Improving literacy and content learning across the curriculum? How teachers relate literacy teaching to school subjects in cross-curricular professional development

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ABSTRACT
This study examined how teachers relate literacy teaching to their ordinary subject teaching in professional development settings. The study is conducted within the large Swedish professional development program the Literacy Boost (in Swedish “Läslyftet”), which can be viewed as an example of an international focus on reading ability beyond early and beginning reading. Such a focus may be well-grounded, but it also raises concerns of how teachers of different school subjects are addressed in such programs. The findings of this study show that participating teachers express four approaches of relating literacy teaching to subject teaching, indicating different types and degrees of coherence between professional development content and teachers’ teaching practice. While all teaching activities described by teachers aimed at improving students’ general literacy, this was mostly done in the form of additional activities rather than being embedded in the ordinary teaching concerning curricular objectives of school subjects. These results suggest that differences in how texts are used and interpreted in different school subjects should be given higher priority in the design of both content and form of professional development programs to better support subject teaching.

KEYWORDS
Teachers’ professional development; disciplinary literacy; content-area literacy

Introduction
Recent years have seen an increasing policy interest in reading ability beyond beginning and early reading, spurred by evidence of that sound literacy teaching in early years does not ensure good reading skills in secondary school (Dillon, O’Brien, Sato, & Kelly, 2010). For example, in the USA, a number of interventions for adolescent reading have been initiated, most notably the “Striving Readers” program (Dillon et al., 2010; Shanahan & Shanahan, 2008). In Sweden, declining reading scores for Swedish students in PISA and PIRLS between 2000 and 2012 legitimated similar policy reactions, including initiation of the large professional development initiative “the Literacy Boost,” (in Swedish “Läslyftet”), which by its end will have reached more than 25% of all primary and secondary school teachers in Sweden.
Research in different fields has shown that learning school subjects also implies learning how disciplinary texts are interpreted and created (Shanahan & Shanahan, 2012). Improved teaching of literacy across disciplines therefore enhances not only language learning, but also content learning. However, because of the strong significance of school subjects in secondary schools, researchers have warned that literacy interventions distributed across the curriculum risk underestimating the significance of disciplinary differences (Dillon et al., 2010).

In their review of research on professional development and teacher education for reading instruction, Dillon et al. (2010) state that while current research has thoroughly shown how literacy and disciplinary practices are embedded, there is still little empirical work on how teachers at the secondary level learn to teach literacy. This is also true regarding how teachers integrate subject-matter knowledge with generic literacy knowledge (Alvermann, Rezak, Mallozzi, Boatright, & Jackson, 2011), a body of knowledge to which this article aspires to contribute.

Research on teachers’ professional development has emphasised that the professional development content should be coherent with teachers’ present teaching content (Desimone & Garet, 2015). Studies of professional development in content-area literacy have investigated such coherence in terms of what literacy strategies seem appropriate for teachers of different school subjects. This research has shown that different literacy strategies are preferred, for example that English teachers often used guided reading, while science teachers preferred brainstorming and social studies teachers enacted test-taking strategies (Nichols, Young, & Rickelman, 2007). Studies have also shown that teachers only find general literacy strategies meaningful if they are adapted to their subjects (Shanahan & Shanahan, 2008). However, earlier research has not explored qualitative differences in how teachers relate literacy strategies to the teaching objectives in their ordinary subject teaching. This research has shown that different literacy strategies are preferred, for example that English teachers often used guided reading, while science teachers preferred brainstorming and social studies teachers enacted test-taking strategies (Nichols, Young, & Rickelman, 2007). Studies have also shown that teachers only find general literacy strategies meaningful if they are adapted to their subjects (Shanahan & Shanahan, 2008). However, earlier research has not explored qualitative differences in how teachers relate literacy strategies to the teaching objectives in their ordinary subject teaching. This study contributes to earlier work by doing this, an endeavour that also provides descriptions of possibilities and difficulties that literacy continuing professional development (CPD) programs may present to those teachers who are asked to adapt literacy ideas to their teaching.

