Introduction Special Issue: Considerations and Recommendations for Reporting on Writing Interventions in Research Publications

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Abstract: This article is an introduction to the special issue on how to report on writing interventions in research publications. The six contributions included in this special issue systematically describe a broad range of writing interventions aimed at learning to write in primary, secondary, and higher education. Based on these contributions and on earlier recommendations of scholars in the field of writing intervention research, we established a set of recommendations for reporting key elements of writing interventions. These elements include characteristics of the context of the intervention, theories and/or empirical studies of writing, learning to write and teaching writing, and design principles of the intervention at both a macro- and micro-level. These recommendations can be considered as a checklist for authors, reviewers, and editors when reporting or reviewing intervention studies.

Keywords: writing intervention, design principles, transparency

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1. The origin of this special issue

To improve students' writing skills, instructional programs should consider both the focus of instruction (i.e., what is taught) and the mode of instruction (i.e., how it is taught) (Fidalgo, Harris, & Braaksma, 2018). In research on effective writing instruction, numerous meta-analyses have already identified several effective writing interventions (e.g., Graham & Harris, 2018a; Graham, Harris, & Chambers, 2016; Graham, McKeown, Kiuhara, & Harris, 2012; Graham & Perin, 2007; Koster, Tribushinina, de Jong, & van den Bergh, 2015). A major shortcoming of most of the studies reporting single writing interventions as well as of the meta-analyses' findings, however, is the lack of detailed information on critical design choices that constitute the instructional writing interventions under study. Nonetheless, gaining insight in both the content and structure of evidence-based writing programs is important in two ways. First, in light of replication and theory building, writing researchers need this insight in the key aspects of the instructional focus and mode of an intervention. Second, in light of dissemination and implementation in educational writing practice, evidence-based writing practices should be clearly described into concrete instructional activities and learning activities (Fidalgo et al., 2018; Rijlaarsdam, Janssen, Rietdijk, & van Weijen, 2018). Hence, clear descriptions of evidence-based writing practices are indispensable. Without such clear descriptions, writing researchers run the risk of hindering theory building, replication, dissemination, and implementation of evidence-based writing practices (Rijlaarsdam et al., 2018).

Consequently, to advance the field of research on writing instruction, it is of high importance that writing interventions are reported in a more systematic way. To this end, Fidalgo et al. (2018) recently published a new volume on design principles for teaching effective writing in the influential book series Studies in Writing. The volume's main aim was to meticulously describe and analyze effective strategy-focused instructional programs so that researchers, teachers, and/or policymakers would have access to all the information needed to disseminate, replicate or implement the strategy-focused writing interventions. To this purpose, the authors of different strategy-focused intervention studies analytically described both the micro-design features (e.g., learning activities, instructional materials and techniques) and macro-design rules (e.g., instructional sequences or stages) of their instructional programs. In addition, in one of the concluding chapters Rijlaarsdam et al. (2018) presented a more general reporting system which aimed to support writing researchers to analytically describe instructional writing interventions. Fidalgo et al. (2018) acknowledge the value of such a reporting system to move the field of research on writing instruction forward by stating that, "Its implementation as a standard to report writing interventions would suppose a significant step for advancing in the future of instructional research of writing as content or tool of learning" (p. 11).

The volume of Fidalgo et al. (2018) in general, and the chapter of Rijlaarsdam et al. (2018) in particular, formed the starting point for this special issue of which the main aim is to further establish recommendations on how to report writing interventions in research papers. While the volume of Fidalgo et al. (2018) focused explicitly on strategy-focused instructional programs of both writing-to-learn and learning-to-write interventions, the present special issue includes recommendations for reporting a broad range of instructional writing interventions aimed specifically at learning to write. More particularly, this issue includes descriptions of writing intervention studies from different countries (i.e., United States, The Netherlands, Belgium, Germany, and Spain) focusing on different educational levels (i.e., primary school students, secondary school students, and PhD students). The majority of the studies focused on L1 writing, with the exception of one study on L2 writing. Finally, the studies in this special issue reflect a broad range of didactical approaches based on (social)cognitive, sociocultural, and/or linguistic theoretical frameworks.

As the chapter of Rijlaarsdam et al. (2018) is a leitmotiv throughout the different papers in the present special issue, we first define and elaborate on the key concepts of 'design principles', 'instructional activities', and 'learning activities' that are introduced in their reporting system. Subsequently, based on our experiences with the implementation of the reporting system, we provide some additional considerations for reporting on writing interventions. Based on this, we provide an overview of the elements that should be included in systematic descriptions of writing intervention research. Additionally, we will provide specific recommendations on how to report on these elements in research publications.

2. Reporting design principles by describing instructional activities and learning activities: The reporting system of Rijlaarsdam and colleagues (2018)

Design principles are the building blocks of an instructional intervention, prescribing the key characteristics that underlie the instructional activities and learning activities within a particular instructional practice or program (Merrill, 2002). To ensure a thorough and transparent description of design principles in writing research, Rijlaarsdam et al. (2018) propose to describe design principles as "if-then" statements consisting of means-end-relations between learning activities and learning outcomes. These statements should include not only the rationale behind the intended outcomes of particular learning activities but also how these activities are triggered by instructional actions. In this respect, the learning activity, which is a (meta)cognitive activity, is a mediating variable between the instructional action and the expected learning outcome or experience. To illustrate this, we can deconstruct the following design principle: "If you aim to increase writing knowledge, then offer students a variety of model texts so they can compare and contrast these texts" (design principle

constructed within this special issue by De Smedt & Van Keer, 2018). In this particular example we can extract three essential elements:

1. **The learning outcome**: e.g., increase writing knowledge
2. **The learning activity**: e.g., compare and contrast texts
3. **The instructional action or activity**: e.g., offer a variety of model texts

Rijlaarsdam et al. (2018) state that these three elements are theoretically connected by a means-end relation, see also Figure 1. A learning activity is triggered by an instructional activity in accordance with a certain theoretical or empirical rationale (cf. arrow 1). Subsequently, this learning activity is expected to realize a certain learning outcome according to experience, theory, or research (cf. arrow 2).

