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Writer's overload: A multifaceted concept and its clarification

Abstract

Many problems student writers are faced with can be understood as writer's overload, the inability to tackle the high and complex concurrent demands of the writing process. In the present paper, we spell out multiple notions of writer's overload from the perspectives of cognitive, educational, and sociocultural psychology in order to provide faculty from all disciplines with some background to understand their students' writing problems. Starting from the Scholarship of Teaching and Learning approach, our aim is to provide teachers with ideas on how they can change crucial aspects of learning activities in their classes and of their teaching practice and study how this affects learning and writing in order to advance the teaching of writing.

Keywords

writer's overload; student writing; scholarship of teaching and learning; writer's block

1 Introduction

Writing research and writing consultation in higher education are interdisciplinary fields and still in need of both theoretical and empirical research. Recent developments place emphasis on small-scale research, for instance in teaching and writing consultation practice. The Scholarship of Teaching and Learning (SoTL) movement provides a particularly helpful frame for this research. To put it very briefly, SoTL encourages faculty to examine their teaching practices and student learning via scholarly research, share their findings with others from the same or other fields, and use the results to improve learning and teaching in their classes, pushing small-scale research beyond less systematic observation and reflection. SoTL focuses on quick feedback circles of practice-related questions, systematic (mostly empirical) research and theoretical reflection, and change of practice.

Being a ubiquitous, central, important, and domain-specific practice, writing is a predestined topic of SoTL research. Such SoTL research enterprises are not strictly disciplinary¹ and thus will often transgress the borders of a researcher's native field concerning both methods and concepts.

In the present paper, we address a particularly interesting idea, writer's overload. Whereas many early discussions on the teaching of writing focused on writer's block, the

1 They are not interdisciplinary either, but that's a different question.

experience to be stuck in thinking and writing for quite a long and (mostly) unproductive time, recent discussions in the community have also come up with the idea of writer's overload (see Ruhmann, 2014). Most of us will understand the metaphorical meaning of writer's overload, and there is nothing to be said against such an understanding in regulating our own writing. However, when it comes to teaching and consultation, it is helpful, if not necessary, to understand the phenomenon more fully. We surmise that such knowledge will enrich writing consultation, add to the understanding of the writing practices as well as difficulties of students, help shaping teaching and consultation practice so that overload becomes less likely or less pronounced, and, importantly, focus research in SoTL on particularly significant problems and levers so that faculty can improve learning and teaching in their classes.

Writer's overload may be an everyday phenomenon frequently experienced by students and faculty, but it is not a unified concept. In the following, we will spell out different basic meanings of writer's overload, and ask how these can be meaningfully included into SoTL studies which may help to uncover specific aspects of overload as well as improve learning and teaching. The frames are working memory models from experimental psychology, cognitive load theory from educational psychology, self-regulation models from motivational psychology, and sociocultural psychology with its focus on the way persons may divide out different parts of difficult activities in close interaction.

Our discussion will focus on insights and findings which we assume to be of particular value for practice in the teaching of writing, writing consultation, and SoTL for all disciplines. We do not attempt to give an overview of the respective disciplinary knowledge but chose content for which the evidence is particularly impressive, or which has straightforward consequences for writing-related teaching practices or the understanding of learning and teaching to write. We will also point out qualitative as well as quantitative methods and instruments that are helpful to study writer's overload. By contrast, directly instigating changes in writing-related practices is not our primary goal.

Our approach is possibly helpful for faculty from all different disciplines or study programs, even without them adopting the SoTL perspective. However, we would like to see it also as a positive contribution to the SoTL framework, whose value for fostering improvement of learning and teaching and discourse about both is still somewhat underrated – especially when it comes to writing as a highly discipline-specific practice.

2 Memory and attention overload

College-level writing is an exceptionally demanding task, much more difficult than reading or learning in general. Although this seems to be a trivial message to many writers, its importance is seldom recognized in discussions of student writing outside research. Beyond doubt, exhausting the resources of working memory and executive attention is one major problem in advanced composition and leads to flawed texts. Many models of academic writing, beginning with Flower and Hayes (1980), have included attention and its depletion (for an overview see Olive, 2012).

Working memory and executive attention are very limited resources. Only a few items can be held active at the same time, and this requires active effort. In an important com-

ponential model of working memory, which is part and parcel of several writing models, Baddeley (e.g., 2001) argued for several subsystems in which verbal, visuospatial, and multimodal information such as sentences, visualizations, and abstract ideas can be stored and upheld by repetition. They are controlled by a limited-capacity attentional supervisor, the central executive, which focuses, divides, and switches attention.