The empirical material for the study is drawn from the nationally distributed literacy CPD initiative the Literacy Boost, which targets K-12 teachers in all school subjects in Sweden and is being conducted from 2014 to 2020. This initiative is designed to help teachers link professional development content to classroom practice, by asking participating teachers to enact literacy teaching activities every second week within their ordinary subject teaching. While these instructions provide broadly described tasks for teachers to perform, teachers are also requested to adapt the tasks so that the enactment contributes to ordinary subject teaching. By studying teachers’ accounts of how these tasks were enacted, this study aims to investigate how teachers relate instructed literacy teaching activities to their ordinary subject teaching. The empirical research questions that are investigated are:

1. What teaching objectives do teachers express in relation to enacted teaching activities?
2. What knowledge areas of school subjects or language do these teaching objectives concern?
3. What patterns are there with regard to how different knowledge areas of school subjects and language are related to one another in teaching accounts?
Theoretical framework

The issue of how teachers relate instructed literacy teaching activities to their ordinary subject teaching is explored in relation to the concept of professional development coherence, a feature of professional development that has been emphasised as critical for achieving effects on teacher and student learning (Desimone, 2009). This study focuses on coherence between professional development content and teachers’ teaching practice (cf. Lindvall, 2017). Regarding this aspect of coherence, earlier research has indicated that professional development has a greater effect when it relates to the topics that teachers are just about to teach (Desimone & Garet, 2015). A number of studies have investigated perceived coherence between professional development, teachers’ goals and other reform ideas with teacher questionnaires (e.g. Fishman, Penuel, Hegedus, & Roschelle, 2011). In comparison to these studies, this investigation emphasises teachers’ active construction of the relation between instructed literacy teaching activities and their ordinary subject teaching, and assumes that different ways of forming this relation are possible. Based on this, teachers’ accounts of enacted literacy teaching activities were analysed with regard to the ways that reported teaching objectives for enacted teaching activities concerned both the curriculum of teachers’ school subjects (representing present teaching), and meta-linguistic knowledge (representing professional development content).

The concept of “teaching objectives” (defined as those student actions that a teacher aims to achieve during a teaching activity) thus had an important role in the initial analysis of transcribed teaching accounts. While there has been considerable discussion of terms such as outcomes, aims, goals and objectives and how objectives should be formulated in order to support teaching and learning (Allan, 1996; Harden, 2002), this study utilised a wide definition of teaching objectives, since teaching objectives were not investigated with regard to their quality, but for generating appropriate units that can be analysed in relation to subject teaching and literacy content.

In order to investigate how teachers relate instructed literacy teaching activities to their ordinary subject teaching, the identified teaching objectives were classified in relation to a framework consisting of three categories, each representing knowledge concerning a certain area of school subjects and language that may be the focus of teaching activities:

(a) Referential knowledge concerning the curricular content of a school subject
(b) Meta-linguistic knowledge concerning school language in general
(c) Meta-linguistic knowledge concerning the specific language of a school subject

This framework relies on a distinction between two functions of language, the referential function and the meta-linguistic function (Creese, 2005). The referential function means commentary on the world, whereas the meta-linguistic function means commentary on the language used to talk about the world. While both these functions are conveyed in language, they differ in what is commented on. A biology teacher could, for example, give a referential comment that “natural selection is an important part of evolutionary theory,” or a meta-linguistic comment like “in biology, the word selection doesn’t indicate a conscious choice.”
The referential function in this framework, as often in classrooms, concerns the curricular content of school subjects (category 1). The meta-linguistic function in the framework is divided into two different areas of language that can be commented on, school language in general (category 2) and the specific language of a school subject (category 3). This distinction has also been described as academic language as opposed to disciplinary literacy (e.g. Shanahan & Shanahan, 2008). The study uses the terms school and school subjects rather than academic and disciplinary, since it investigates how teachers relate instructed literacy teaching activities to their ordinary subject teaching, rather than the relation between their teaching and academic disciplines.

