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### Disciplinary writing

*Four empirical studies on historical and philosophical literacy*

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## CHAPTER 6

### GENERAL DISCUSSION

The aim of this dissertation was to contribute to the development of secondary school students' disciplinary literacy, with a focus on writing proficiency. Developing students' skills for writing based on sources, which includes reading, is an important educational objective. In their future studies and working life, students need to be able to critically read and assess information, and to communicate their thoughts and reasoning in new texts. Since every discipline knows its own subtleties with regard to reading and writing, it is important for teachers to address these disciplinary nuances. When disciplinary literacy is mastered, a student has achieved the highest level of literacy.

In the Netherlands, which is the setting of our study, the development of students' disciplinary literacy has not been not a priority. Subjects generally center around content goals; communicating knowledge and disciplinary reasoning is underrepresented. However, previous research has proven the potential for teachers to address disciplinary literacy in multiple disciplines for students' literacy levels (De La Paz & Felton, 2010; De La Paz et al., 2014; De La Paz et al., 2017; Hand et al., 2002; Moje et al., 2004).

Students' declining literacy levels, and at the same time, society's elevated threshold, have increased the urgency to respond. In this dissertation, we investigated how teachers can address disciplinary literacy in their classrooms without disrupting their regular teaching. Because the subjects history and philosophy both are known to have high literacy requirements, we decided to focus on these two disciplines. The main research question was:

*Which instructional approach is suited to develop students' disciplinary literacy effectively and efficiently in upper secondary history and philosophy education?*

We investigated this question through design research: after examining the context and literature, we formulated design principles for writing tasks and strategy instruction. We used the task principles to help teachers develop

sound writing-to-learn tasks. The strategy instruction principles formed the basis for an instructional unit that was tailored to each subject (history and philosophy) and tested in practice.

### 1. OVERVIEW OF RESULTS

In a prestudy, we explored the context of content teachers' practice around writing task design, writing instruction, and writing support. The goal of this prestudy was to obtain a clear picture of history and philosophy teachers' writing practices and their needs for improving disciplinary writing instruction. Although we started the project with this exploration in an interview study, we did not report on this study with teachers until later, in Chapter 3.

The purpose of the prestudy was to connect with the then-current situation of teachers' teaching and support of writing in history and philosophy, and to disentangle general and discipline-specific processes. In the prestudy, we conducted interviews with teachers of history ( $n = 10$ ) and philosophy ( $n = 11$ ) from different schools. We asked them what type(s) of writing tasks they commonly used in their subject at the upper secondary level. Furthermore, teachers were asked to bring a representative example of a writing task for their subject, and we used this example task as a "hook". We asked the teachers what demands they made on the product of the task, how they supported the students' writing process, and what they thought the students' process should resemble.

The prestudy showed that teachers had difficulty with the verbalization of writing processes. Both philosophy and history teachers expressed that they found it challenging to describe what students should actually do in order to successfully complete their assignment. The majority of history teachers interviewed, disregarded aspects of the writing process; they focused on reading and evaluating sources rather than, for example, on structuring or revising their previously written text. Philosophy teachers were more aware of the role of writing processes in their assignments, implying that they recognized writing as a means of learning philosophy.

The first study reported on in this thesis (Chapter 2) was a background study of students' processes while performing writing tasks for the two concerning subjects in a think-aloud study. Fifteen high-achieving students were selected, since we aimed to explore which cognitive processes novice-experts would

show when they were reading and writing in the two disciplines. Our research questions were:

*RQ1: Which patterns in source-based reading and writing can be related to (a) the quality of text produced by students, and (b) the quality of students' thought processes?*

*RQ2: Are there differences with regard to RQ1 depending on the discipline under consideration (history versus philosophy)?*

For each subject, we selected a writing task based on sources, which was thought to be representative of the subjects in question, based on the interview study with teachers. For history, the task presented to students contained a source text, of which students had to write down whether it was useful to be able to answer a certain research question. For philosophy, the task required students to reflect on a specific statement. Students of 11th grade who took both subjects, performed the two tasks in random order, while thinking-aloud.

To identify students' cognitive processes, we employed a data-driven approach to find patterns in students' processes. For the segmenting and coding of students' think-aloud protocols, we also made use of existing frameworks for reading and writing in general (e.g., Hayes & Flower, 1981), and reading and writing in the disciplines (e.g. Brante & Strømsø, 2018; Corcelles & Castelló, 2015; Hof et al., 2015). Three main categories: reading, writing, and metacognition, were subdivided into 11 process activities. All process activities were analyzed on frequency, and absolute and relative duration.

Subsequently, students' protocols were assessed on two measures of quality: (1) quality of the eventual text, and (2) quality of students' thought process. Afterwards, quantitative analyses were conducted: we researched correlations between the quality of students' texts, the quality of students' thought process, and their process activities.

Results showed that the relations between quality and activities differed per task, or, as we suggested, per subject. In the history assignment, text quality mostly depended on planning variables. Students who spent more time on planning and planned more frequently, produced higher quality texts. By contrast, in the philosophy assignment, most of the variables affecting quality were writing variables. Students who wrote relatively high-quality texts

showed characteristics of expert writers: they produced longer texts, spent more time writing, and reviewed more often.

Furthermore, the relation between text quality and thought process quality differed per subject. The history assignment mainly provoked the outcome of students' reasoning process, while the philosophy assignment invited students to write down their entire reasoning as well; the tasks stimulated thinking and writing to codevelop.

The results of this contextual study had implications for the next steps in our research: we considered the character of the philosophy assignment, which evidently could stimulate students' thought process, to be a suited task type for use in other content classrooms as well. As opposed to the history assignment, which only required an outcome, the philosophy assignment could be characterized as a writing-to-learn task; such tasks are well suited for use in content classrooms, since they fit the focus on knowledge development.

In the next study (Chapter 3), design principles and an instructional design to enhance students' historical writing were developed. Furthermore, the instructional unit was evaluated on validity, practicality, and effectiveness. The main research question was:

*RQ: What are design principles for a valid, practical and effective design for writing tasks, and writing instructions, for upper secondary school history to support students' historical writing?*

Insights from our prestudy, think-aloud study (Chapter 2), and a literature search, led us to the formulation of two design principles, which formed the foundation of the instructional units for both history and philosophy. The two design principles were:

*If we want students to develop a profound understanding of content through writing, then:*

*Design principle #1: students should write short evaluative texts, based on multiple primary sources that represent multiple perspectives.*

*Design principle #2: students should be provided with discipline-specific, dual-route, reading-writing strategy instruction which is easily applicable for teachers.*

The strategy instruction was included to support the construction of coherent knowledge; making the writing process manageable, is likely to promote knowledge construction, and having a dual route to accommodate different writing preferences prevents the writing process from becoming a burden.