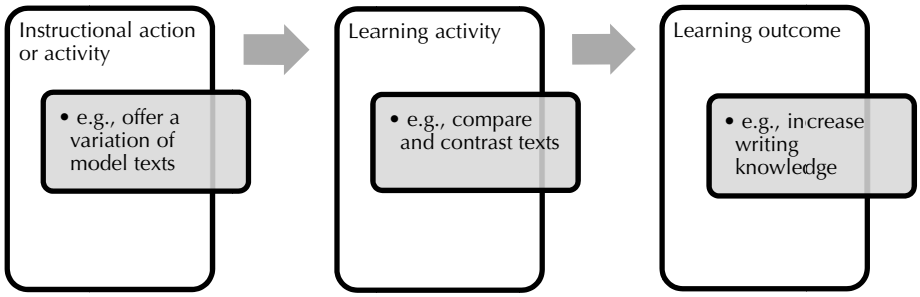

Figure 1. Schematic overview of the means-end relation between instructional activities, learning activities and learning outcomes.

Based on these insights, Rijlaarsdam et al. (2018) constructed a reporting scheme to systematically describe and theoretically explain the means-end relations between instructions, learning activities and intended outcomes for each of the design principles in a writing intervention (see Table 1). In the first column, the design principles for the content of the intervention are labeled. In the second column, the structure of the instructional program is described by indicating the instructional phase. Based on Merrill's key principles of instruction, it is possible to distinguish between five instructional phases (Merrill, 2002): (1) assigning tasks in which learners engage in solving real-world problems, (2) activation of existing knowledge, (3) demonstration of new knowledge, (4) application of new knowledge, and (5) integration of new knowledge and transfer into everyday activities. In the third column, each learning activity is described by specifying the cognitive or metacognitive activity of students, and a rationale is given to explain the effectiveness of the specific learning activity. In the fourth column, the instructional activity is described by specifying the actions of

teachers, and a rationale is given to explain how this instructional activity relates to the learning activity in students.

Table 1. Reporting Scheme for Writing Interventions by Rijlaarsdam et al. (2018, p. 310)

Design principle	**Phase**	**Learning activity**		**Instruction/task that stimulates or leads to learning activity**	
		Describe	**Explain**	**Describe**	**Explain**
Label the design principles	Choose from: 1. Problem-centered 2. Activation existing knowledge 3. Demonstration of new knowledge/skill 4. Applying new knowledge/skill 5. Integrating new knowledge/skill	Label each learning activity in the sequence in terms of cognitive activity *and* content to operate upon and the expected outcome/result	This learning activity is effective because … Relate learning result to former/ following learning result	Describe instruction/ task, distinguish relevant features	This instruction is effective, because/ these elements in the instruction lead to … Relate features of instruction to the learning activity

3. Challenges in reporting design principles by instructional activities and learning activities: Considerations of the editors

The authors in this special issue were offered the reporting system of Rijlaarsdam et al. (2018) as a frame of reference to analytically describe their instructional writing intervention. Authors were free to use this particular scheme or to choose not to use it, but to qualify for this special issue they were required to clarify the design principles of their specific intervention by systematically describing and explaining the instructional activities and learning activities of their writing program. Although all contributors were offered the same theoretical framework which defined and clarified the key concepts of design principles, instructional activities, and learning activities (Rijlaarsdam et al., 2018), their descriptions of the instructional writing programs varied significantly. These variations highlight some additional reporting challenges that should be taken into consideration when establishing recommendations for reporting on writing interventions in research publications.

A first challenge is the conceptualization of what design principles actually entail when describing instructional writing programs. In some contributions, authors reported only on design principles regarding the focus of the intervention (e.g., teaching students

a revision or a planning strategy for opinion essay writing), whereas in other articles design principles also contained information on the instructional modes (e.g., modeling or peer collaboration).

A second reporting challenge is to determine the degree of specificity to which design principles have to be disentangled and reported on. In some articles, the design principles were rather broad descriptions of the general instructional activities in the program, whereas in other articles the principles were described in detail at the level of a specific writing lesson. For example, most of the writing programs made use of modeling as an instructional practice. In some cases, authors simply mentioned modeling as an instructional activity without clarifying what modeling actually entailed within their writing program. Others, however, elaborated in detail on how modeling as an instructional practice was operationalized and which kind of student learning activities were triggered by the instructional actions. As an example of the latter: one writing intervention program that is described in this issue (De Smedt & Van Keer, 2018), operationalized modeling by the following teaching activities: (a) teachers modeled the writing strategy (e.g., planning, writing, or revision strategy) in front of the class by demonstrating how and why to apply a writing strategy, (b) by thinking aloud what they were thinking and doing, (c) by visualizing the writing strategy on a board/smartboard, (d) by showing writing behavior while intentionally making errors and correcting themselves or by showing difficulties with the writing task. During teacher modeling, students: (a) observed how the teachers demonstrated and modeled the writing strategies on the (smart)board, (b) listened, (c) tried to comprehend what the teacher was thinking and doing, and (d) they helped the teacher while he/she was planning, writing, or revising a text by providing ideas to write about and by offering suggestions to optimize the text. It is clear that such a detailed description fosters the implementation and dissemination of the intervention in practice. A lack of consistency in how authors define and report on design principles has an impact on the transparency, comparability and usefulness of the analytic descriptions: we cannot expect educational practitioners to successfully implement intervention programs in their classroom when instructional practices are only described in general terms, such as 'modeling', as this is far too vague. Teachers need more detailed information on how to model exactly, for example by applying instructional activities such as: (a) demonstrating, (b) thinking aloud, (c) visualizing, and (d) intentionally making errors and correcting them. Sufficient detail in the descriptions of activities is also essential for researchers who aim to replicate or understand the effectiveness of an instructional writing program. For modeling, for instance, different applications might have differential effects on students' learning activities and, in turn, on students' learning outcomes.

