heuristic dimension refers to the development of thoughts through writing, the rhetoric dimension is focused on the presentation of those thoughts for a specific audience. In other words: The writers work *on their own understanding* of a topic in the heuristic dimension, whereas in the rhetorical dimension they try to make their insights *understandable for oth-*

this chapter, the PROSIMS writing process model is published for the first time in English.

ers. The heuristic and the rhetorical dimensions must not be equated with content and language. In fact, writers work with language in both dimensions. But they can do it in different ways. The heuristic dimension aims at knowledge transforming in the sense of Bereiter and Scardamalia (1987) while the rhetoric dimension is focused on *knowledge crafting* in the sense of Kellogg (2008).

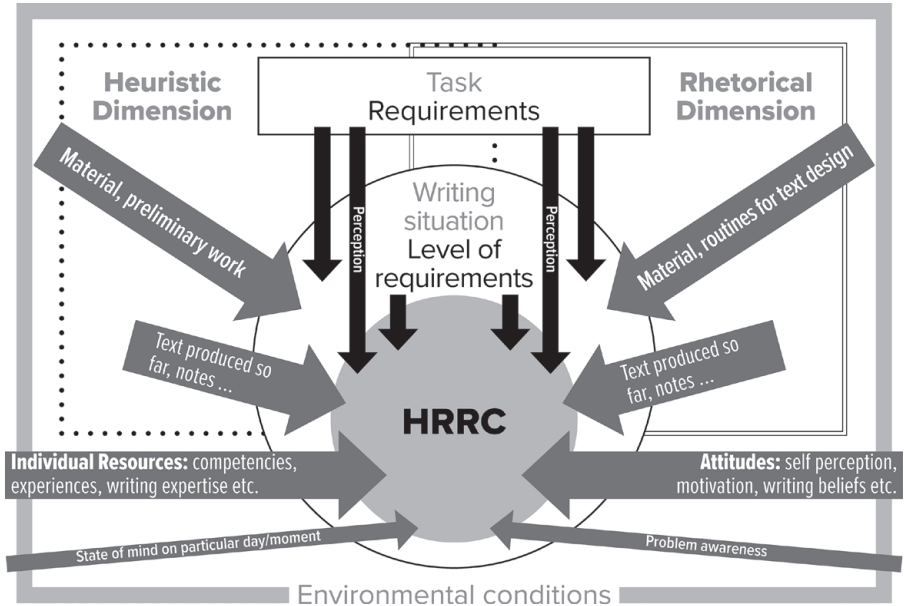


Figure 6.2. PROSIMS writing process model part 2—the situation-zoom model.

The HRRC concept explicitly addresses the writing process in situ (instead of focusing on writing development or writing competence, as in Kellogg, 2008). However, writing development and writers' competences implicitly become important when it comes to the second distinction: the distinction between requirements and challenges. *Requirements* refer to the level of the writing task, to the needs of the *product*, the *text* to be written, whereas *challenges* depend on *the writers' perception* of these requirements. Their perception partly depends on the level of requirements in a specific writing situation. And the level of requirements, in turn, depends on the writing task as well as on preliminary work (in the heuristic and the rhetorical dimension) and on several other factors like individual resources (competencies, experiences, writing expertise, etc.), attitudes (self-perception, motivation, writing beliefs, etc.), problem awareness and the writer's state of mind on the day or in the moment.

The distinctions in the HRRC concept help to understand writing behavior in its functional dimensions and to explain individual and situational variation. Furthermore, the HRRC concept helps to distinguish between strategies and routines: Requirements can often be addressed through routines, whereas strategies are usually needed for overcoming challenges. While requirements refer to the product level, challenges refer to the writing situation and the writers' perceptions. Therefore, challenges do not only depend on the demands of the target text but also on the material, experience and competence that writers bring into a writing situation. In some cases, even high text requirements on the product level do not lead to the perception of difficulties, while in other cases even seemingly low text requirements can be perceived as quite challenging. To paraphrase Wrobel (1995, p. 23), in extreme cases, a holiday postcard can become a writing problem, and a novel routine.