To put design principle 2 into practice, a strategy was designed, based on the insights obtained in our think-aloud study, and previous interventions studies, using writing strategy instruction in the content classroom (e.g., De La Paz et al., 2017). This resulted in the seven-step Read-Think-Write Strategy (RTW strategy), which was accustomed to historical evaluative questions, in the form of "to what extent"-questions: questions that were assumed to be writing-to-learn questions. The strategy offered two routes to accommodate different writing process preferences: "free writers" and "pre-planners".

In a trial study, the instructional unit was implemented and evaluated by two history teachers in a switching replications design with three measurement occasions. As measurements, three different writing tasks were designed in cooperation with the participating teachers. This procedure enhanced feasibility and encouraged teachers' engagement with the materials.

Students' texts were assessed by a jury of history teachers on three criteria: holistic quality, content quality, and quality of structure. Results showed indications of effectiveness on content quality. However, results were not fully convincing, possibly because the second principle did not stand out sufficiently. The participating teachers valued the writing tasks as described in principle 1. They doubted however some aspects of the strategy instruction as mentioned in principle 2. The main recommendation arising from this trial was to increase teachers' background knowledge of the design principles, and to explain the underpinnings behind these principles more prominently. In a redesign, a teacher development session was thus included.

In the third study (chapter 4), we tested the effectiveness of the optimized instructional design in a quasi-experimental study with three research conditions, to obtain insights into effects of two factors: (1) implementation of writing tasks, and (2) implementation of writing process instruction. Research questions were:

*RQ1: To what extent does the replacement of workbook assignments by evaluative writing tasks contribute to (a) disciplinary source-based*

*writing proficiency, (b) epistemic experience of writing, and (c) students' course content knowledge?*

*RQ2: To what extent does the addition of strategy instruction to such writing tasks contribute to (a) disciplinary source-based writing proficiency, (b) epistemic experience of writing, and (c) students' course content knowledge?*

*RQ3: To what extent are effects on RQ1 and 2 moderated by learner characteristics (writing beliefs and self-efficacy)?*

In a first experimental condition (WT+S; 7 groups, 119 students, 6 teachers), participating teachers designed writing tasks, which were in line with design principle 1. Additionally, they implemented an optimized version of the designed writing strategy instruction, using the RTW strategy. In a second experimental condition (WT; 3 groups, 63 students, 2 teachers), teachers also designed writing tasks, but the strategy instruction was omitted. A third condition was a non-writing control condition (C; 4 groups, 86 students, 3 teachers).

In a quasi-experimental pretest-posttest design, with two writing tasks as a pretest and posttest, we aimed to measure effects on students' writing proficiency. These writing tasks were evaluative tasks on a topic which was not discussed during the history lessons. After the strategy instruction - containing direct instruction, through a video showing modeling peers, and discussions of exemplars - students practiced writing through performance of two writing tasks, which were designed by their own teacher, and therefore fully tailored to the content of their history lessons. These writing practice tasks thus differed from group to group.

Students' pre- and posttest texts were assessed by a jury team of history teachers, on five aspects: situational understanding, multiperspectivity, source use, argumentation, and structure. Furthermore, texts were assessed holistically, by means of a text scale. These scores were indicators for students' writing proficiency in history.

Furthermore, we explored the effects of the writing tasks and strategy instruction on students' epistemic experience: to assess to what extent students experienced writing tasks as learning tasks. Finally, we explored whether writing tasks were a proper alternative to other, more common, learning activities for learning history. Therefore, we measured students' course content

knowledge in a pre-post recall test. The topic of this recall test differed from group to group, as each group followed their regular year plan.

Results showed effects on students' writing proficiency: students in Condition WT+S, who had received writing strategy instruction, outperformed other students: they wrote better texts. This applied to students with all self-efficacy levels and beliefs types. Significant effects of the additional strategy instruction were visible in all aspects of text quality, holistically and on discipline-specific criteria. Next to that, students in Condition WT+S more often indicated they experienced the epistemic function of writing, compared to the control condition.

Recall test results showed that students in Condition WT+S performed equally well as students in the other conditions regarding course content knowledge gain: time had been devoted to writing strategy instruction, and was not wasted, as had been feared by content teachers. These results imply that writing seems to be a promising learning activity for history, however, only when attention is paid to the writing process, this results in more advanced writing proficiency.

The second and third study (Chapters 3 and 4) were focused on the subject history. However, to compare different disciplines, we have investigated the effects of a similar instructional design for philosophy in a fourth study (Chapter 5). This study focused on the interaction of three philosophy teachers with writing task design and the instructional unit, which they implemented into their philosophy lessons in 10th-grade. The instructional design was open to context modifications. Implementation was accompanied by teacher guidance activities, utilizing implementation of the intervention as a learning trajectory for teachers. Six activities integrated in the research process were aimed to prompt teachers' contemplation of writing instruction and writing quality. Our main research questions were:

*RQ1: Which design principles can be derived from previous research on developing secondary school students' philosophical literacy?*

*RQ2: How can these design principles be translated into an instructional unit?*



*RQ3: How do philosophy teachers interact with (a) principle-based writing task design, and (b) an instructional unit to support students' disciplinary writing?*

*RQ4: To what extent has the instructional unit contributed to (philosophy teachers' notions of) progress in students' philosophical writing development?*

This study can be characterized as a design study, to profoundly explore how philosophy teachers interacted with the designed instructional unit, what results it yielded for students' disciplinary writing proficiency, and to what extent students' actual achievement was consistent with teachers' expectations.

In this study, we adapted our instructional unit for history to a next knowledge domain: philosophy. The two design principles for writing tasks and instruction remained similar. The main difference between the two units concerned the RTW strategy, which was tailored to "philosophical questions". The four main aspects (reading, thinking, writing, and monitoring) remained, but contained typical philosophical "colors": students were prompted to contemplate different perspectives in order to establish their own stance towards the issue, to show their independent philosophical thinking, to write from their own perspective, to use philosophical concepts, and to include examples from their own life or current events as illustrations. The accompanying strategy instruction was optimized, but did not change conceptually.

Three philosophy teachers were instructed to design their own writing tasks for use in their 10th grade classes, and implemented the designed instructional unit. Implementation was accompanied by teacher guidance activities, which were aimed to prompt teachers' contemplation of writing instruction and writing quality. We monitored and evaluated teachers' implementation, to explore how resilient the design would be in open, ecologically valid contexts (RQ3) and conducted evaluative interviews with students and teachers to research their adjustments to the design.