How writing spends so much working memory or attentional resources has been spelled out in many empirical studies. To begin, writers have to keep what they want to say – their ideas – present, so as not to forget them while they put them into words and write these down.² Advanced writers have to keep different ideas active at the same time: advanced writing presupposes that content-, author-, and reader-related ideas are present simultaneously.

In addition, writing consists of different subprocesses, such as planning, text generation and reviewing. Writers have to quickly and recursively change between them. This demands executive processes which are responsible for combining different activities into a whole, focusing attention onto the currently relevant aspects, and inhibiting alternative activities. At least for more advanced writers, executive attention seems to be a central bottleneck, and there is a strong relationship between executive capacity and writing ability (Vanderbergh & Swanson, 2007). Note also that the exhaustion of attentional or executive functions has a further consequence: Self-regulation is impaired (see below).

From a practical viewpoint, it is thus very important to reduce the strain on working memory. To put it in the words of Kellogg: “Adopting cognitive strategies that circumvent attentional overload may be one key to optimum writing performance” (1988, p. 355). Much can be gained by learning new strategies or externalizing (for instance, placing an easy-to-grasp graphical outline of the next paragraphs on the desktop before starting to write). The possibly most important means is to excessively practice subprocesses. The more routinized a writing activity is, the less resources, effort, or attention it needs. Most writing activities can be trained – planning and reviewing, for instance –, and some – longhand writing or typing – may even become altogether automatic. Typically, longhand writing is highly automatized and needs only little visual control, whereas many students need at least some attention for typing. Another important sub-activity is formulating, especially when it comes to genre-typical ways of expressing content, such as passive voice or nominalizations. Many text schemas, such as argumentative or persuasive ones, are poorly practiced and thus not easily available (Kellogg, 2001). High levels of practice in reading and writing subprocesses have the further advantage of increasing flexibility and adaptivity so that the writer is able to respond adequately to current or changing demands (e.g. Kellogg & Whiteford, 2009). In accordance with research on ex-

2 Distinguishing between ideas and the process of translating means to believe that there is a pre-verbal stage of knowledge. Most writing researchers seem to agree with this. By contrast, Galbraith (1992) notes that ideas may indeed be formed by writing. According to his concept of knowledge constitution, knowledge can be implicitly present in a network of concepts and ideas. Such a network cannot be translated into words. Its semantic concept has to be articulated in the first place.

pertise and deliberate practice some thousand hours of practice or a roughly estimated 10 years will be needed to reach an expert level (Ericsson, Krampe & Tesch-Römer, 1993).

Many novice writers intuitively adapt to the problem of memory overload. The strategy of knowledge-telling, for instance, to which many students take refuge, effectively reduces the strain on working memory by refraining from planning, not spending attention on representations of author and reader perspective and letting thoughts be guided by associations in long-term-memory – in sum: it is a very resource-efficient process (Bereiter & Scardamalia, 1987).

It is certainly beyond the scope of SoTL to look into the mechanisms of working memory. However, working memory research points towards important interventions for enhancing writing skills, such as practicing strategies to a high level of routine. Examples might be practicing text schemas or discourse-relevant phrasing by writing and reading (e.g., Graff & Berkenstein, 2014). The effects of these or how they are perceived by student and faculty could well be a topic of SoTL studies. Examples might be

- training a certain aspect of writing such as summarizing or paraphrasing within a seminar and testing whether or how far this leads to relief while writing a complex final paper (we emphasize practice over externalization and new strategies because at present high levels of practice are an underestimated aspect of learning writing),
- pointing students towards attentional overload and teaching them strategies to reduce it such as practicing subprocesses or externalizing,
- providing opportunities where knowledge-telling strategies are appropriate and evaluating whether this helps at-risk writers to develop academic competencies and achieve good results.

The effects of such interventions can be explored in the overall quality or specific features of written products which faculty often have at their fingertips. Longitudinal designs such as portfolios with a sequence of texts can tap into development. A second alternative are student reports of their strategy use, e.g. in a customized questionnaire or qualitative interviews. Which data are chosen depends both on the specific question and on the expertise of the researcher.

It should be kept in mind, however, that there is no (or only some very minor) general training of writing skills. They develop in a genre- or task-specific manner so that improvements will often only be visible in the same genre or discipline.

3 Cognitive overload

Writing has been repeatedly recognized as a special form of problem solving (Hayes & Flower, 1980). The cognitive load theory (CLT; Sweller, 1994) applies ideas of working memory models from experimental psychology to the educational context. It coins the term “cognitive load” for all the mental activities going on in working memory while learning and problem solving. Consequently, it explains how to reduce cognitive load while learning and problem solving. Thus, CLT can be very informative when it comes to analyzing the demands of a writing activity.