In the writing situation, the factors that shape this situation and the writer's background as well as activities interact with each other. The third part of the model, the situation-interaction model, focuses on these interactions.

The Situation-interaction Model

The distinction between requirements and challenges helps to analyze writers' actions in the process, especially when it comes to strategies and routines and the (strategic) handling of language resources in (multilingual) writing processes.⁶ In the third part of the model, the situations-interaction model, we take a closer look at the factors that determine the interrelations between writing activities and other factors in a specific writing situation. The situation-interaction model (Figure 6.3) takes up the HRRC concept, again, from another perspective and locates it in its interactions in the writing situation.

The situation-interaction model conceptualizes the interrelation of writing activities and other factors shaping a writing situation. Writing behavior is contextualized in the writers' verbal and strategy repertoire as well as

6 The handling of language resources—and maybe of more than one language during writing—is especially important for writing in an L2. However, in academic writing as well as other forms of professional/demanding writing, the rhetorical text design often affords kinds of language use that differs from vernacular L1. Against this background, Knorr and Pogner (2015) point out that academic language can be interpreted as a kind of foreign language for everybody. The HRRC concept points to the possibility of separating rhetorical text design and heuristic aspects when this perceived as necessary or helpful by the writers.

in writing habits on the one side, and the writing tasks and its requirements on the other side. While repertoires and habits are embedded into individual approaches and individual needs in general, the writing task is embedded into an institutional environment. The tasks' general requirements lead to specific levels of requirements in specific writing situations. The interaction between HRRC and writing behavior (such as routines, strategies or handling of language/s) is further influenced by motivation and individual goals within the writing situation as well as by writing experience⁷ and suggestions of guidebooks and writing didactics. (This does not mean that the writers *follow* these suggestions. Actually, they might oppose them as well). Thus, the model covers interrelations at several levels: some referring to the specific writing situation, others to more general influence factors on the writing process.

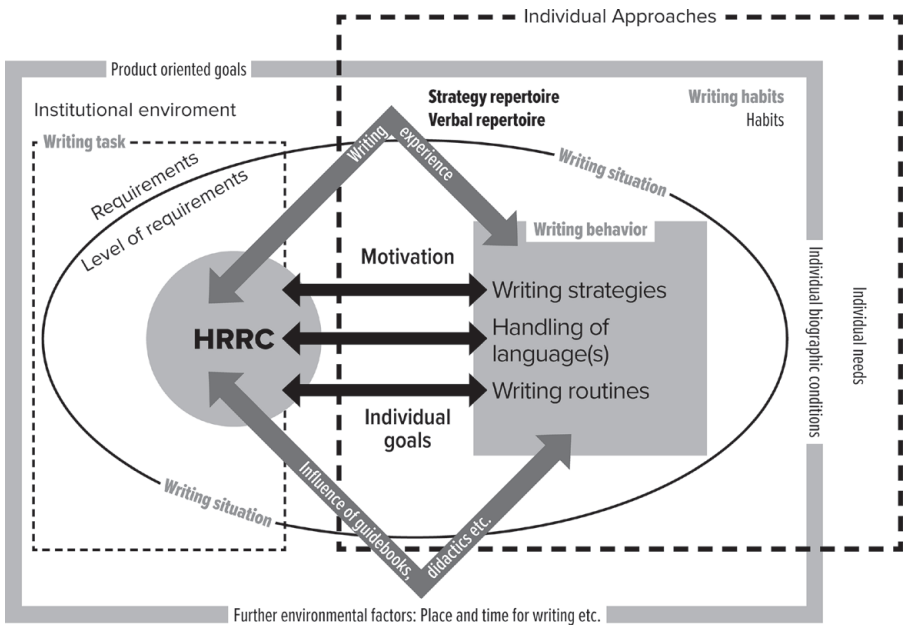


Figure 6.3. PROSIMS writing process model part 3—the situation-interaction model.