Furthermore, we explored student progress as perceived by teachers (RQ4). Students' writing proficiency was measured with writing tasks (T1-T2-T3), two of which were designed by the group's teachers (T2-T3), and thus differing from group to group. Teachers then selected a benchmark text for each task: the "average" text for that task. This activity elicited a reflection on quality criteria in philosophical writing.

To frame teachers' perceptions of progress, the writing tasks and students' texts written in response to these tasks were assessed by independent jury teams, with benchmark texts as references. In reflective interviews teachers explained and reflected on their students' results in reflective interviews. Results indicated that philosophy teachers were able to design qualified writing-to-learn tasks, when instructed on theoretically grounded design principles. The accompanying instructional unit turned out to be feasible and instructive. With regard to students' progress, we carefully concluded that the instructional unit was a valuable contribution to students' philosophical writing proficiency. Students showed more independent philosophical thinking in their text, whilst tasks became more complex. The teacher guidance program elicited reflection on the value of writing tasks and instruction for subject goals, and on perceptions of student progress.

In general, the results of Chapter 5 provoke discussion about what writing tasks and writing instruction can provide for philosophy education and what a high-quality philosophical text precisely entails.

## 2. CONCEPTUAL ISSUES

The main objective of this thesis was to enhance secondary school students' disciplinary literacy, by improving teachers' practice with regard to writing task design and teaching writing in their respective subject. In retrospect, three lines of development have become apparent through the four studies of this dissertation, namely, with regard to (1) disciplinary writing; (2) supporting writing; and (3) innovation of teachers' writing practice.

### 2.1 Disciplinary Writing

Before we can think about how to illuminate the disciplinary aspects of writing in subject lessons, we will need to consider the writing tasks employed in content lessons. The think-aloud study of Chapter 2 revealed that writing tasks can highly direct students' cognitive processes. The history assignment used in this study predominantly elicited students' reasoning outcome. Resulting texts, therefore, offered limited insight into students' reasoning underlying that outcome, whereas that might be precisely what is most valuable to teachers.

While we cannot quite say that all history assignments are of such a nature, the one used in the explorative study was selected to be representative of the subject, based on the prestudy. History teachers tend to align their

assignments with what is asked in the final exam: in the Netherlands, that is, answering shorter questions. In Dutch history education, therefore, writing tasks rarely focus on communicating the underlying thought process, however, this does not mean that no reasoning process should take place, or that the reasoning process is not considered important. On the contrary: history teachers put much effort into students' historical reasoning skills. Why, then, would a content teacher not employ a writing assignment to be a vehicle for teaching this reasoning skill as well? Not only will it teach students to express and organize their thoughts on paper, but it will also help the teacher gain insight into the student's reasoning level. A good example is the document-based question (DBQ), an exam task in the US, which might support learning about history as an inquiry into the past (De La Paz, 2011; Sendur, 2021). Therefore, we used tasks similar to DBQ essay tasks in the continuation of our studies. History teachers' evaluations after implementation of the instructional unit (Chapters 3 and 4) showed that they valued writing tasks, when these were aimed to exploit the epistemic function of writing. They seemed uninformed regarding the effects a writing task might have on learning, and their writing task design relied on assessment, rather than on a contemplation of learning effects.

For philosophy teachers, this was much less of an issue. The most frequently mentioned writing tasks were philosophical essays or thought experiments. These are genres that are generally well suited as teaching tools; these genres invite thoughts to be further developed while writing.

All in all, we can conclude that an appropriate writing task for both of these school subjects focuses on learning, which might be interpreted as content learning and/or learning to reason (Galbraith, 2015). Learning is generally enhanced when students are prompted to explore different perspectives on an issue, by means of multiple sources to analyze and interpret, and to provide their own perspectives on the issue based on the sources, in an evaluative text. Since the label "evaluative text" is not quite common in either subject, we translated the genre into "to what extent-questions" for history, and "philosophical questions" for philosophy, which are familiar labels within each subject.

When teachers are instructed on design principles for disciplinary writing tasks, our studies show that teachers are capable of designing qualified tasks. Overall, history teachers were comfortable with the design principles, which suited their subject goals of sourcing and discussing historical issues. Their

main concern was to keep the tasks concise, to keep the number of sources manageable.

Philosophy teachers struggled with the length of the writing tasks for different reasons. They generally recognized the usefulness of short tasks to make students' processes visible in class, but at its core, the task did not correspond to their view that philosophical thinking, and with that, reflecting and writing, simply takes more time than is available in a single class period. Intrinsic to philosophy is the contemplation of an issue; a process that takes time. The prescribed short tasks ran counter to this premise, as the thought process was delineated by the short time. This design principle thus tore into teachers' conceptions of the learning effects of writing assignments. Nevertheless, teachers recognized after the intervention that short tasks can be a different way of utilizing writing for learning, namely, to master the procedure of philosophical writing.

All in all, with this dissertation, we advocate the integration of writing tasks which can promote learning, in order to develop students' disciplinary literacy. In our studies, we used prompts which covered the core of a topic to be learned, as a replacement of workbook assignments, in which core topics are often broken down into a series of shorter questions. Results of our studies showed that teachers valued the writing tasks, history teachers in particular. Furthermore, our experimental study of Chapter 4 showed that students who performed writing tasks and received strategy instruction, experienced the epistemic function of writing. Presumably students are learning, when they perceive the task as relevant.

Including evaluative writing tasks might be a vital counterbalance to the contentious mile-wide-inch-deep approach in history education, where teachers are alleged to cover a large set of topics, but on a somewhat shallow level. Since writing is time-consuming and cognitively demanding for students, we argue to include writing tasks every once in a while, next to other useful learning activities which also have the power to develop students' knowledge accretion and disciplinary reasoning.

## **2.2 Supporting Writing in the Content Classroom**

When writing is used as a learning tool (writing-to-learn) as well as a means to work on literacy (learning-to-write), it is advised to provide strategy instruction. Our studies have shown that disciplines differ: writing processes as well as texts have discipline-specific elements, which should be addresses in

content classes. With our studies, we provide examples of reading-writing strategy instruction implementation in two subjects. The strategy instruction we developed was highly discipline-specific, based on previous research on reading and writing in the specific subjects, combining theoretical understanding of generic reading-writing development, and disciplinary literacy.