Interestingly, cognitive load is not reduced to the load that results from the problem to be solved but feeds from three different sources: intrinsic, extraneous, and germane load. Intrinsic cognitive load refers to the mental activities in working memory that result from the complexity and difficulty of the task/topic/problem in combination with the learners' prior knowledge concerning this task/topic/problem. For example, writing an essay is a complex and difficult task. However, for writers who are writing their first essay this task causes a higher extent of intrinsic load than for writers who have already written a few essays in their life. Extraneous load refers to the mental activity in working memory which results from information not relevant for the task at hand. This type of load originates from the learning material and the learning environment. Concerning writing, extraneous load can result from a text a writer tries to read that is cluttered up with irrelevant information such as comics, unnecessary figures, and sidetracks on the topic. It can also be caused by noisy construction work going on in the library, while the writer tries to focus on the writing assignment. Then there is germane load. It refers to the kind of load resulting from the genuine learning activity itself. When writing, writers need to organize the material. They need to elaborate it and compare it to their previous knowledge, for instance. This causes germane load. Whereas intrinsic load results from the difficulty of the writing assignment, germane load results from the writing activity per se, such as organizing and elaborating.

CLT postulates that intrinsic and extrinsic loads need to be reduced in order to allow germane load to be as high as possible. This claim is based on the observation that these three types of load add up to a total load. If this total cognitive load exceeds the capacity of working memory, cognitive overload occurs. Overload, in turn, reduces the effectiveness of the learning or problem solving activity. Thus, from the perspective of CLT, writer's overload can be understood as cognitive overload.

In their attempts of reducing overload, faculty should design learning materials and learning environments that keep the extraneous load to a minimum in order to save sufficient capacities for the learning activities. Intrinsic load, however, cannot be eliminated but only be controlled by selecting learning tasks that fit the learners' prior knowledge. Transferring these ideas to writing activities, writers themselves can reduce extraneous load by finding a spot that suits their needs in order to reduce distractions while writing and by carefully selecting texts that do not contain irrelevant information. Advanced writers will also be able to select writing assignments that correspond to their level of knowledge in order to control intrinsic load. Inexperienced writers probably need teachers who choose the writing assignments carefully to match their students' skills and previous knowledge. Bean (2011) suggests a model for designing writing assignments in which subsequent writing tasks gradually build on preceding ones and the associated learning goals accomplished there. By following this successive model, teachers pave the way for students to progressively develop their writing skills. Thus, each of the writing assignments stays within the students' current scope of knowledge, and intrinsic load is minimized at its best.

Against the background of SoTL, the following topics could be addressed from this perspective:

- Familiarizing students with the different forms of cognitive load and assessing via qualitative interviews whether this changes the way they reflect their writing processes and address their writing problems.
- Teaching students how to reduce extraneous load and analyzing whether this improves the quality of their texts.
- Teaching faculty how to design writing assignments that match their students' levels of skill or knowledge and analyzing whether this improves the quality of their texts.

4 Ego-depletion

As mentioned above, academic writing is a cognitively demanding task that requires writers to master a variety of skills in a lengthy and often burdensome process of self-regulated learning. Models of academic writing have acknowledged the significant role of self-regulation for successful writing, for example, the cognitive process theory of writing (Hayes & Flower, 1980) or the cyclical model of self-regulation (Zimmerman & Kitsantas, 2007).

Broadly speaking, self-regulation is the capacity of an individual to invest cognitive, emotional, and behavioral resources and to modify and control these resources, all that in order to achieve a desired goal or outcome (Baumeister & Heatherton, 1996). It is a multifaceted process that breaks down in different subprocesses (e.g., attention control). All of these processes can be initiated, run, and stopped either unconsciously or consciously. The unconscious processes are often termed self-regulation, while the conscious processes are termed self-control (cf. Kuhl, 1996). Self-control is especially vital for the attainment of long-term goals and rewards at the expense of immediate or short-term gratification. For explaining writer's overload, we focus on the conscious processes, thereby talking about self-control in this article.

The adequate orchestration of the different processes of self-regulation supports the writers to maintain their goals in the face of competing action tendencies, temptations, or external distractions. However, orchestrating these different processes is very complex and difficult. Failures of self-control are inevitable and manifold. Baumeister and Heatherton (1996) differentiate between underregulation and misregulation. While underregulation entails a failure to exert self-control, misregulation involves the exertion of control over oneself, but this control is exerted in a misguided or counterproductive fashion, so that the desired result is not achieved. One special form of misdirected control is overregulation. For instance, a writer who is extremely adept at controlling his impulses to walk around while thinking arguments through but does so to such an extent that it leads to pains in the back, is in a state of overregulation.