7 Writing experience refers to previous writing processes, to the perceptions and the memories that come along with them. It refers to transferable knowledge as well as to emotional factors. Reflecting writing experience is an important source for the development of strategy repertoires: writers have learned about their strengths and weaknesses as well as their preferences for specific kinds of writing situations. On this base, they can apply their strategies and routines in the writing process.

The case studies provide rich material with examples for individual preferences, for instance concerning the field of tension between spontaneous writing in the flow, the (feeling of) security that is provided by planning and the need for revision of draft versions. Some writers rely on writing in the flow and the feeling of discovering their own thoughts through writing. Carmen (CS11), for example, hates revising when it affects higher order concerns. However, this does not mean that she would apply low quality standards for her texts. On the contrary, if she considers a text part or entire text as not satisfying, she re-writes it. Her re-writing can be interpreted as an especially radical form of revision that effects even “highest order concerns” (Dengscherz, 2019, p. 498).

With her writing habits, Carmen shapes writing situations that offer starting points for following ones she can rely on and meet her preferences. A first version, even if not yet satisfying, allows her to work on some aspects on the text while writing spontaneously in the flow. If she writes a second version, the first one serves as a starting point for a mental text plan that will be revised during writing. Since Carmen likes formulating and writes quickly, her writing habits work efficiently for her.

Manuel (CS10), another student and very experienced writer (he came back to university after approximately 20 years of working life), has quite different habits and preferences. He starts with rough draft versions of thoughts, which he revises and refines in adding details step by step. In contrast to Carmen, revision is a main part of his text production. It often takes up to 20 steps until he has reached the final version of a single sentence.

Nevertheless, he shares some similarities with Carmen: He likes to formulate sentences and text passages in detail, the sentences and texts parts early look complete and elaborated (in the interview, he states that the visual aesthetic is important for him). Both, Carmen and Manuel, write quickly and formulate their text from the beginning in the target language (on the screen capturing videos, this is the L2 English for Carmen and L2 German for Manuel).

While Carmen and Manuel enjoy writing, Andrea (CS1) perceives it as very difficult, not only in her L2 German but also in her L1 Hungarian. She *is* able to produce functional texts but it takes a lot of time and energy, and she applies multiple strategies to reach her goals. One of those strategies is to split heuristic and rhetorical demands of the text. Unlike Carmen and Manuel, she considers formulating as very difficult and energy-consuming and tries to minimize the formulating expense. Therefore, she works a lot with plans and notes, and leaves formulating for the final version of a text or paragraph. For her notes, she often draws on multilingual language resources, especially

when she is working on a complex heuristic problem and tries to find out what exactly she wants to say.

As we see, writers apply their repertoires of strategies and routines according to their competences and preferences and the needs of the actual situation (for example drafting and fixing meaning, working on a complex heuristic problem or elaborating thoughts, in a next version or by adding details). For example, it makes a difference if a writer likes or dislikes phrasing in the target languages: Some strategies focus on reducing this phrasing in early phases or to make it easier through preliminary work. The PROSIMS writing process model aims at covering the complex interrelations between the requirements and challenges of writing situations in their specific context—and in the context of individual needs, habits and preferences (for reflections on the complexity of professional learning see also Melonashi et al. in this volume).

The Quantitative Dimension: A Survey on Writing Behavior at the CTS

The quantitative survey, which was conducted at the end of the project, fulfilled mainly two goals: First, it was used for testing the model, especially concerning the relevance of influence factors on writing behavior. Second, it aimed at eliciting quantitative information about writing strategies and routines that could be observed in the case studies, especially concerning the handling of languages in the writing process.