Our prestudy (Chapter 3 and 5) revealed several obstacles to overcome. Most importantly, the interviews with history and philosophy teachers showed that, overall, teachers have limited knowledge about writing processes. Moreover, in general, history teachers remain staunch supporters of "content first". This observation raises the question also discussed by Moje (2008), what might be the root cause for history teachers to be so adamant in their adherence to a traditional teaching paradigm. While there seems to be an increasing focus on historical reasoning skills in history education, literacy skills hardly play a role.

An appropriate example of a tenacious teacher is one of the teachers who participated in the history trial study (Chapter 3). They supported the implementation of writing tasks that focused on learning; they called it "the essence of history", to work with evaluative tasks. But for providing writing instruction, to support students in completing such a task, they felt less responsibility. The steps in the strategy that dealt with reading and reviewing sources felt like a logical addition in their history teaching, since these steps addressed typical historical reasoning skills, but that sense of responsibility seemed to disappear at the steps where students transitioned into communicating their reasoning process.

An explanation for teachers' insistence on knowledge accretion might be an overloaded curriculum. Teachers commonly consider a knowledge base to be necessary to develop reasoning skills. A logical consequence would then be for teachers to build students' knowledge first, and subsequently address reasoning skills. Literacy then often remains elusive, due to the time pressure. However, in our study, we tried to consolidate knowledge building, reasoning skill development, and literacy proficiency, as we assume these might develop hand-in-hand.

As in their attitude towards writing tasks, participating philosophy teachers differed from history teachers with respect to their beliefs about providing writing instruction and support. Philosophy teachers already frequently used tasks that could stimulate thinking, and these teachers generally felt responsible for guiding the process precisely, because they aimed thought processes and writing to converge. The main obstacle for philosophy teachers was their

lack of knowledge about reading and writing processes. However, with our guidance, participating teachers rapidly felt familiar with providing process instruction.

A key question in our research, then, was: how can we achieve teacher engagement to ensure that they integrate appropriate writing tasks as opportunities to develop disciplinary literacy, and that they incorporate time for additional reading-writing instruction in their subject lessons? We addressed this conundrum by inviting teachers to develop their own writing tasks to be embedded conveniently in the curriculum. Writing in-class enables teachers to observe and support students' process. Our advice was to make use of minimally invasive short tasks, that take approximately one lesson period to complete. In addition, we developed feasible materials, such as a video with modeling peers, to relieve teachers of the complex, knowledge-requiring components of writing instruction. Finally, we examined whether writing instruction affected content learning (Chapter 4) as a negative effect, a common fear (primarily among history teachers) which is generally brought up as an excuse to avoid writing instruction. Students' recall tests showed that writing tasks, when accompanied by process instruction, were able to compete with regular history education as regards history knowledge acquisition; a reassuring result.

Despite our efforts for a feasible instructional design, the unit presented challenges. The main challenge for teachers was the discussion of exemplars. To address subject specificity in a writing task and text, a teacher will need to be aware of what a good historical or philosophical text actually entails. In practice, teachers are not overly concerned with differences between subjects; they are primarily focused on their own subject. Teachers would like to make use of general writing skills, but do not link general writing skills to subject-specific writing skills because they are not consciously engaged in this matter. Knowledge of subject-specific writing proficiency therefore often remains implicit among students.

This may be, because teachers themselves find it difficult to make explicit what the criteria are for texts in their subject. When exemplars were discussed in class, students often suggested requirements related to general text quality, rather than subject-specific text quality. Generic elements, such as overall text structure, also provide guidance for subject-specific reasoning to emerge; therefore, it is not trivial. Although teachers indicated they were satisfied with generic requirements to some extent, nonetheless a sense of dissatisfaction

prevailed. Of course, both a history text and a philosophy text should have a clear text structure, but what distinguishes an excellent text from a mediocre text in history or philosophy? In fact, the discussion of text quality lingered at the level of basic, or perhaps intermediate, literacy but did not reach a profound discussion at the disciplinary level (Shanahan & Shanahan, 2008). Therefore, it might be valuable if teachers from different disciplines exchanged more thoughts with each other about what they consider constitutes a good text in their discipline. It could make teachers aware of the text and process elements that distinguish their subject from other subjects.

Our study revealed such nuances for the subjects history and philosophy. In response to a "to what extent"-question in history, students are required to take a stance towards the issue, based on a profound investigation of historical sources. Students are required to explore a variety of arguments, to support them with sources, and balance them. "Sourcing" is an important step in this process (Wineburg, 1991; Van Drie & Van Boxtel, 2008). The student's stance towards the issue is explicitly based on the historical inquiry; personal preference has no place. This way, a student will show their capacity to reason historically.

This is different in a student's response to a philosophical question, where personal notes are appreciated, provided that they are supported. In a philosophical text, the student as a writer is visible throughout the text, the text is obviously "colored" by the student's perspective. This personal perspective is what makes the philosophical text interesting: it shows their independent philosophical thinking. Thus, how an answer to an evaluative question should be framed, depends on the discipline to a large extent.

### **2.3 Innovating Practice**

Previous literacy researchers (e.g., Gillis, 2014) have advised to not adopt reading and writing strategies in the content classroom, but to adapt those strategies, and to always keep track of content goals. To meet this requirement, interventions aimed at students' literacy development would need a large amount of flexibility. Over the three intervention studies, therefore, we might recognize an increase of openness of the designs-as-constructed. In the first trial study (Chapter 3), we started with a semi-open design, with two teachers from the same school co-designing writing tasks to use in their classes. In the experimental study (Chapter 4), teachers from multiple schools were involved, which resulted in many different tasks covering a wide range of topics. Moreover, we presented different methods for teachers to choose

from to discuss exemplars with teachers in class. Flexibility of the design was expanded again in the philosophy study (Chapter 5), with highly contextual measurements and therefore an also highly contextual assessment procedure to determine student progress. Although these flexible research designs presented us with methodological challenges (as discussed in the next section), evolving our research design to include more openness in each subsequent study may indicate the need for flexibility in innovating teachers' writing practices. When a design is too rigid, teachers might see too many barriers that prevent them from integrating writing instruction after all.

In our research, it gradually became clear that we needed to guide teachers in implementing writing instruction and supporting students in their writing process. Even though we aimed to keep the interventions accessible, in our intervention studies (Chapters 3, 4, and 5), guidance to teachers intensified and became more reflective. We aimed to add practical significance in the long run; therefore, we aimed to not only enhance teachers' practice, but also challenge their beliefs about writing and writing instruction. We thus aimed for cultural change in addition to technical change (De Vries, 1984).