The capacity for self-control is assumed to be finite. In fact, the strength or energy model of self-control centers around the idea that self-control is a limited resource that, once depleted, results in reduced capacity to further regulate the self (Baumeister, Bratslavsky, Muraven, & Tice, 1998). Importantly, self-control is a global and domain non-

specific resource. Accordingly, controlling the self in one domain will consume some of the universal resource leaving a limited amount to expend on subsequent behaviors requiring self-control in another domain. As a consequence, subsequent performance on tasks or activities in another domain is likely to be impaired. The exhaustion of self-control resources is termed ego-depletion (Baumeister et al., 1998). This theory has found a lot of empirical support in different contexts such as health and education (e.g., Oaten and Cheng, 2006).

Understanding writer's overload from this perspective implies that coping with stress, regulating negative affect, and resisting temptations while writing can deplete the capacity of self-regulation which will eventually lead to ego-depletion. However, it also implies that coping with stress, regulating negative affect, and resisting temptations in another context than writing can also impair the writing process. The second dynamic is especially important because we tend to focus on the writing process only and neglect all the other things going on in a writer's life that do have an influence on writing. Thus, we make the case that writer's overload may be a context-specific form of ego-depletion that is not only caused by the writing activity itself but also by ego-depleting activities going on in another context.

Muraven, Baumeister, and Tice (1999) showed in a series of experiments that self-control capacity can be trained. Transferring this idea to the academic context, Oaten and Cheng (2006) implemented a study program that focused on training self-control capacity for exam time. It included artificially early external deadlines, an individual study plan, and a study diary for self-monitoring. Participants not only improved their regulatory strength but also reported significant decreases in smoking, alcohol, and caffeine consumption and an increase in healthy diet, emotional control, maintenance of household chores, attendance to commitments, monitoring of spending, and an improvement in study habits. In addition to training self-control, before starting to write writers need to avoid situations that demand controlling their self because these self-control-demanding situations will impair the subsequent writing performance. Therefore, it is necessary to observe and analyze one's own writing episodes in order to find out what kind of situations can precede writing and which should absolutely not precede writing.

Against the background of SoTL, the following topics could be addressed from this perspective:

- Training students' self-control capacity (e.g., by teaching them the merits of self-monitoring) and analyzing by qualitative interviews whether this reduces writer's overload.
- Teaching students general strategies to avoid situations that lead to ego-depletion before writing and analyzing by writing diaries whether this reduces writer's overload.
- Reducing students' need for self-control by having them write parts of their text in class or having them hand in a detailed writing plan which includes due dates for parts of their products and testing whether this improves the writing process and ultimately the quality of their texts.

5 Overload in its sociocultural context

We conclude with a final approach which focuses on writing and cognition as socially and culturally shared practice. This sociocultural approach helps to shed light on the social resources to reduce overload and the possibilities of shaping writing processes in and through interaction. From a sociocultural perspective, writer's overload has to be understood as a struggle to meet the complex demands of the writing process. This struggle, however, is not to be conceived of as a purely individualistic phenomenon, but it is conceptualized as rooted in social, cultural, and historical writing practices.

Sociocultural research on shared cognitive practices (seminal: contributions to Resnick, Levine, & Teasley, 1991) and on learning as situated activity (Lave & Wenger, 1991) put forward a picture of cognitive processes as distributed among individuals in joint practice and situated in social contexts. Writing is one form of socially shared cognitive practice (Prior, 2005, cf. the academic literacies approach for writing in higher education, Lea & Street, 2006, Lillis & Scott, 2007). This view is grounded in a Vygotskian perspective on learning with its central notion of sociogenesis (Vygotsky, 1997): Higher psychological processes such as the organization of ideas, the deliberate guidance of attention and a great deal of self-regulation – in short, much of what is needed in the writing process in order to avoid writer's overload – are social in origin.

The core concept is interiorization, the appropriation of shared interpersonal activity by the individual. In interiorization, the individual gradually takes the interactional position of the other toward herself, i.e. she performs a formerly shared semiotic process towards herself (Bertau, 2008). Differing from the psychological approaches mentioned above, it is crucial for the present approach that not only the learning situation is social, but that what the student learns is actually a social process and the performance of a mutual relationship (Veresov, 2004). This implies that sharing and distributing a complex cognitive activity not only disburdens the individual in the moment of the overload, where the other (teacher, peer) can take over challenging parts of the activity or help to structure the problem at stake for the writer. It also provides students with rich possibilities to interiorize others' positions and activities, which are helpful for structuring their writing process. This experience is key to constructively deal with the causes for overload in the long run.