Via the German platform “Umfrage online,” the questionnaire was sent to students, teachers and researchers at the CTS in October 2019. Since multilingual writing was at the core of the project, the context of translation studies and transcultural communication was considered as appropriate for the survey because students as well as most teachers and researchers write in multiple working languages. Additionally, they share a disciplinary context which makes the results more comparable. While in the case studies, comparability was side-lined in favor of a preferably broad range of writing situations as well as diverse individual backgrounds, comparability is more important in the survey

However, the survey does not aim at comparing patterns of writing behavior between groups of writers (like students or researchers), since the case study analysis illustrated that writing experience cannot be reduced to the categories of students or teacher/researcher. More experienced and less experienced writers can be found in both groups (Dengscherz, 2019). Instead, the

survey is interested in the overall quantitative distribution of writing behavior that could be observed in the case studies.

Three hundred ninety-six persons participated in the survey. Three hundred ten of them completed the entire questionnaire. The largest groups of the participants are students in the BA program (49.4%) and in the MA program (36.1%). Additionally, teachers (10.3%), researchers (6.9%), and tutors (1.3%) at the CTS participated in the survey. Some of the participants (7%) belong to more than one of those groups (they are, for example, MA students and tutors, or teachers and researchers). Two hundred thirty-one participants affirmed that in the past year they had been engaged in forms of professional writing that the PROSIMS project was interested in (such as academic writing or text production in other demanding genres, see “The HRRC Concept: Insights into the Process of Integrated Analysis and Theory Building”). The tables hereafter focus on the answers of those 231 participants.

The following sections summarize important results from this survey. First, I focus on testing the model, thus on results concerning influence factors on writing behavior. Second, I analyze the participants’ answers concerning the handling of language resources in multilingual writing contexts and compare them with observations from the case studies. Based on this triangulation of data, I reflect on multilingual repertoires as strategic resources in writing processes.

Testing the Model: Influence Factors on Writing Behavior

For testing the PROSIMS writing process model, the survey participants were asked to rate the impact of several factors influencing their writing. The provided response options are related to factors occurring in the PROSIMS writing process model. Though the perception of these factors varies individually, the results show clearly that the factors mentioned in the model are influential for most writers (see Table 6.1).

The main results of this part of the survey can be summarized as follows. First, most participants seem to be aware of influence factors on their writing behavior: The option “I can’t tell” was hardly taken. Second, the influence factors mentioned in the model and listed in the questionnaire seem to be accurate for most writers. Only few of them noted that a factor had no (or little) influence on their writing. The factors were mostly rated to be of strong (or at least moderate) influence (between 1.29 and 1.97 with a maximum standard deviation of 0.85). Further, the questionnaire offered the possibility of including additional influence factors, but the participants hardly made any use of this option.

Table 6.1. Survey Participants Rate the Influence of Different Factors on their Writing Behavior*

Provided response options	Strong influence (1)	Moderate influence (2)	Little influence (3)	No influence (4)	I can't tell	Average score	SD
	<i>numbers in %</i>					Ø	±
Requirements of the target text	74.89	22.08	1.30	1.30	0.43	1.29	0.56
Frame-work conditions (for example time)	63.64	26.84	7.79	1.73	--	1.48	0.72
Previous experience (with the genre)	58.08	34.93	5.24	0.87	0.88	1.48	0.64
Anticipated difficulties concerning the target text	46.29	36.68	13.10	0.87	3.06	1.58	0.74
Own attitudes towards writing	54.82	32.02	7.02	3.95	2.19	1.59	0.79
Notes and text produced so far	47.19	39.39	11.69	1.30	0.43	1.67	0.73
State of mind at a day/moment	48.48	32.02	16.02	1.74	1.74	1.70	0.80
Importance of the target text	45.89	35.50	13.85	4.33	0.43	1.77	0.85
Already existing/previous elaborated material	33.04	51.30	12.17	1.30	2.19	1.81	0.69
Routines: I do what has proven successful in previous writing situations	30.43	42.17	17.83	4.78	4.79	1.97	0.84

* 1=strong influence; 4=no influence; n=231

It can be concluded that the qualitative and the quantitative research led to matching results. According to the participants in the survey, the PROSIMS writing model seems to cover the most important influence factors on writing situations. Nevertheless, it would be interesting to test the validity of the model by implementing it in further contexts and to carry out additional research.