The studied CPD initiative

In 2013, the Swedish Government commissioned the National Agency for Education (NAE) to conduct the CPD initiative the Literacy Boost (Utbildningsdepartementet, 2013). The initiative was initially commissioned to last for four academic years, 2014–2018, and was later extended to 2020. The aims of the Literacy Boost were described as to “give teachers scientifically well-grounded methods and proven ways of working in order to develop the students’ reading- and writing skills with the aim of enhancing the students’ reading and writing skills” (Utbildningsdepartementet, 2013, p. 1, translated from Swedish by the author). The reasons that were stated for initiating the Literacy Boost were that the reading scores for Swedish students in PISA and PIRLS had declined since the year 2000, and that reports from the Swedish Schools Inspectorate state that Swedish teachers do not sufficiently help their students in understanding the texts that are used in class (Utbildningsdepartementet, 2013).

By 2018, with two more years of the Literacy Boost remaining, government grants will have been disbursed for the coaching of at least 33,000 participating teachers (Skolverket, 2017), which roughly amounts to 25% of the teachers in primary and secondary schools in Sweden. Adding to this, many teacher groups and schools participate in the initiative without receiving grants. The NAE costs of the initiative up to 2020 amounts to 617 million SEK [€64 million] according to letters of regulation for the NAE and the Budget Bill (Government Bill 2017/18:1, 2017; Utbildningsdepartementet, 2015a, 2015b, 2015c, 2016). It is thereby, together with it’s sister initiative in Mathematics education (the Boost for Mathematics), the largest professional development initiative in Swedish or mathematics organised by the NAE 1991–2015 (cf. Kirsten & Wermke, 2017).

The structure of the Literacy Boost is described in its guidance notes (Skolverket, 2014) as follows: the participants should work in groups of 6–10 teachers, who meet once a week for CPD meetings led by a CPD coach. Each meeting is structured by guidelines available on a specially developed CPD website. These guidelines include instructions to read and discuss texts, plan and enact certain literacy teaching activities, and to reflect on the activities that were taught (for examples of instructed activities, see supplementary material).

The CPD coaches are school-based teachers who are assigned to support the participating colleagues’ at their school (or a neighbouring school), during CPD meetings and to guide them in the CPD material. The coaches are appointed by the principal organisers of schools but are financed by the NAE in the amount of about 50,000 SEK [€5,200] per teacher group and academic year, which should enable coaches to use 10% of their working time for the CPD initiative. Coaches also receive training in courses organised by the NAE.
Participating schools may choose which “modules” of the Literacy Boost that they wish to work with. Each module treats a specific aspect of literacy, such as “Reading strategies for non-fiction texts” and “Dialogues on text.” The modules contain theoretical texts, videos, examples and instructions. A module lasts for one semester, during which 16 CPD meetings are held. As each group works with two modules over an academic year, this amounts to 32 meetings for each teacher group, with a total instructed meeting time of 36–48 hours. According to participant questionnaires, preparation takes just as much time as the meetings (Carlbaum, Andersson, Hanberger, & Lundström, 2015). This means that participants use about 80 hours during an academic year for CPD participation, which can be calculated as being about 5% of their working time.

**Methods and materials**

**Selection of schools and collection of empirical material**

Six schools, distributed across three municipalities, that participated in the Literacy Boost during the 2015/16 academic year were selected for this study. Lists of participating schools in each municipality were collected, and out of the 22 participating schools in these three municipalities, six were chosen for the study, a number that was considered small enough to enable repeated observations at each school, and at the same time large enough to enable variation in the empirical material. In order to increase the potential for variation in the data material, the schools that were chosen represented different school results, student compositions, grades taught, and geographical locations (inner city/suburb/small city/rural).

At each school, one teacher group of 6–13 teachers participating in the Literacy Boost was followed. All of these teacher groups contained teachers teaching different school subjects, for example, Swedish, English, French, social study subjects, science studies, mathematics and crafts. Such a cross-curricular organisation was representative of the Literacy Boost nationally, as about 75% of all teacher groups consisted of teachers of at least three content areas (Carlbaum, Andersson, & Hanberger, 2016).