Collaboration and the division of cognitive labor in writing can be made more explicit and strengthened in order to help students reduce overload – both in “acute situations” and later on, through interiorization. In this vein, the role of conversation about writing becomes crucial to learning and enhancing writing. Ruhmann (2014, p. 64), for example, sees writing process consultation as a suitable method of cognitive apprenticeship because it creates a cooperative division of labor between the writing counsellor and the writer. Difficult writing tasks are split up and distributed between the writing counsellor and the student. Similarly, Bruffee (1999) calls for more collaborative forms of learning to write in the college and university classroom. The best way to achieve this, according to Bruffee, is to give students the opportunity to talk with their peers about what and how they are writing. For the teaching of writing, this implies that these conversations can reduce the overload students are faced with due to unclear audience, writing tasks which involve topics they don't have much knowledge of, etc.

Once interiorized, the new writer's positions, which help to reduce or even prevent overload, can be further developed by becoming the object of shared cognitive practice between teacher and student. This amounts to a distributed form of self-reflection. Murray (1982) describes such shared self-reflective processes as "teaching the other self" – a process which provides the arena for interiorizing a reflecting and monitoring writer's position. According to Murray, it is the teacher who brings the writer's other self into existence and then later works with this and other learned writer's positions and further professionalizes them together with the student.

Some of the approaches discussed in this section explicitly name concrete teaching and learning activities in order to enhance students' writing. Consequently, their role in reducing writer's overload might be a fruitful object of SoTL practice:

- Observing students' peer conversations about writing and peer review interactions, tracking their influence on the quality of students' texts and assessing the students' perception of the helpfulness of peer interactions about writing via interviews or questionnaires.
- Analyzing what parts of the writing activity teachers take over (e.g. deciding on a topic, revising parts of the text) and how teachers foster self-reflection on writing in teacher-student writing consultation, preferably through videographic methods.
- Comparing the influence of modes of teacher involvement in the writing process on students' text or students' perceptions of their writing processes.
- Studying the interaction of shared writing practice and writing development through long-term assessment of the topics suggested above and other related topics. This can be carried out via, e.g., study diaries, interviews, questionnaires, or videography.

6 Conclusion

In the present article we drew attention to the multiple facets of writer's overload. Students may not write optimally (or not well) because their executive attention is overloaded by the different high and complex demands of the writing task, because there is additional load from adverse contexts or suboptimal materials, because their self-control runs dry, or because they do not receive or seek support from others with whom they could transitionally parcel out parts of demanding activities in writing. Whereas the first three notions of overload stem from cognitive and educational psychology and focus on the individual, implying that rescue lies in training and optimizing the individual's skills and competences, the last, sociocultural, approach includes others as important players. Consequently, remedy lies in including peers and teachers as important actors. Writer's overload has different facets which are at present tackled by different and partly incompatible disciplines or approaches. Some of its instantiations, however, interact. For instance, inner speech accompanies many externally silent writing acts. Thereby, it facilitates self-regulation but increases the strain on working memory. Interactions of this kind have to be carefully taken account of when teaching students how to write or in writing consultations.

The present article focused on the contents of possible SoTL research, starting from important problems in writing and their conceptual reconstruction. We suggested changes in teaching practice and interesting questions for SoTL projects. It was not our goal to provide faculty directly with the methods they need to assess the effects of improved teaching and learning, although we presented some ideas how this can be achieved. To name a few: one may collect writing portfolios, have students keep logs of writing-related activities, assess text quality systematically, collect and categorize metaphors students associate with writing, conduct interviews with students or measure students' strategy use with questionnaires.³ In SoTL projects, methodological as well as theoretical standards deviate from those of disciplinary research. The focus is on solving teaching and learning problems, practical value and, importantly, on contextual validity (Huber, 2011).

We finally would like to draw attention to the fact that most interventions we suggested might be interesting for SoTL do not raise additional claims with respect to what goes on in class. On the contrary, peer review, modelling of writing tasks, summarizing or phrasing tasks – to name just a few examples – cannot only be integrated into classes but also facilitate content-related work.

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3 Some methods examples can be found in Nückles, Schwonke, Berthold, and Renkl (2004: learning logs), Ransdell and Levy (1996: grid-based assessment of text qualities), Wegner and Nückles (2015: metaphor analysis), Pintrich, Smith, García, and McKeachie, (1993: questionnaires for students' strategy use).

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