Patterns in the Handling of Language Resources

Writing in multilingual contexts allows for various ways of handling language(s) in the writing process (see also Lange, 2012, and Machura, this volume). In the case studies, some patterns of strategic application of language resources could be observed. Based on these findings, the participants in the survey were asked about the ways they apply their language resources in second language writing settings. The language command expected from students at the CTS is quite high (minimum B2 for their working languages, for German and English it is C1). Most of them prefer to write immediately in the target language. A quarter of the participants stated to use only the target language in writing, an even larger group (40.2%) rely on the target language whenever possible. However, nearly half of the group (44.6%) confirmed to take notes in different languages, and a third of the participants shifts to another language when they cannot express in the target language what they want to say. Nearly a quarter of the writers (23.7%) indicated to use their entire language repertoire (see Table 6.2).

Table 6.2. Individual Variation in the Handling of Language Resources: “Which language(s) do you use when writing in a foreign/second language?” (Multiple Answers Allowed)

	%
Only the target language.	25.0
The target language whenever possible.	40.2
I like to take notes in different languages.	44.6
I shift to another language when I can't express in the target language what I want to say.	31.3
I use my entire language repertoire for writing.	23.7
It varies.	8.9
I can't tell. I did not observe myself consciously.	2.2

The participants seem to be quite aware of their handling of languages in the writing process, and their language use varies. Some of them (8.9%) explic-

itly state this variation, and most writers chose more than one of the answering options. As observed in the case studies: Individual variation is only one side of the coin—situational variation is just as important. Therefore, another question of the survey focused more specifically on writing situations. The participants were asked, in which situations they apply language resources from other languages than the target language. Table 6.3 summarizes their answers.

Table 6.3. Situational Variation in the Handling of Language Resources: “In which situations do you apply other languages than the target language?” (Multiple Answers Allowed)

	%
For investigation.	80.4
For gaining ideas.	71.4
When developing the structure of the text.	29.2
When I use writing to ponder a difficult issue.	31.3
When I have difficulties to express my thoughts in the target language.	63.1
Other.	6.0

Investigation is the most common option (80.4%) for the use of another language than the target language. Similarly, in the case studies, even writers who tried to write entirely in the target language, *did* take advantage of their multilingual repertoire for investigation. Further, writers make use of multilingual resources for gaining ideas (71.4%), for developing the macrostructure of the text (29.2%) or for thinking over a complex problem (39.9%). Further, a large majority of the participants (63.1%) stated that they shift to another language when they cannot express in the target language what they want to say.

The writers’ choice of language resources depends to some extent on individual attitudes. Individual attitudes towards multilingual writing and their own multilingual repertoires are an important aspect: In the case studies, it became obvious that some writers try to “switch” to the target language entirely and get confused when alternating between languages, while others experience a creative potential in working multilingually.

Further, situational foci are important. For a deeper understanding of the strategic, functional handling of language resources the HRRC concept is helpful. In the case studies, it could be observed that heuristic and rhetorical aspects were sometimes addressed separately. For overcoming heuristic or rhetorical challenges, it proved a reasonable strategy for some writers to single out either heuristic or rhetorical aspects and address them specifically while ignoring other problems of the text in the meantime. When working

on complex heuristic problems, some writers largely leave aside the rhetorical requirements of the target text (as recommended by Elbow as early as 1973). When those writers focus explicitly on the epistemic-heuristic function of writing (Molitor, 1985), on knowledge transforming and knowledge making during writing, they do not address an external audience in the first place. Draft versions need not be accessible and understandable for an external audience, the drafting rather enables the writers to take further steps with their texts. This opens spaces for translanguaging (García & Kleyn, 2016; García & Wei, 2014) and other forms of multilingual and translingual writing.