The empirical material for this article is drawn from a larger data set including both observations of CPD meetings and interviews with coaches and participating teachers at the studied schools, all collected by the author. The author acted as passive observer during CPD meetings, and was in no way involved in the CPD management.

The empirical material studied in this article is limited to 10 of the observed meetings (see Table 1), which are those meetings in the material that are designated for reporting on the enactment of instructed literacy teaching activities. The choice to only include these meetings in the study was made since teachers’ accounts of enacted teaching activities directly address the aim of this study regarding how teachers relate literacy teaching activities to their ordinary subject teaching. On other occasions (such as during interviews), teachers may make comments concerning this issue, but such comments would be reflections in hindsight and made in another context than during the CPD frame with colleagues.

As can be seen in Table 1, the studied CPD groups worked with different “modules,” and their discussions and enactment thus focused on different aspects of literacy
teaching. However, the work process (including instructions to enact certain literacy teaching activities) is identical in all modules. The modules were chosen by the CPD groups after schools were selected for inclusion in the study.

**Transcription and selection of relevant parts of the empirical material**

At all observed CPD meetings, audio-recordings were taken and comprised the prime empirical material for the study. Field notes were also taken during the sessions and directly afterwards reworked into summaries.

The audio recordings were examined as follows. The parts of the recordings that contained teachers’ accounts of enacted teaching activities were identified. These parts are typically demarcated by the CPD coach inviting a teacher to begin an account, for example “now I’m curious to hear (...) let’s have John begin.” Teaching accounts also include questions and comments from the CPD coach and other participants that are responded to. The accounts are typically closed by a demand from the CPD coach for the next teaching account to begin, for example “should we go on, Anna?” In total, the observed CPD meetings contained 46 teaching accounts. The duration of the teaching accounts varied between one and 14 minutes, with an average of six minutes.

All teaching accounts were transcribed verbatim by the author and thereafter analysed as described below. The quotes presented in this article were translated by the author and verified by a professional language editor. Omissions within a quote are marked with three spaced ellipsis points (...) and any additional clarifications with square brackets [ ]. All names that are stated in the quotes are fictitious in order to ensure anonymity for participants.

**Analytic procedure**

The empirical material was investigated in the three analytical steps as described below.
Step 1: identifying teaching objectives
The first analytical step aimed at mapping the teaching objectives that were expressed in teachers’ accounts of their enacted teaching activities.

In the analysis of teaching objectives, three different ways of expressing objectives were used for identification. Together, these forms of expression covered both explicit and more implicit ways of expressing teaching objectives, defined as desired student actions. First, teaching objectives were expressed explicitly in formulations such as “the goal was” and “the students were expected to.” Second, teaching objectives were expressed through instructions for students, such as “I told them to define the concepts,” which indicate desired student actions. Thirdly, teaching objectives were expressed through statements that evaluated specific student actions positively or negatively, such as “it was so good that they could build on the statements of one another.”

The identified teaching objectives were written into spreadsheets, one sheet for each teaching account.

Step 2: categorising teaching objectives
In step 2, the identified teaching objectives were classified into the three categories: referential knowledge concerning the curricular content of a school subject, meta-linguistic knowledge concerning school language in general, and meta-linguistic knowledge concerning the specific language of a school subject, as presented in the theoretical framework section. Table 2 exemplifies the analysis of teaching objectives with extracts from analysis spreadsheets.

A number of the expressed teaching objectives were excluded in this step as they were not within the scope of the three categories or the scope of this study, for example, objectives that related to classroom management, such as being quiet in the classroom.