A third challenge is the inclusion of theoretical, empirical, and/or practical rationales underlying the instructional activities and learning activities in the intervention. In some manuscripts authors elaborated on the theoretical and empirical base of their instructional writing program in detail, while other authors referred to

theoretical or empirical insights without discussing its impact on design choices. Based on our experiences, we stress the importance of not only including theoretical and/or empirical rationales for the selection of design principles but also to explain why certain instructional activities may trigger certain learning activities and how these, in turn, may affect a certain learning outcome for the targeted group of students. To us, providing such rationales in the analytic descriptions of instructional writing programs is essential to enhance replication, implementation, and dissemination of writing programs in two ways. Firstly, educational practitioners and policymakers are more likely to invest time and resources into educational writing programs consisting of theoretically and empirically driven instructional activities and learning activities. Secondly, writing intervention researchers designing new instructional writing programs should build on prior writing programs and adapt these programs according to the needs of the specific context in which the intervention takes place (Graham & Rijlaarsdam, 2016). In doing so, they need insights into the theoretical and empirical foundations of instructional activities and learning activities so they can make well-considered choices on which activities they want to include and adjust in their specific writing program.

A fourth challenge is to systematically describe characteristics of the context in which the intervention is implemented. As the effectiveness of instructional activities and learning activities actually very much depends on the context (Graham & Harris, 2014), it is required that authors provide all the necessary information regarding a study's context, such as for example teacher and student characteristics, and school or state policies and standards.

Based on the abovementioned challenges, additional guidelines are required for how to report on the conceptual structure of writing programs in a systematic and transparent way. As editors of this special issue, we therefore aim to provide an overview of the elements that we deem important to be included in systematic descriptions of writing intervention research. Additionally, we will provide specific recommendations on how to report on these elements in journal articles.

4. An overview of mandatory elements in systematic descriptions of instructional interventions

A first element we deem crucial when reporting on an instructional writing intervention is the **context** in which the intervention takes place. Indeed, the choice for including specific design principles (or not) may very well depend on characteristics of the specific context in which the intervention takes place and on possible constraints related to this (Graham & Harris, 2014).

Secondly, in view of substantiating the design choices it is important to describe the **theoretical and/or empirical rationale** behind the relation between instructional activities and learning activities (e.g., based on theories of writing instruction) as well as

between the learning activities and expected outcomes (e.g., based on theories of writing and learning to write) (Rijlaarsdam et al., 2018).

Within the context of the abovementioned contextual factors and the theoretical and/or empirical grounding of an intervention, **the key design principles of an intervention** can be described. Following the editors of the book on design principles in the series Studies in Writing (Fidalgo et al., 2018), and based on our experiences as guest editors of this special issue, we explicitly distinguish between a macro- and a micro-level in the intervention description. At the **macro- (or program) level**, the key design principles regarding the focus, mode, and sequence of the intervention are described and theoretically defined. At the **micro-level**, the key design principles are integrated and operationalized into specific instructional activities, learning activities and instructional materials. Figure 2 shows an overview of the elements that should be included in descriptions of instructional interventions and how they are related to each other.

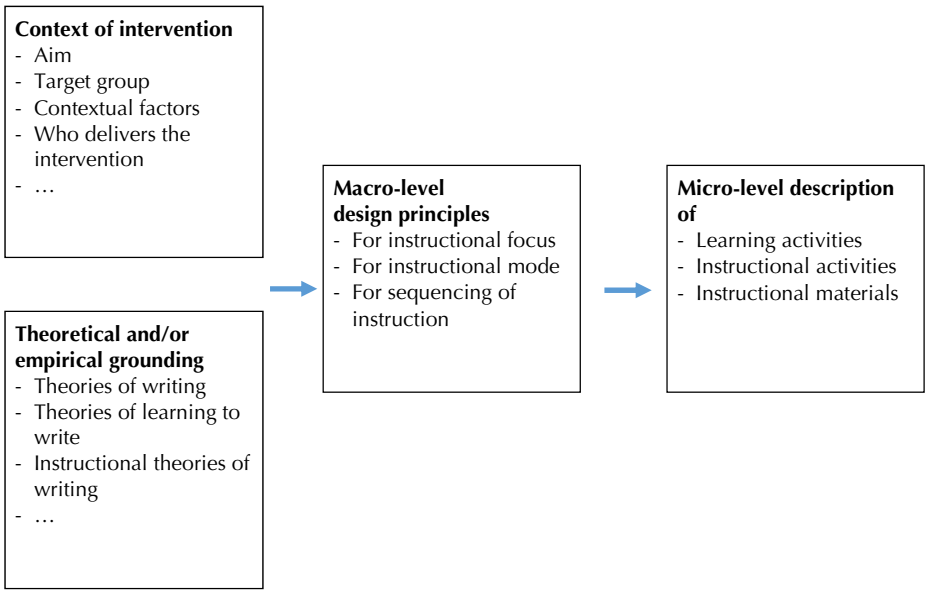

Figure 2. Elements to be included in a systematic description of a writing intervention.