This does not necessarily mean that all writers occupy translingual spaces or separate heuristic and rhetorical requirements at all. In the case studies, some writers disassemble challenges in another way: They break down complex heuristic challenges into smaller parts (instead of separating them from rhetorical requirements). Manuel, for example, adds details step by step, and Carmen elaborates thoughts in writing a new version of a paragraph (or even an entire text), if necessary. Some writers, like Lajos or Manuel, explicitly write everything in the target language, even when focused on heuristic aspects and/or taking notes.

In most cases, however, multilingual and translingual strategies could be observed. Some writers used to write multilingual text passages, others took notes in their L1, and one of the participants (Andrea, CS1) “invented” a special orthography for notes in Hungarian which was compatible with German keyboard settings (she wrote her MA thesis in German but often took notes in Hungarian). Andrea reduces formulating (in the target language) to a minimum.⁸ In her multilingual notes, Andrea applies specialist terminology in the target language (German), embedded in multilingual or Hungarian sentences (the syntax mainly in Hungarian). Andrea types economically, sparing characters (often using abbreviations or switching to another language for a shorter word; for example, writing “done” instead of the German “erledigt” or the Hungarian “elvégezett”).

Multilingual strategies are valued differently by the writers, depending on their focus on heuristic or rhetorical aspects. Those writers who applied multilingual or translingual strategies in the writing process, appreciated them when working on heuristic or macrostructural aspects of their texts. When focused on the heuristic dimension, multilingual and translingual writing tends to be perceived as a free decision, for example a strategy for openness

8 When it comes to the final version, even Andrea tries to phrase everything immediately in the target language, using online dictionaries and drawing on her notes. If she cannot find the right words, she leaves a gap, uses a related word in the target language or some (Hungarian or multilingual) hints on what should be said at this point.

and creativity. When it comes to rhetorical questions of the text design, in turn, the case study participants mostly prefer to formulate in the target language—if their language command allows it (Dengscherz, 2019). The writers shift to another language when they have no other choice, thus, when they are not able to express their ideas in the target language. While multilingual notes and drafts that focus on the heuristic dimension of the text production are an individual strategy of those writers who deliberately opt to employ them, code shifting while addressing the rhetorical aspects of the target text is rather perceived as a “provisional prosthesis,” a temporary aid for dealing with the unfortunate lack of language proficiency: a problem-solving strategy for a problem the writers would prefer not to have in the first place (Dengscherz, 2019; 2020).

Based on these observations in the cased studies, the participants of the survey were asked explicitly about the functions of applying language resources beyond the target language. Most of the writers point to reasons of “security” (51.2%), or creativity, in pointing out that they gain different ideas in different languages (54.8%), or feelings of “freedom” when they can use all language resources that come to their mind (51.2%). The need for compensation is stated by a third of the participants (33.9). Additionally, a smaller group of participants (7.1%) sometimes deliberately writes multilingual texts (see Table 6.4). In an open answer box, the participants were encouraged to elaborate the category “other”: They referred to spontaneity and to the precision of expressions on the one hand, and to maintaining the writing flow or silencing their inner critic on the other hand. Additionally, they stated variation according to audience or genre.

Table 6.4. Functions of Using Other Language/s than the Target Language in Writing (Multiple Answers Allowed)

	%
I choose a language in which I feel secure.	51.2
I have different ideas in different languages.	54.8
I feel free when I can use all languages that come to my mind.	51.2
I would prefer to use the target language only but this does not always work (at once).	33.9
I write deliberately multilingual texts.	7.1
Other.	6

All in all, the survey complemented observations from the case studies with information about their quantitative distribution. The survey results

can be interpreted best when compared to the “thick description” of the case studies and the theoretical insights in the PROSIMS writing process model (and HRRC concept). Together, the theory development, the quantitative case studies and the quantitative data make the whole of the project results concerning individual and situational variation in the handling of multilingual language resources in writing.