Step 3: identifying teaching approaches of relating instructed literacy teaching activities to subject teaching
Step 3 aimed at generating a framework for understanding different approaches of relating instructed literacy teaching activities to subject teaching. This was accomplished by

Table 2. Examples of identification and categorisation of teaching objectives.

| Form of expression                  | Teacher quote                                                                 | Teaching objective                           | Knowledge area of school subject or language                                      |
|------------------------------------|-------------------------------------------------------------------------------|---------------------------------------------|-----------------------------------------------------------------------------------|
| Explicit statement about teaching objectives | "why is this Buddhist, then one aims at if they have understood the religion" | Understand properties of a religion        | Referential knowledge concerning the curricular content of a school subject        |
| Description of instructions for students | "then I had written headlines and subheadings (...) and then we discussed, what can this be about" | Using headlines for identifying the topic of a text | Meta-linguistic knowledge concerning school language in general                    |
| Description of instructions for students | "they should guess the concept, they get positive things that are connected to the concept and negative that are the opposite of the concept, and I took ‘public sector’” | Figure out the concept “public sector” | Meta-linguistic knowledge concerning the specific language of a school subject     |
| Positive evaluation of student actions | "build on to [peers’ comments], as in this group now, that was glorious" | Relate to other students’ comments          | Meta-linguistic knowledge concerning school language in general                    |
investigating patterns in how teachers related instructed literacy teaching activities to their ordinary subject teaching across the individual teaching accounts. First, teaching accounts were investigated with regard to whether they expressed objectives from one or more knowledge areas, and, if there was more than one knowledge area, how these objectives were combined. Second, the patterns found in individual teaching accounts were also compared with other teachers’ accounts during the same CPD meetings, and with accounts given during other CPD meetings showing similar patterns. This comparison resulted in the identification of four teaching approaches. After the framework of these approaches was established, each teaching account was re-examined in order to ensure that no additional approach was unaccounted for.

**Results**

This section presents the four teaching approaches for relating instructed literacy teaching activities to ordinary subject teaching that were identified in the empirical material. These four teaching approaches are defined primarily by which knowledge areas the teaching objectives concerned: (a) referential knowledge concerning the curricular content of a school subject, (b) meta-linguistic knowledge concerning school language in general, and/or (c) meta-linguistic knowledge concerning the specific language of a school subject. Table 3 presents this information in a cross-table format.

The four approaches presented in Table 3 differ in how and to what degree they reflect coherence between professional development content and teachers’ present practice. Approaches 1 and 2 include teaching objectives concerning both curricular content and meta-linguistic knowledge, which means that teachers expressing these approaches made professional development content coherent with present teaching in a way that the two knowledge areas were balanced fairly evenly. Approaches 3a and 3b share the feature that teaching objectives only concern meta-linguistic knowledge concerning school language in general. They differ, however, in that approach 3a thematically links teaching activities to the school subject (e.g. discussing reading

| Area of knowledge | Referential knowledge concerning the curriculum of the school subject | Meta-linguistic knowledge concerning school language in general | Meta-linguistic knowledge concerning subject-specific language | Number (and proportion) of teaching accounts in each category (N = 46) |
|-------------------|---------------------------------------------------------------|---------------------------------------------------------------|---------------------------------------------------------------|---------------------------------------------------------------|
| 1. Applying general literacy strategies to the curriculum of school subjects | X | X | | 17 (37%) |
| 2. Defining subject-specific concepts | X | | X | 2 (4%) |
| 3a. General literacy strategies loosely framed by a school subject | | X | | 17 (37%) |
| 3b. General literacy content with no reference to school subjects | | | | 10 (22%) |
strategies in relation to texts related to the school subject), although no curricular objectives are aspired to. In approach 3b, the school subject is not mentioned in any way.

The specific ways that teachers in each category relate instructed literacy teaching to their ordinary subject teaching are presented below, using teacher quotes. The quotes were chosen based on their ability to clearly illustrate the category in which they are presented, especially by being coherent and explicit enough for an outside reader to follow. While there are individual differences between each teacher’s account in the material, the descriptions below seek to present the main characteristics of each category, as well as the most important differences within each category.

**Applying general literacy strategies to the curriculum of school subjects**

The teaching accounts within this teaching approach contained teaching objectives that concerned both school language in general and the curriculum of the school subject. This means that the activities aimed not only at developing the students’ literacy skills, but also at increasing their knowledge in the ongoing course work. Below, an account from a teacher of English will illustrate this teaching approach. This teacher group had been instructed to conduct a peer assessment in class regarding texts that the students had written or currently were writing, with special attention given to one specific aspect of their texts. The teachers were provided with a list of suggestions of aspects of texts that could be attended to, aspects that had been discussed earlier in the CPD material. The teacher in the example chose to ask the students to reflect in groups of two on the usage of linking words in texts they had written.