5. Recommendations on how to systematically report elements of instructional interventions

In what follows, we provide specific recommendations on how to report the mandatory elements of instructional interventions as prescribed in Figure 2. Additionally, we refer to the manuscripts included in this special issue to illustrate the proposed recommendations. These recommendations are presented in Table 2. This table is

based on the work of Levitt et al. (2018) on journal article reporting standards for qualitative research. The first column in Table 2 contains the elements to be included in analytic and systematic descriptions of interventions (see also Figure 2). These descriptive elements might be used to structure an article (e.g., Koster & Bouwer, 2018) or might be described in a narrative format in the manuscript itself (e.g., Grabowski, Mathiebe, Hachmeister, & Becker-Mrotzek, 2018). The second column provides concrete recommendations on how to approach the description of the mandatory elements. The final column contains more general recommendations that might be useful for authors, reviewers, and editors to consider. In this way, Table 2 can serve as a checklist for authors, reviewers, and editors when reporting on or reviewing intervention studies.

Table 2. Recommendations for Systematically Reporting Writing Interventions in Research Publications

Elements in systematic descriptions of writing interventions		**Recommendations for reporting the elements**	**General recommendations for authors, reviewers and editors:**
Context	Aim of intervention	Describe the intended writing outcomes and indicate the needs.	*For authors*: Emphasize the necessity of why you focused on these particular learning outcomes. Make your case by referring to previous studies or (inter)national reports supporting your claim.
	Target group	Provide information on: - demographics - cultural background - socio-economic background - the educational level - the types of learners (e.g., special needs, L1/L2)	*For authors*: Provide a rationale for your focus on this particular target group. Make your case by referring to previous studies indicating the need to focus on this particular group of learners.
	Contextual factors	Provide information on: - the national context - state standards, policies school types (public, private schools) geography (rural, urban schools) - curriculum, teacher, and class characteristics - learning contexts (formal or	*For authors:* Specify contextual constraints that may impact the design of the intervention (e.g., limited access to computers can constrain digital writing interventions). *For reviewers and editors*: Note that educational contexts can vary greatly depending on the

		informal)	national context. In this respect, note that in some studies it is not possible to provide information on specific elements. For instance, school types such as public and private schools are not common in all educational contexts.
	Who delivers the intervention	Describe who will deliver the intervention (e.g., main researcher, research assistant, teacher, self-instructed materials, …)	*For authors:* When the intervention is delivered by the teacher, describe the kind of support or instructions they received to implement the intervention with fidelity.
Theoretical and empirical grounding	Theories of writing, learning to write, and teaching writing	Provide theoretical and/or empirical foundation of relevant elements in the instructional design: Theories on intended writing outcomes. Examples of influential models of writing: - Flower and Hayes (1981) - Graham (2018) - Zimmerman and Risemberg (1997) - … Theories on learning to write. Examples of influential models of writing development: - Berninger, Fuller, and Whitaker (1996) - Bereiter and Scardamalia (1987) - McCutchen (2008) - … Theories on teaching writing. For an overview of important meta-analyses on	*For authors:* For theories of writing refer to cognitive, social-cognitive, and/or sociocultural models of writing. Each perspective has its merits and combining perspectives can result in a richer understanding of writing (Graham, 2018). *For authors:* If prior empirical research is missing, clearly point out this lack of empirical research in your article. *For reviewers and editors:* Empirical grounding is only required if prior empirical research is available.

		teaching writing, see the review of reviews by Graham et al. (2016) and Graham and Harris (2018a)	
Macro-level design principles	Design principles for instructional focus	Define key features of instructional focus at program level and specify: - the central learning activity - how this is triggered by (an) instructional action(s) - how this leads to expected learning outcome(s)	*For authors:* Instructions can be focused on improving: - product knowledge (e.g., genre instruction) - process knowledge and skills (e.g., writing strategies, transcription skills) - self-regulation skills (e.g., goal setting, peer/self-assessment)
	Design principles for instructional mode	Define key features of instructional mode at program level and specify: - the central learning activity - how this is triggered by (an) instructional action(s) - how this leads to expected learning outcome(s)	*For authors:* Mode of instruction can include the following: - Modeling - Peer collaboration - Gradual release of responsibility (scaffolding, guided practice) - Feedback - Direct instruction (discussion, presentation, questioning) - Independent practice Integration/transfer
	Sequencing of instructional activities	Define the order of instructional focus and mode at program level: - Do the learning and instructional activities follow a time-based or a mastery-learning approach? - Do the activities follow a whole-task or separate skills approach?	*For authors:* When skills are taught one by one, specify the sequence and provide a rationale for doing so. If multiple skills are taught simultaneously, e.g., through a whole-task approach, indicate how often students practice and what kind of writing tasks are offered. Again, provide a rationale for doing so.
Micro-level descriptions	Instructional activities	Describe what teachers need to do to stimulate students' learning. Show how design principles	*For authors:* Show how the key principles for the focus and mode of instruction are integrated and operationalized into concrete instructional and

		for instructional focus and mode are integrated and operationalized into instructional activities.	learning activities. Be as specific as possible, keep in mind that the activities should be replicable by researchers and implemented by practitioners. For instance, modeling can be used to improve the writing product (e.g., by showing examples of varying quality), but it can also be used to improve the writing process (e.g., by showing a strategy for revision).
	Learning activities	Describe what students are expected to do during instructional activities in view of reaching the intended writing outcomes.	*For authors:* Explicate how students' learning activities are the mediating variable between the instructional activities and the writing outcomes.
	Instructional materials	Describe all the teaching and student materials in detail. Provide examples of lessons. If applicable, provide access to or give a detailed description of an online learning environment.	*For reviewers:* The description of instructional materials might take up some space in journal articles. *For editors:* Provide the opportunity for authors to submit their instructional materials as online supplementary files. For comprehensive intervention programs, a video registration can provide detailed information about the intervention.