Eventually, the technical guidance focused on a number of knowledge components: (1) knowledge about writing tasks, which type of task is appropriate when; (2) knowledge about text quality, especially disciplinary aspects; (3) knowledge about (disciplinary) writing processes; and (4) procedural knowledge about how to guide writing processes, and (5) how to discuss writing products. These components will be useful for future professional development programs aimed at teachers' improvement of literacy teaching.

### 3. METHODOLOGICAL ISSUES

In this section we address six issues concerning research methodology: (1) the power of mixed methods design research; (2) validity; (3) teacher involvement; (4) measuring content knowledge; (5) epistemic experience; and (6) measuring writing proficiency.

#### **3.1 The Power of Mixed Methods Design Research**

In this thesis, Chapters 3 and 5 are explicitly presented as design research, aimed at the design of an instructional unit to promote students' historical and philosophical literacy. However, this thesis as a whole can be characterized as educational design research as well: the four studies together represent the different stages of analysis and exploration (Chapters 2 and 3), design and



construction (Chapters 3 and 5), and evaluation and reflection (Chapters 4 and 5).

Next to quantitative measures, we frequently made use of qualitative approaches to obtain more insights in students' processes and progress, which brought many advantages. First of all, we used qualitative methods in the exploratory phase of the study. We conducted interviews with teachers to establish a window into the context in which we were operating. The explorative study of students' cognitive processes while performing writing tasks for two different subjects, was also of qualitative nature. Of course, the think-aloud method also has disadvantages: for example, students' verbalizations are not conclusive of all students' thoughts (Pressley & Afflerbach, 1995; Van Someren et al., 1994). Nevertheless, the think-aloud method provided us with a solid insight into the activities students perform while making writing assignments for history and philosophy. This insight provided a solid base for designing a reading-writing strategy for each subject.

Invariably, we also used a qualitative approach in evaluating the implementation of the lesson series (Chapters 3, 4, and 5). After implementation, we consistently conducted interviews with teachers and students, not only to determine implementation fidelity, but also to get an idea of teacher and student reception. To what extent did the new writing tasks and writing instruction align with teachers' views of their subject, and why? And how did students experience learning through writing?

A drawback of our qualitative approach in the evaluations with students, was that not all students were consulted. Students participated in the interviews voluntarily, which might have resulted in a selection bias. Students who were willing to participate, might have been those who were more motivated than others. We tried to overcome this by asking teachers to encourage a diverse group of students for participation. However, a quantitative measure (e.g., questionnaire) could have provided valuable additional information.

A final beneficial qualitative addition in our research, were the retrospective interviews with philosophy teachers, after the implementation of the design as well as after the assessment of the student texts. To enable the latter, students' texts were assessed by an independent jury. This jury made use of benchmark texts, which were selected per task by the philosophy teachers to represent "the average student's expected performance". The remaining texts written in response of the respective task were assessed in relation to this

benchmark. After the rating procedure, the teacher was presented the jury's scores to reflect on.

In their reflections, teachers not only contemplated the implementation of the instructional unit, but also the level of the writing tasks they had developed, the benchmark texts they had selected, and the scores the students in their group obtained in relation to those benchmark texts. Among other things, this method provided us insights into teachers' views of what exactly constitutes a good text in philosophy. Furthermore, we obtained insights in teachers' perceptiveness of students' writing proficiency level. The fact that the texts were assessed by an independent jury added an extra dimension: it offered us insight into the teacher's assessment of the difficulty of self-composed writing tasks and the teacher's expectations of students' performance level. The in-depth approach in Chapter 5 thus provided us with a flood of observations.

In addition, during the different stages of the research project, we made use of quantitative methods, to measure if students' writing proficiency had progressed after intervening with a writing strategy instruction. In three studies, students' texts were assessed by jury teams (Chapters 3, 4 and 5), and their scores were analyzed using multilevel statistical analyses (Chapters 3 and 4). The larger scale of the Chapter 4 study, with 268 students participating, provided us with evidence of students' progress in their disciplinary writing. Precisely the combination of different methods thus offered great insight, illuminating different perspectives.

### **3.2 Validity**

Generalizability was an important concern for the impact studies in our research project. We wanted to design an instructional unit that could contribute to students' subject-specific writing skills. Generalization across disciplines seemed not to be possible here - after all, it is specifically discipline-specificity that matters - but we did aim to generalize across teachers and students, per discipline. In particular, we aimed for generalizability in a number of areas.

First, we prioritized ecological validity. Our research was conducted in existing groups of students, taught by their regular teacher. We preferred a teaching situation representative of the real world, rather than a researcher in front of the class. Moreover, our aim was to investigate to what extent the subject teachers themselves could cope with the developed writing

instruction. After all, the principles behind the instruction had already proven their value in previous research.

Also, considering ecological validity, and then mainly the integration of instructional materials into regular curricula, we did not completely seal off the lessons: we entrusted the design of writing tasks to teachers themselves, accompanied by a PD session on design principles for effective writing-to-learn tasks. Hereby, we aimed to promote engagement, and to effectuate a knowledge base of teaching writing and writing task development. This decision may have led to create some muddling, as groups became less directly comparable. However, variety existed in all conditions (Chapter 4). We presume generalizability was actually also enhanced by using such a variety of writing tasks, covering multiple topics, in both subjects. Moreover, writing tasks were tuned to different grades, since in the history studies, students of multiple grades (10th-11th-12th) participated.

We also tried to enhance generalizability by consistently exploiting design principles. After implementation of a unit, we evaluated to what extent the design principles behind the design had been brought to bear. Responding to the appeal by Rijlaarsdam and colleagues (2017), to consider an intervention as a construct, and to define and operationalize it as such, we explained our subject-specific interventions as comprehensively as possible in Chapter 3 (for history) and in Chapter 5 (for philosophy). The importance of design principles for implementation also became evident after the trial study of Chapter 3, where we concluded that teachers must be exceedingly aware of the underlying principles, in order to properly implement an intervention.

In addition, the methodology itself enhanced generalizability. First, generalizability was sought during the data preparation phase (Chapter 4), by including a variety of raters in the text assessment procedure. Second, we used statistical analyses, more specifically multilevel modeling, which allowed us to generalize across tasks, students, groups, and teachers.

We might criticize the internal validity of the study in Chapter 4, in which the teachers themselves chose the research condition, rather than being randomly assigned to it. Since we considered motivation of the teacher to be an important factor for successful educational innovation, teachers were offered a choice with regard to the two experimental writing conditions. As a result, we do not know to what extent the positive results could also be due to the teachers' positive stance towards strategy instruction from the beginning.