I did it in English and I’m not done yet I can say, but, because I found it to be so good I will work with this now, and they [the students] asked today, “but if we should have time to write out fair?” [imitating student speech]. We had about the same setup, err, that they get to read, they have written answers about, what is, there are some questions about love, what is love, like, in the textbook, so they got them and then wr-, first they just got to write their own thoughts about love based on those questions and then they pairwise read each other’s, just like you [the previous speaker] had done then, and then, err, posed the question then, how are linkages created in the answers, err, and then, this was great for me because it is something that I have thought of but never did, so I got out on the web too and searched for linking words in English, so, [in] Swedish I’ve had linking words, but yes, linking words, what is that, what do we think? Well however, like, and, but, they are obvious, but then, there are lots of good linking words, so I made a little list of this and showed [to the students], and then I included some of these, can you insert them, like, in the text, and then they should write a final text (Account B3-3).

In the above excerpt, we can see that the students were asked to write reflections on love, the content of the textbook chapter they had been working with for some time. The activity thus aimed to help the students practice their English writing skills in relation to the textbook content. The instructed peer assessment activity was used as a method for the students to evaluate and enhance the quality of their texts. Thus, the general literacy strategies of peer assessment and linking words in the instructed teaching activity were used for addressing the teaching objectives of the curriculum of the school subject. One reason that this teacher found a way to address curricular objectives within the instructed activity may have been that the curricular objectives of
the school subject – English in this case – resembled the objectives of the instructed activity. In fact, all but 2 of the 17 teaching accounts within this teaching approach concerned language subjects (Swedish or English).

**Defining subject-specific concepts**

This is the only teaching approach in the empirical material that includes teaching objectives concerning subject-specific language in ongoing course-work. These accounts only concern one aspect of subject-specific language, namely subject-specific concepts. Below, an account of a biology teacher illustrates this teaching approach. The CPD material instructs the teachers of this group to conduct a teaching activity concerning the concepts of the current block in their teaching. It was suggested that the teachers use the method of concept maps, which this teacher did in relation to evolutionary theory, a section of biology that was recently initiated in the class.

Each group then got a number of post-it notes, and were instructed to find the concepts in the text (...) they got to, kind of on their own, start looking for concepts and some knew that at the beginning of the book cover there is a little focus box, *This section focusses on* [quotes a text book headline]. There you’ve got a number of concepts that are important. I have shown them an image from Bjärred [a Swedish municipality], in two school classes that had done this about atoms, so I said, you can think like this, it’s almost like mind maps, that’s how I introduced it, it’s almost like mind maps, but instead of having just arrows you also tell, you can add a verb that tells you something, how it, how something affects something else (...) and then they got to tinker, err, with that, and when it was done, they got to tell what they had thought, and then, it becomes very clear, some have understood how it works, evolution leads to sexual or natural selection, and natural selection creates competition, one might question that, many have [written], if it is, that [natural selection] which creates competition or if it is competition that creates natural selection, err, and by the time in this competition, err, new species are created (Account D4-6).

In the above excerpt, subject-specific concepts are the focus of the students’ work, rather than school language in general. The students were given a set of subject-specific concepts such as “evolution,” “sexual selection,” “competition,” and “species” that they were asked to link to one another. This example also shows that, in many cases, teaching objectives concerning subject-specific language simultaneously concern the objectives of the curriculum of the school subject.