5.1 Recommendations for describing the context of an intervention

As to the context in which the intervention takes place, it is essential that the *aim* of the intervention is clearly stated (e.g., López, Rijlaarsdam, Torrance, & Fidalgo, 2018). In other words, what are the intended writing outcomes and why is it important to target these? In addition, the necessary information on the learners under study should be reported in order to specify the *target group* of the intervention in as much detail as possible. Other *contextual factors* at nation-, school-, classroom-, or teacher-level that might have implications on the design of a specific intervention also need to be described (e.g., De Smedt & Van Keer, 2018; Link, 2018). Finally, information on *who delivered the writing intervention* to the learners should be elaborated upon (e.g., Koster

& Bouwer, 2018). For more concrete recommendations on how to describe the context of an intervention, see Table 2.

5.2 Recommendations for describing the theoretical and/or empirical grounding of an intervention

When reporting writing interventions, we deem it essential to justify the design choices by providing their *theoretical* (e.g., Graham & Harris, 2018b) *and/or empirical underpinning* (e.g., Grabowski et al., 2018). Particularly, researchers should elaborate on the theoretical grounding of relevant elements in the instructional design concerning (a) the intended writing outcomes, (b) the learning activities, and (c) the instructional activities. Rijlaarsdam et al. (2018) state that three sets of theories are central in designing writing interventions: (a) *theories of writing*, which provide insight into the cognitive, verbal, affective, and regulative processes of writing, (b) *theories of learning to write*, which focus on the relations between learning activities, the writing process, and the outcomes, and (c) *instructional theories of writing*, which provide insight in the relation between instructional conditions and actions and learning activities. References to theories of writing, learning to write, and teaching writing and empirical writing research are thereby essential in systematic reports of writing interventions. For more concrete recommendations on how to report the theoretical and/or empirical grounding, see Table 2.

5.3 Recommendations for describing macro-level design principles

The description of the macro-level, or program level, should provide information on the key design principles. According to the chapter of Rijlaarsdam et al. (2018) the analytic descriptions of design principles should include the following elements: (a) a central learning activity, (b) triggered by a particular instructional action, (c) the expected learning outcome(s), and (d) a theoretical and/or empirical rationale for the expected relation between the learning activity and the learning outcome on the one hand and for the expected relation between the instructional activity and the learning activity on the other. Based on our experiences as editors of this special issue, we underline the need to describe each of the abovementioned elements proposed by Rijlaarsdam et al. (2018). Additionally, we want to highlight the importance of describing macro-level design principles for both *the focus* (i.e., the main content of your instruction) and *the mode of instruction* (i.e., how instructions are provided to the learners) separately (e.g., Koster & Bouwer, 2018), in order to ensure a complete and thorough analytic description of multifaceted interventions.

Besides providing information on design choices concerning focus and mode of instruction, it is also important for readers to understand the design choices that are made for the *sequencing of instructional activities* (e.g., Graham & Harris, 2018b). Comprehensive writing programs usually consist of multiple writing sessions or lessons. When designing these programs, researchers have to consider the sequence of the lessons in the overall program by clarifying (1) whether the intervention follows a

mastery learning or time-based approach, and (2) whether the activities are aimed at whole-task learning or learning subcomponents of writing. Together, the design principles of the instructional focus and mode, as well as of the sequencing of the program, provide a clear overview of the key ingredients of the intervention program as a whole. For more concrete recommendations on how to report macro-level design principles, see Table 2.

5.4 Recommendations for micro-level descriptions of an intervention

At the micro-level, the analytic description should include detailed information on how the key design principles are integrated and operationalized into concrete *instructional activities and learning activities* (e.g., López et al., 2018). Again, it should be clarified how these operationalizations are driven by theoretical and empirical concerns. In particular, descriptions at this level need to inform how design principles for the instructional focus are combined with design principles for the instructional mode. For instance, modeling can be implemented as an instructional practice to show students how to use a strategy (e.g., strategy instruction through modeling), but also for showing students elements of a text of high quality (genre or text structure instruction through modeling). At this level of the description, it should become clear which principles are combined, and how they are operationalized into instructional activities. It should also be clarified what kind of learning activities students should be involved in during the instructional teaching activities. For instance, when observing a model, students can observe, take notes, interact with the model, compare it to their own behavior, and/or reflect on the effectiveness of the modeled behavior (cf. Rijlaarsdam et al., 2018). As each kind of learning activity can have differential effects on the learning outcomes, micro-level descriptions of interventions should include information on all these specific activities.

Additionally, micro-level descriptions should inform the reader on *instructional materials* that are used to support the teaching and learning activities (e.g., De Smedt & Van Keer, 2018). These materials can range from example texts or videos to support modeling activities, to lesson plans in which students have to follow instructions, fill in questions or complete writing tasks. These materials need to be described, at least at a general level, but for complete transparency we recommend to include them (or examples of them) as (online) supplementary materials to the analytic description. See Table 2 for concrete recommendations on how to report micro-level design features.

5.5 Overview of the papers

Table 3 provides an overview of the manuscripts included in this special issue. Each intervention study is outlined in terms of the context (i.e., aim, target group, contextual factors, who delivered the intervention), the theoretical and empirical grounding, and the macro-level design principles (i.e., design principles for instructional focus, design principles for instructional mode, sequencing of instructional activities). For information on the micro-level descriptions, we refer to the individual manuscripts. By providing

this overview, we try to present differences and similarities between the various instructional writing interventions described in this special issue. In this respect, we explicitly want to refer to the work of López et al. (2018) and De Smedt and Van Keer (2018) as they provide guidelines on how to report differences and similarities between different instructional writing interventions.