One might also comment on the validity of the research instruments: although randomization is not always necessary to detect effects, all of our

studies had fixed pre- and post-measurements for writing proficiency. As a result, differences in pre- and post-measurement scores could be due to task differences. For example, prior knowledge about a particular topic could have played a role. When students have a high level of prior knowledge about a topic, they will write better texts (Olinghouse et al., 2015). Therefore, in interpreting the results, we only considered the differences on the post-measurement; the pre-measurement was included as a covariate. However, this raises a next validity issue: in the study of Chapter 4, we only used one task as a post-measurement. We might have to consider the extent to which this task was representative.

However, we tried to avoid any of these biases by asking control questions. We did find differences between the pre- and post-measurements, but they were present in all conditions. In addition, we used a transfer task, to demonstrate that students were able to perform new tasks on a new topic. In the study of the effects of the lesson series on writing skills in philosophy (Chapter 5), we controlled for task differences in a different way: all writing tasks were analyzed in great detail by an independent jury team.

A final comment regarding external validity, is a comment about the limited research group: all participating groups received education in upper secondary levels of the pre-university track. The target group of our study was upper secondary education, because in these grades, students are expected to read and write longer and more complex, abstract texts, which also explicitly address disciplinary literacy. We have not tested whether the materials are also suitable for lower grades or tracks. However, writing based on sources can be done at many levels, and experience shows us that adapting writing tasks to the level of the target group in question is possible. The teachers in our study distinguished between tasks for 10th, 11th, or 12th grade students, seemingly without much effort. Whether strategy instruction in modified form will also be effective, is beyond the scope of our current study, but previous research has proven strategy instruction to be successful in earlier grades (De La Paz & Graham, 2002), and for students with mixed abilities (De La Paz, 2005; Wissinger et al., 2018).

### **3.3 Teacher Involvement**

As mentioned in the previous section, we entrusted the design of the writing tasks to the content teachers participating in our studies. We aimed to involve history and philosophy teachers in the design process for several reasons. First of all, we expected that teacher involvement would make the design

more feasible, and it would enhance generalizability. After all, teachers would not be bound to one topic, nor would the results of the studies. Moreover, the writing tasks would be better writing-to-learn tasks, when these would actually be tailored to the content learning goals as envisioned by the teacher and/or prescribed by the curriculum. Next to that, discipline-specificity would be ensured, and the content teacher would be valued as the expert in their field. Finally, with the involvement of teachers we aimed to effectuate their engagement to disciplinary literacy.

One drawback of teacher involvement in the design process was that tasks not only differed in content, but also in length, complexity, and abstraction. For example, a prompt about a more complex issue required more source texts. As a result, there was a wide variety of tasks, and since our research team mainly holds a linguistic perspective, it was not easy to estimate the extent to which the tasks were still comparable in, for example, the degree of prior knowledge required for the task. At the same time, an added benefit was that we could obtain insights into teachers' interaction with design principles, and which feedback and guidance they required.

### **3.4 Measuring Content Knowledge Learning**

This research project was primarily concerned with promoting discipline-specific writing, rather than content learning. Learning indicators were mainly investigated (in Chapter 4) to explore whether we can promote writing development without impeding content matter. Our main aim was to enhance students' disciplinary literacy, and to gain power in convincing teachers to implement interventions with this aim, we investigated learning effects next to effects on students' writing proficiency.

Foremost, we measured students' learning by assessing students' texts. However, to what extent can learning be measured with writing tasks? What kind of knowledge is enhanced with writing in the disciplines, with the writing genres we used? Philosophical reasoning, one of the main goals of philosophy education, was considered well-represented in resulting texts. Students' level of historical reasoning can also be derived from their texts; however, history seems to depend more on facts and functional knowledge, than philosophy. Therefore, we included an additional learning measure in the Chapter 4 study: a recall test, measuring content knowledge of the topic discussed in class during the intervention period.

Nevertheless, we could question whether this recall measurement was the best instrument to measure content knowledge. Previous research has

criticized recall tests as a measure of knowledge gain through writing, since a recall test is likely to detect knowledge accretion, which is, according to Schumacher and Nash (1991), an "unlikely outcome of writing" (p. 92). Despite this objection, the recall measure demonstrated that knowledge accumulation was not limited by the writing strategy instruction.

### **3.5 Epistemic Experience**

In Chapter 4, we added a third indicator of content knowledge: epistemic experience. This concept refers to the degree to which students experienced the epistemic function of writing: the awareness of constructing knowledge through writing.

The concept was derived from Bereiter's (1980) model of skill systems in writing development. This model includes six stages of development in the maturation of writing, with epistemic writing as the highest stage. Epistemic writing transcends the skill of unified writing: the ability to understand not only other people's perspectives on the text one is writing (what we call communicative writing), but also one's own perspective as a reader of one's own text. As a result, students become more authentic writers, and develop more personal styles.

According to Bereiter's model, epistemic writing emerges when the skill of reflective thought is developed. Creating a text then becomes a personal search for meaning. Writing becomes "an integral part of thinking" (Bereiter, 1980, p. 88). Philosophical essay tasks and evaluative questions based on historical sources rely heavily on unified and epistemic writing, the complex stages of writing.

In the study in Chapter 4, epistemic experience was measured to indicate students' knowledge development. We assumed that the sense of learning contributed to actual learning. Epistemic experience was highest in the strategy instruction condition: students who received supportive writing instruction apparently developed the epistemic potential of writing. Since Bereiter's skill system is about writing development in general, we might thus even infer that strategy instruction enhanced students' writing proficiency in a broader sense.

### **3.6 Measuring Writing Proficiency**

We invariably measured students' discipline-specific writing proficiency in our research through disciplinary writing tasks. When assessing students' texts, we involved subject teachers: after all, we wanted students' texts to

improve in the eyes of the subject teacher, i.e., on subject-specific criteria. During the implementation of the intervention, however, we noticed that subject teachers found it difficult to make the criteria for good disciplinary texts explicit. Therefore, in addition to analytical ratings, we have continuously used holistic scoring methods next to analytic scoring. Holistic scoring makes the rating task more complex: it requires raters to decide on a single score whether a text exposes different proficiency levels in the various writing components (Bacha, 2001; Barkaoui, 2010). However, the advantage of this method is that a rater can include criteria that are not covered by an analytical scoring rubric.

In two of our studies using both holistic and analytic scoring of history texts (Chapters 3 and 4), we concluded that holistic and analytic scores correlated highly, implying holistic scoring to be an appropriate method for assessment of disciplinary texts, despite teachers' knowledge of text quality criteria seeming tacit.