Conclusion and Outlook

The PROSIMS writing process model supports the analysis of writing activities in the context of the writing situation and its specific conditions. The model addresses writers’ actions systematically on context levels: First, it locates writing situations in the context of the writing process, and, second, it conceptualizes heuristic and rhetorical requirements and challenges in the context of writing situations, writing tasks, institutional and biographical factors, etc.

In its focus on factorial interrelations in writing situations, the model supports a deeper understanding of writing processes in their individual and situational variation. Activities, such as strategies or routines, meet specific heuristic/rhetorical requirements/challenges (HRRC) in writing situations. The PROSIMS writing process model aims at the comprehensibility of variations in writing behavior, since it provides a theoretical base for the analysis of individual strategies, routines, and applications of language resources in their functionality.

Based on empirical data from 17 case studies with students and researchers, the three parts of the model draw on “thick descriptions” (in the sense of Geertz, 1973; for the entire description of the case studies see Dengscherz, 2019) of situational factors in their context and delve step by step into the factorial interrelations in writing situations. While the first part of the model provides a rough sketch of the writing process as a sequence of writing situations that are interlinked by writers’ actions, the second part zooms into the writing situation and points out influence factors shaping that specific situation. The writing process is conceptualized as a dynamic system in which the altering of one factor affects several other factors as well. Against this background, the third part of the model focuses on the interrelations between writing activities and the context factors of the writing situation.

The PROSIMS writing process model addresses (epistemic-heuristic) writing processes in quite a general way and is meant to be applicable to various contexts. The empirical base of the model covers a broad range of writing situations and writing tasks. However, they still present just a fraction of all possible writing situations. Therefore, the following limitations should be

taken into account: First, the case studies are focused on writing in academic contexts. Second, they are focused on writing in specific disciplines of the humanities (mainly translation studies). Third, the case studies are focused on quite successful multilingual writers. “Successful” is interpreted as writing that leads to functional texts in the end. While, of course, also successful writers may perceive difficulties and challenges, they can rely on their strategy repertoire for overcoming those difficulties and challenges. Fourth, while the model was tested in a survey at the CTS, the questionnaire data does not claim to be representative for other contexts and domains. The survey carried out can be regarded as an example of how the model can be used for further research.

In view of these limitations, it would be desirable to test the model for further contexts, for example in supervision situations (as described by Ankersborg and Pogner, this volume), or for writing in other disciplines or beyond academia, or for different groups of writers (for example writers that struggle with writing block and thus do not come to a target text at all). Further research will be needed to find out to what extent the model can be transferred to those contexts, and how it could or should be adapted for them. Thus, the model provides several starting points for further research. If the model is to be applied to collaborative writing, researchers have to consider that the conditions of the writing situation are even more complex when it comes to simultaneous collaborative writing. The other writers in the group shape the writing situations with their competences, attitudes, and preferences as well as their repertoire of strategies and routines. Their approaches are interconnected in the joint writing process. When applied to collaborative writing, the model can build a base for reflecting the different perspectives of individual writers in the group that collaborates. Modes of collaboration can be interpreted as factors that shape the specific writing situation, and a writing situation might be or feel different for every single writer that is part of the group. The model can serve as base for reflecting and discussing these different perceptions and help negotiating modes of collaboration that work best for the specific group.

Overall, the PROSIMS writing process model is designed to support a closer look into strategies and routines applied in writing situations. It aims at perceiving them in their functionality for specific aims that are important for individual writers at particular moments in the writing process. Though writing behavior is not predictable, it is not random either. Addressing individual writing activities in their situational functionality against the background of additional context factors leads to a deeper understanding of the individual and situational variation in writing processes. Such a deeper understanding, again, is helpful for writing support and didactics, especially for the reflection

of individual writing habits in interrelation with their specific functions in writing situations. In defining factors that influence individual writing activities, and conditions that lead to challenges, the model helps to analyze the specific nature of situational challenges against the background of individual needs and attitudes. This way, the PROSIMS writing process model supports the reflection of strategies that might be useful for overcoming these challenges in the writing process.

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