6. Conclusion

This paper is an introduction to the special issue on how to report on writing interventions in research publications. The six contributions in this special issue systematically describe a broad range of writing interventions aimed at learning to write in primary, secondary, and higher education. Based on the experiences of the authors of these contributions in describing their writing intervention in the most systematic, transparent, and replicable way, and based on earlier recommendations of scholars in the field of writing intervention research (Fidalgo et al., 2018; Rijlaarsdam et al., 2018), we established specific recommendations for reporting the key elements of writing interventions. These elements include characteristics of the context of the intervention, theories and/or empirical studies of writing, learning to write, and teaching writing, and design principles of the intervention at both a macro- and micro-level. These recommendations can be considered as a checklist for authors, reviewers, and editors when reporting or reviewing intervention studies. We also advise using these recommendations in the process of designing a writing intervention program to ensure that all key elements are taken into consideration when selecting activities for particular writing lessons.

To conclude, we aim at taking the reporting of instructional writing interventions to the next level by linking the need for detailed descriptions of instructional writing programs to current trends in writing intervention research. In journal articles, complete reports of intervention studies need to consist of more than only a thorough and systematic description of the design of the intervention, they also need to provide information on how the intervention is implemented in practice as well as on the evaluation of the effectiveness of (components) of the intervention (Graham & Harris, 2014; Reigeluth & Carr-Chellman, 2009).

In what follows, we aim to connect the current trend of analytically describing writing intervention programs to two current trends in writing intervention research: (a) the need for professional development of teachers who implement the instructional writing programs and (b) the growing demand of reporting fidelity measures (Dumas, Lynch, Laughlin, Smith, & Prinz, 2001; O'Donnell, 2008).

Table 3. Overview of Writing Interventions in this Special Issue using Reporting Recommendations

	Aim of the intervention	Target group	Contextual factors	Who delivers the intervention	Theories of writing, learning to write, teaching writing	Design principles for instructional focus	Design principles for instructional mode	Sequencing of instructional activities
Graham and Harris (2018b)	Improving the capabilities and motivations of students to compose opinion texts and stories	Second and third grade students	Elementary school in the United States. Three times a week for 30 minutes for the duration of no more than 8 weeks	Regular classroom teachers	Theories from a social cognitive and sociocultural view on writing	1. Product: Knowledge on characteristics of opinion texts and stories 2. Process: genre-specific planning/writing strategies for opinion and story writing 3. Self-regulation: self-monitoring, goal setting, self-instruction, and self-reinforcement	Six recursive stages of instruction: 1. Develop background knowledge 2. Discuss it 3. Model it 4. Memorize it 5. Support it 6. Independent performance	Mastery-based learning

	Strengthening the capabilities and motivations of teachers to provide Self-Regulated Strategy Development (SRSD) instruction for opinion writing and story writing	Second and third grade teachers	Elementary schools in the United States collaborating with a local university. Practice-Based Professional Development (PBPD) teams of 5 teachers from the same school. Two full days with follow-up assistance	Experienced SRSD instructors	Theories from a social cognitive and sociocultural view on writing	1. Knowledge on characteristics, strengths, and needs of the students 2. Content and pedagogical knowledge to implement SRSD	Six recursive stages of instruction: 1. Develop background knowledge 2. Discuss it 3. Model it 4. Memorize it 5. Support it 6. Independent performance	Time-based approach
Koster and Bouwer (2018)	Learning to write in multiple genres (narrative, instructional, descriptive, argumentative)	Primary students, grade 4 to 6	The Netherlands; 16 lessons, one lesson per week (45-60 minutes/lesson)	Regular classroom teacher	Theories from a social cognitive view on writing	1. Product: text structure instruction 2. Process: general strategy for the writing process 3. Self-regulation skills: goal setting; peer assessment; self-assessment	1. Direct instruction 2. Modeling 3. Peer collaboration 4. Gradual release of responsibility 5. Independent practice	Time-based approach and tasks are sequenced according to their difficulty

De Smedt and Van Keer (2018)	Learning to write descriptive texts	Primary students, grade 5/6	Belgium, 11 writing lessons spread over ten weeks (one lesson of 50 min. per week)	Regular classroom teacher	Theories from a social cognitive view on writing	1. Product: text structure instruction and genre knowledge instruction 2. Process: planning, writing, and revising strategies	1. Direct instruction 2. Modeling 3. Gradual release of responsibility 4A.INTV1: peer-assisted writing 4B. INTV2: individual writing	Time-based approach
López et al. (2018)	Learning to revise and write argumentative texts	Primary students, 6th grade	Spain, six intact classes, 4 lessons per program (one lesson per week of 50-55 minutes)	Main researcher	Theories from a social cognitive view on writing	1. Product/process: (meta)cognitive knowledge about revision and revision process 2. Self-regulation: goal setting 3A. INTV 1: Process: revision strategy + self-regulation of the steps of the strategy 3B: INTV 2: Process: reader-oriented instruction	1. Direct instruction 2. Modeling 3. Collaborative & independent practice	Time-based approach