#### 4. RESEARCH ASSETS AND FUTURE RESEARCH

We consider the main assets of our research to be its interdisciplinarity and its subject-specificity - which might seem paradoxical. The initial aim of our research was to build a bridge between writing skill development as taught in the L1-classroom on the one hand, and writing skill development in the disciplines on the other. Gradually, however, the differences between the subjects that at first glance seemed to be close together, turned out to be of great importance. We therefore tried to make these explicit to students. In this way, we were able to contribute to research on discipline-specificity. What is specific to writing in history and philosophy? For history, this area is less unexplored than for philosophy; however, history is often contrasted with completely different disciplines, such as mathematics and science (Goldman et al., 2016; Lee & Spratley, 2010; Shanahan & Shanahan, 2008; Shanahan et al., 2011) or compiled together with other subjects to form social studies (Graham et al., 2020). This is in fact still a collection of subjects, which have their own subtleties, though certainly relevant.

At the same time, we tried to overarch, and look for the similarities between subjects, in order to make statements for disciplinary writing in general. We tried to identify the boundaries between intermediate and disciplinary literacy (Shanahan & Shanahan, 2008). Where does generic writing end, and where does discipline-specific writing begin? Because basic literacy underlies disciplinary literacy, we were able to make good use of frequently

conducted research on general writing skills (Graham & Harris, 2018), and build on these recommendations based on subject-specific reading and writing processes (Chapter 2) and subject-specific reasoning processes (e.g., Wineburg, 1991).

Research outcomes are known to give rise to new questions. First, our study calls for theoretical research into subject-specific reading and writing process models. In the think-aloud study (Chapter 3), we obtained conceptual understanding of disciplinary reading and writing processes, but we did not develop a framework. With larger-size studies, exploring processes of a significant number of students while performing a variety of disciplinary tasks, a model could be created to serve as a basis for disciplinary literacy instruction. Frameworks for subject-specific reasoning, such as the one for historical reasoning of Van Drie and Van Boxtel (2008), can serve as a foundation for reading and writing in history. However, such frameworks will need transfer to the domain of literacy. Furthermore, to our knowledge, such a framework is not available for philosophy.

There is also a need for research on the nuance differences between different subjects (cf. Goldman et al., 2016; Shanahan & Shanahan, 2008; Shanahan et al., 2011). In addition, research on the relationship between learning and writing could be further explored across disciplines. Galbraith's dual-process model (1999) might provide its groundwork. In this model, writing is not seen as a form of problem solving, as Hayes and Flower's classic model (1980) assumes, where the writer is supposed to set goals and pursue them step by step. Content discovery is largely ignored by this model; the content is already there. The dual-process model, on the other hand, assumes that writing is inherently about discovering knowledge or content. Writing involves the interplay of two processes: the knowledge-constituting process, in which implicit knowledge is activated and comes to the surface, and the knowledge-transforming process, in which the knowledge is organized, aimed at communicating the knowledge.

Another question left unanswered by our research is the extent to which students actually modified their writing strategies as a result of strategy instruction. We did offer students two different routes in the strategy instruction (for "free writers" and "pre-planners"), however, we did not investigate which writing routines were preferred by students, and whether, after instruction, they applied a different strategy route. Furthermore, from previous research (Van Steendam et al., 2022) on writing routines, we know that students might change their routines from task to task, depending on their topic



knowledge and topic interest. Further research might determine what could be the additional influence of disciplines. Relatedly, in the current project, we did not consider the extent to which the dual-route option was actually utilized or appreciated by students. This should be addressed in a subsequent iteration. Finally, our research raises the question to what extent results are sustainable.

Our research also provokes more practice-oriented questions. For example, what writing genres and writing strategies would be useful for learning in other subjects, such as geography and economics (e.g., preceding work of Sampson, et al., 2013a, 2013b; Levin, et al., 2021)? What would strategies and instruction look like for other grades and levels? In our research, we already empowered teachers to take an active role in developing materials, but the strategy and instruction were designed by us, since we were the experts with regard to writing processes and writing instruction, which was precisely what teachers lacked. But what might be achieved if we also left the design of strategies and strategy instruction to teachers? Previous intervention studies with large teacher involvement have shown promising results (Van Drie et al., 2017; Van Drie et al., 2021).

## 5. PRACTICAL IMPLICATIONS AND RECOMMENDATIONS

Our research adds to the current discussion about students' declining literacy proficiency, and methods for how to convert this trend. As a response to the Dutch Education Inspectorate's (2020) advice for each school to have a "language policy", many schools have been working on the development of strategies with regard to students' literacy. Increasingly, school leaders become aware of literacy as a shared responsibility, and initiate school-wide strategies. However, the awareness that language development is not only the responsibility of the language teacher has yet to register among content teachers.

In our studies, we promote a literacy view that might go even further than the notice that literacy is a shared responsibility. We recommend not only practicing generic language skills in content lessons, but also to primarily focus on discipline-specific literacy skills instead. Each content teacher is responsible for students' literacy development in their discipline. From our research project, several recommendations have arisen, which we will explain in the next section.

### **5.1 Deliberate Writing Task Design**

Inclusion of reading-writing tasks will be necessary to create opportunities for literacy skill development. For subject teachers to contribute to students' development of literacy, they should think carefully about their task design: reading-writing tasks should fit the learning goals teachers have in mind for their students. When tasks are appropriate for the intended content learning, they will not be "extra" but merely "alternative". A writing task becomes a learning activity in itself, rather than just a way of processing new knowledge, which had already been acquired through another learning activity. It is likely that teachers will prefer to use tasks which prompt students to include reasoning into their texts, instead of tasks which only require the outcome of a reasoning process.

#### ***Recommendation 1: Include Writing-to-Learn Tasks***

The first prerequisite for developing students' literacy skills is to create opportunities to do so. Reading-writing tasks that can promote learning or comprehension of subject matter are ideally suited for content lessons: in this way, learning and developing literacy converge. A first requirement for a good writing-to-learn task is that the student's reasoning is activated by a stimulating prompt, evoking different angles toward an issue (e.g., an evaluative question). A second requirement is that students have not yet been fully instructed on the issue. Background knowledge might be required, but if an issue has already been extensively covered by the teacher in-class, there is no need for the learner to further investigate, since the brainwork has essentially already been done.