Grabowski et al. (2018)	Learning to write in multiple genres (i.e., report and argumentative text)	Secondary grade students in 5th and 9th grades; with more than 40 percent of students whose home language is not German (L1 + L2 learners)	Germany; classes came from urban schools; 11 lessons, one per week	Self-instructional materials	Theories from a social cognitive and linguistic view on writing	1. Product knowledge: offering linguistic and conceptual means to create coherence management in texts 2. Process knowledge: offering linguistic and conceptual means to foster perspective taking 3. Self-regulation skills: self-assessment	1. Direct instruction 2. Guided practice 3. Independent practice	Time-based approach and tasks are sequenced according to their difficulty
Link (2018)	Learning to write dissertations	Doctoral students	United States; a-week long dissertation writing workshop in groups for up to 30 students	Facilitators	Theories from a social cognitive and social cultural view on writing	1. Product: genre knowledge instruction 2. Process: general writing strategies and library search skills 3. Self-regulation skills: goal setting and self-assessment	1. Direct instruction 2. Modelling 3. Independent practice	Time-based approach

6.1 Using the recommendations for implementing the intervention in practice: professional development of teachers

A challenge in implementing interventions in practice is to establish a proper balance between the internal and ecological validity of the intervention study (Koster, Bouwer, & van den Bergh, 2017). With respect to internal validity, it can be more advantageous to implement interventions in classrooms by researchers or trained assistants. Although this will ensure that the intervention is implemented as intended, effects of such intervention studies cannot be generalized to regular educational practice as teachers often adapt interventions to their own context to meet the needs of their students. Moreover, we cannot expect any long-lasting effects of an intervention if teachers are not involved in a meaningful way (Borko, 2004). For instance, if the lessons are too complex or require too much preparation time it is highly unlikely that the intervention will have an enduring implementation and consequently an effect in practice. It is therefore essential to involve teachers in the implementation of writing interventions and to allow for some flexibility without sacrificing internal validity.

Professional development of teachers is a way to promote the successful implementation of an intervention in educational practice. As professional development activities are aimed at increasing teachers' pedagogical content knowledge and skills for teaching writing, variability between teachers will be reduced. Desimone (2009) indicates five core features of effective professional development programs, in other words, five key design principles for teacher professional development: focus on content and how students learn that content, consistency with existing teacher knowledge and beliefs and alignment with state standards, engagement of teachers in active learning, sufficient in duration, and collective teacher participation. Once teachers experience these features in professional development activities, this will lead to a change in their knowledge and skills and in their attitudes and beliefs, impacting their classroom practice and, in turn, also their students' achievements (Desimone, 2009). Within the present special issue, Graham and Harris (2018b) provide a systematic analysis of the design principles that underlie their practice-based professional development program.

Furthermore, to ensure that professional development supports teachers in making more informed decisions on how to flexibly adapt parts of the program while implementing the key aspects as intended, activities within a professional development program should align with the design principles of the intervention program. The contribution of Koster and Bouwer (2018) in this special issue provide an example of how the systematic description of the macro and micro-level features of an intervention can be used as a basis for a professional development for teachers.

6.2 Using the recommendations for evaluating an intervention: fidelity and effectiveness of interventions

Reports of writing interventions also need to evaluate whether the designed intervention has the intended results. First, it should be verified whether the intervention leads to the desired teaching and learning activities once it gets implemented in practice (i.e., fidelity of implementation). Fidelity of implementation refers to the alignment between the implementation of a writing program and the original writing program design in efficacy or effectiveness studies (O'Donnell, 2008). Low fidelity of implementation, which means that the writing program is not implemented as intended according to the original program design, endangers the internal and external validity of the intervention study (Dumas et al., 2001; O'Donnell, 2008). To measure fidelity of implementation, researchers first need to determine the crucial ingredients of their intervention. In this regard, we argue that the need for analytically describing writing interventions by means of design principles, instructional teaching activities and learning activities appears to be an essential first step in creating measures of fidelity. Once these crucial elements are analytically described, researchers can translate these activities into measures of fidelity. They can, for instance, create observational instruments assessing the quality of the instructional teaching activities (i.e., the extent to which teachers implement the instructional activities as intended). A further step might even be to assess the quality of students' learning activities by creating assessment instruments to measure the extent to which they apply the learning activities as anticipated.

Second, the effectiveness of the intervention regarding the desired writing outcomes needs to be evaluated. This can be done for the intervention as a whole, but for further theory building it is also necessary to gain more in-depth insight into the effectiveness of specific components of the intervention. By systematically describing subcomponents of the intervention at both a macro- and micro-level it is possible to compare and contrast the effectiveness of interventions at a more fine-grained level. In case of effective interventions this enables researchers to substantiate the effectiveness of distinct macro- and micro-level activities in the program. Similarly, for non-effective interventions, unexpected effects might be explained based on theory or previous empirical results.

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References

Bereiter, C., & Scardamalia, M. (1987). *The psychology of written composition*. Hillsdale, N.J.: L. Erlbaum Associates.

Berninger, V., Fuller, F., & Whitaker , D. (1996). A process model of writing development across the life span. *Educational Psychology Review, 8*(3), 193-218. doi:10.1007/BF01464073

Borko, H. (2004). Professional development and teacher learning: Mapping the terrain. *Educational Researcher, 33*(8), 3-15. doi:10.3102/0013189X033008003

De Smedt, F., & Van Keer, H. (2018). An analytic description of an instructional writing program combining explicit writing instruction and peer-assisted writing. *Journal of Writing Research, 10*(2), 225-277. doi: 10.17239/jowr-2018.10.01.04

Desimone, L. M. (2009). Improving impact studies of teachers' professional development: Toward better conceptualizations and measures. *Educational Researcher, 38*(3), 181-199. doi:10.3102/0013189X08331140

Dumas, J., Lynch, A., Laughlin, J., Smith, E., & Prinz, R. (2001). Promoting intervention fidelity: Conceptual issues, methods and preliminary results form the EARLY ALLIANCE prevention trial. *American Journal of Preventive Medicine, 20*(1), 38-47. doi:10.1016/S0749-3797(00)00272-5

Fidalgo, R., Harris, K., & Braaksma, M. (2018). *Design Principles for Teaching Effective Writing* (Vol. 34). Leiden; Boston: Brill.