#### ***Recommendation 2: Select Sources Deliberately***

Writing requires knowledge; therefore, we recommend the use of source texts. In this way, reading skills can be trained functionally: students need the information from the sources to be able to write a text. It is important that the source texts represent different perspectives on the given issue. Sources are thus advised to partly complement or contradict each other. Primary source texts are preferable to secondary texts, since primary documents are more likely to point students' attention towards sourcing (evaluating usefulness and trustworthiness of a source) and enhance the use of references in students' texts (Rouet et al., 1996). However, secondary sources might be preferred in some cases, depending on the writing task goal (cf. Van Driel et al., 2022a). An important point, is that the number of sources needs to be limited, in order to

keep the students' attention focused on the essence, and to keep the task manageable within the given time frame.

***Recommendation 3: Use Short Writing Tasks***

To guide student writing processes, writing must take place in-class, within the teacher's sight, which can only be accomplished with short tasks. Encompassing yet contained writing tasks provide a manageable workload for teachers, and do not impede student motivation, as students may dread reading and writing long texts. Moreover, short tasks facilitate frequent use, and regular writing promotes writing skills (Graham & Harris, 2017). However, this latter finding was not confirmed in this thesis; in the Chapter 4 study, a condition with writing tasks, but without strategy instruction, did not outperform a control condition without writing. To conclude: simply adding writing tasks into the curriculum will thus not improve students' writing nor their learning, as it needs to be accompanied by support.

**5.2 Support Students' Processes**

Subject teachers need efficient and effective teaching methods to support students' writing processes. Providing students with strategies is therefore recommended, as a strategy breaks a process down into smaller steps, making the "cognitive load" of the complex literacy task more manageable (Galbraith & Torrance, 2004; Torrance & Galbraith, 2006). Self-regulated strategy development (SRSD) is appropriate for all types of learning, but it has been most extensively studied in the area of writing (Harris & Graham, 2015). According to the SRSD framework, a strategy is best described, then modeled, and then practiced.

In order to describe and model a process, teachers need to know what processes are actually required. This can be challenging; teachers are not always aware of their own processes, let alone their strategies, and what other strategies might be effective. It is therefore important for teachers to become aware of the processes at play in their subjects, the variation between subjects, and possible strategies for addressing these processes. Theoretical research can provide a foundation on which to build instruction.

***Recommendation 4: Provide and Model Strategies***

It is recommended to provide direct, explicit instruction on required reading and writing processes (Graham & Perin, 2007). After all, it seems unfair to expect that students are able to write a text genre which they have never

written before. In addition to making the strategy explicit, it is also important to show how the strategy can be applied. Modeling (live or using a video) gives students the opportunity to learn through observation. Observational learning has proven its service for writing development in previous research (Braaksma et al., 2004).

***Recommendation 5: Highlight Disciplinary Aspects***

It is imperative to explicitly highlight disciplinary aspects of the process and of the product. This requires knowledge of cognitive processes in general, and awareness of subject-specific processes in particular. Professional development in this area is important: a professional learning community with colleagues from the same subject (to examine the specificity of a subject) or with colleagues from a variety of subjects (to be able to expose differences with other subjects) can be useful here. Teachers then construct knowledge by comparing and contrasting.

***Recommendation 6: Support Students' Writing During Task Performance***

It is recommended to support students' process during reading and writing, by providing feedback on students' reading and writing while they are in the middle of it. This can be achieved by writing in-class, within the sight of the teacher, instead of instructing students to write a text as homework. During writing, the teacher might walk through the classroom to observe and to scaffold when needed.

***Recommendation 7: Use Exemplars***

The process of discussing exemplars of different levels, is a type of teacher feedback. Through series of example texts, it becomes clear which dimensions of text quality are in play, how they may interact in texts, and what are the options for, a discipline-specific text. This learning activity is in fact a first step in formative assessment: a didactic approach to stimulate students' self-regulatory skills. Discussing exemplars are aimed to clarify teacher expectations of student writing, which can be seen as the first phase in the Formative Assessment Cycle (Gulikers & Baartman, 2017).

***Recommendation 8: Connect Product Feedback to the Process***

If product feedback is provided, this feedback can be linked to the student's process. Do you think a student's writing needs more audience focus? Explain why, and then relate it to the process steps in the writing stage, e.g.: "This

particular student needs to pay more attention to taking the reader's role after the text is written. They will need to learn to put themselves in the reader's shoes, to reread and check: did my message come across?" The writer may need the help of a peer reader, to read the text aloud, and maybe adding question marks in the margin when comprehension becomes difficult or unclear. This process may result in a reorganized second draft. If the student had a choice of strategies, the chosen strategy might also be discussed: should the student try a different route or improve the chosen route?

### **5.3 Support Teachers in Integrating Writing Instruction**

We also pose two recommendations regarding external aids, which might help future content teachers to include writing support in their lessons.

#### ***Recommendation 9: Develop Teachers' Pedagogical Content Knowledge of Writing***

Content teachers' pedagogical content knowledge with regard to (disciplinary) writing might become a learning objective in teacher education. During their teacher education, teachers learn about general and disciplinary writing processes, effective reading and writing instruction, and process support. Our studies have shown that teachers are well capable of designing sound writing-to-learn tasks based on design principles. However, the other components (development of the strategy and the instructional unit) were provided by us. In the future, teachers will need to develop their own instructional units, and to be able to their purposes. This requires deeper knowledge about processes, and experience with how students confront particular reading-writing tasks. These aspects of literacy instruction in content classrooms deserve a place in the teacher education curriculum, to properly equip future teachers to develop students' disciplinary literacy.

We recommend teacher support to focus on a number of knowledge components: (1) knowledge about writing tasks, which type of task is appropriate when; (2) knowledge about text quality, especially disciplinary aspects; (3) knowledge about (disciplinary) writing processes; and (4) procedural knowledge about how to guide writing processes, and (5) how to discuss writing products.

#### ***Recommendation 10: Include Writing Support in Textbooks***

Textbook publishers might also take a role in developing students' literacy skills. For example, workbooks might need to be supplemented with writing-

to-learn tasks, which can be accompanied by process support, for example by including strategies for students and modeling videos, or by stimulating pre-writing or re-writing activities.

## 6. CONCLUSION

With this thesis, we have tried to answer the research question: Which instructional approach is best suited to develop students' disciplinary literacy effectively and efficiently, in upper secondary history and philosophy education? Based on four studies, we conclude that secondary school teachers who include disciplinary reading-writing tasks into their curriculum, and who provide additional support to students' writing process by means of strategy instruction, support the development of students' disciplinary literacy skills. Our studies also provide insights in teachers' interaction with design principles for writing task design, and show what we can achieve if we involve teachers in designing and implementing interventions in general.