Flower, L., & Hayes, J. (1981). A cognitive process theory of writing. *College Composition and Communication, 32*(4), 365-387. doi:10.2307/356600

Grabowski, J., Mathiebe, M., Hachmeister, S., & Becker-Mrotzek, M. (2018). Teaching perspective taking and coherence generation to improve cross-genre writing skills in secondary grades: A detailed explanation of an intervention. *Journal of Writing Research, 10*(2), 331-356. doi: 10.17239/jowr-2018.10.01.06

Graham, S. (2018). A writer(s) within community model of writing. In C. Bazerman, V. Berninger, D. Brandt, S. Graham, J. Langer, S. Murphy, P. Matsuda, D. Rowe, & M. Schleppegrell (Eds.), *The lifespan development of writing* (pp. 271-325). Urbana, IL: National Council of English.

Graham, S., & Harris, K. (2014). Conducting high quality writing intervention research: Twelve recommendations. *Journal of Writing Research, 62*(2), 89-123. doi:0.17239/jowr-2014.06.02.1

Graham, S., & Harris, K. (2018a). Evidence-based writing practices: A meta-analysis of existing meta-analyses. In R. Fidalgo, K. Harris, & M. Braaksma (Eds.), *Design Principles for Teaching Effective Writing* (pp. 13-37). Leiden: Brill.

Graham, S., & Harris, K. (2018b). An examination of the design principles underlying a Self-Regulated Strategy Development study. *Journal of Writing Research, 10*(2), 139-187. doi: 10.17239/jowr-2018.10.01.02

Graham, S., Harris, K., & Chambers, A. (2016). Evidence-based practice and writing instruction: A review of reviews. In C. MacArthur, S. Graham, & J. Fitzgerald (Eds.), *Handbook of Writing Research* (pp. 211-226). New York: The Guilford Press.

Graham, S., McKeown, D., Kiuhara, S., & Harris, K. (2012). A meta-analysis of writing instruction for students in the elementary grades. *Journal of Educational Psychology, 104*(3), 879-896. doi:10.1037/A0029185

Graham, S., & Perin, D. (2007). A meta-analysis of writing instruction for adolescent students. *Journal of Educational Psychology, 99*(3), 445-476. doi:10.1037/0022-0663.99.3.445

Graham, S., & Rijlaarsdam, G. (2016). Writing education around the globe: introduction and call for a new global analysis. *Reading and Writing, 29*(5), 781-792. doi:10.1007/s11145-016-9640-1

Koster, M., & Bouwer, R. (2018). Describing multifaceted writing interventions: From design principles for the focus and mode of instruction to student and teacher activities. *Journal of Writing Research, 10*(2), 189-224. doi: 10.17239/jowr-2018.10.01.03

Koster, M., Bouwer, R., & van den Bergh, H. (2017). Professional development of teachers in the implementation of a strategy-focused writing intervention program for elementary students. *Contemporary Educational Psychology, 49*, 1-20. doi:10.1016/j.cedpsych.2016.10.002

Koster, M., Tribushinina, E., de Jong, P., & van den Bergh, H. (2015). Teaching children to write: A meta-analysis of writing intervention research. *Journal of Writing Research, 7*(2), 299-324. doi:10.17239/jowr-2015.07.02.2

Levitt, H., Bamberg, M., Creswell, J., Frost, D., Josselson, R., & Suàrez-Orozco, C. (2018). Journal article reporting standards for qualitative primary, qualitative meta-analytic, and mixed

methods research in pyschology: The APA publiciations and communications board task force report. *American Pyschologist, 73*(1), 26-46. doi:10.1037/amp0000151

Link, S. (2018). Scaling up graduate writing workshops: From needs assessment to teaching practices. *Journal of Writing Research, 10*(2), 357-399. doi: 10.17239/jowr-2018.10.01.07

López, P., Rijlaarsdam, G., Torrance, M., & Fidalgo, R. (2018). How to report writing interventions? A case study on the analytic description of two effective revision interventions *Journal of Writing Research, 10*(2), 279-329. doi: 10.17239/jowr-2018.10.01.05

McCutchen, D. (2008). Cognitive factors in the development of children's writing. In C. MacArthur, S. Graham, & J. Fitzgerald (Eds.), *Handbook of writing research* (pp. 115-130). New York: The Guilford Press.

Merrill, M. (2002). First principles of instruction. *Educational Technology Research and Development, 50*(3), 43-59. doi:10.1007/BF02505024

O'Donnell. (2008). Defining, conceptualizing, and measuring fidelity of implementation and its relationship to outcomes in K-12 curriculum intervention research. *Review of Educational Research, 78*(1), 33-48. doi:10.3102/0034654307313793

Reigeluth, C. M., & Carr-Chellman, A. A. (2009). Frameworks for understanding Instructional Theory. In C. M. Reigeluth & A. A. Carr-Chellman (Eds.), *Instructional-Design Theoreis and Models* (Vol. 3, pp. 3-26). New York and London: Routledge Tailor and Francis.

Rijlaarsdam, G., Janssen, T., Rietdijk, S., & van Weijen, D. (2018). Reporting design principles for effective instruction of writing: Interventions as constructs. In R. Fidalgo, K. Harris, & M. Braaksma (Eds.), *Design Principles for Teaching Effective Writing* (Vol. 34, pp. 280-313). Leiden; Boston: Brill.

Zimmerman, B., & Risemberg, R. (1997). Becoming a self-regulated writers: A social cognitive perspective. *Contemporary Educational Psychology, 22*, 73-101. doi:10.1006/ceps.1997.0919