One could expect that the characteristic of this teaching approach – defining subject-specific concepts – would be part of every teacher’s ordinary instruction, and it may in fact be so in their teaching outside of this professional development initiative. However, even in this teacher group that was specially instructed to attend to subject-specific concepts, only two teachers included objectives concerning the currently addressed subject-specific language. The other four teachers in the group did enact activities that made use of teaching methods for working with concepts. However, they applied the methods on concepts that were more or less loosely related to the school subjects rather than part of the curricular objectives currently treated in the course. For example, a geography teacher asked the students to define the concept “geography,” a task that was neither part of the ongoing course work nor would be later on. One explanation for the fact that not all teachers used the activity for considering currently
addressed course work is that the timing was not right; definitions are typically given at the start of new course blocks.

**General literacy strategies loosely framed by a school subject**

This teaching approach is defined by teachers having expressed teaching objectives concerning school language in general, but not the curriculum of the school subject or subject-specific language. These teachers did, however, relate the instructed literacy teaching activity to the school subject they teach, but in a loose thematic way, rather than attending to curricular objectives in the ordinary subject teaching.

In the quote below, a teacher describes how the teaching activity was enacted during a science studies lesson using a text about the water cycle, an upcoming topic in the course work. The CPD material had instructed the teachers to explore a text together with the students and discuss which skills were needed for understanding the text (e.g. decoding, using prior knowledge, interpreting images). The text used in the activity should, according to the instructions, preferably relate to the content that was currently taught in the class. The teacher explains how the lesson unfolded.

> I posed an open question to the students, so it was fun to hear, like, what they spontaneously thought of about reading and, like, except for books and literature, it was words and letters and sentences, and it was that you have to understand what you read. Then they got two assignments, and it will be the same that Caitlin [another teacher in the group] has about the water cycle, but without images with a difficult text, and then with an easier text and images. And, err, there were many [students] that, they could, like, reflect on that it was different texts and on, how hard it is when there are difficult words and concepts, and also what significance the images have, like [for] apprehension, and then, yes, about that, and then at the end I did so, err, actually after they got to reflect in pairs about when you are to make a text or talk about something so that the one that reads this should understand and find it interesting and remember it, what should you think of then (Account C4-5).

As can be seen in this excerpt, this teacher demands that the students reflect on the meaning of reading comprehension in relation to a text, in compliance with the instructions given in the CPD material. The teacher also asked the students to compare two texts and reflect on the importance of images, concepts, and other aspects of the text for reading comprehension. The teacher commented on the students’ ability to do this: “they could, like, reflect on that.” Thus, the ability to reflect on reading comprehension appears as the primary teaching objective of this teaching activity. In a subclause, the teacher mentions that the topic of the texts was the water cycle. In the teaching activity, however, the students were not asked to pay attention to the properties of this natural phenomenon and their thoughts on the water cycle were not commented on in the teaching account. It can also be noted that the students were asked to reflect on reading texts in general, not on the specific challenges of reading texts within science studies. Thus, even though the water cycle is part of the curricular content of the school subject, this content was not treated as a teaching objective in the activity. The activity was conducted as an additional task outside of course work rather than to help the students develop their understanding within science studies.

Out of the 17 teaching accounts within this category, nine concern the subjects social studies, science studies and music, and eight concern language subjects (Swedish and
Thus, enacting the activity as an additional task with a loose thematic link to the school subject seems like a common solution for teachers of all school subjects.

**General literacy content with no reference to school subjects**

In this teaching approach, the literacy activities were articulated as separate from the school subjects that teachers taught. The teachers expressed teaching objectives concerning school language in general without relating the activity to a theme of the school subject, let alone to the curricular objectives of the school subject. The most common type of teaching accounts within this teaching approach are teaching activities that consist of asking students to complete a questionnaire concerning school language in general. One example is to ask the students about what general strategies they use before, during and after reading. The type of teaching activity in this category that does not comprise questionnaires is illustrated by a science studies and mathematics teacher in the quote below. This teacher’s group was instructed to perform an activity on reviewing texts critically with special attention to power and gender. The students were supposed to discuss the content of a text in relation to questions such as who the participants in the text are, who the author is and whether the students wished to change the text, and if so, how. The teacher explains how the activity was enacted.

Then I continue, I who didn’t know what I should do, math, science studies, it became a Swedish lesson. The students asked, do we have Swedish now? I read two chapters of a book called "Hjärnpunka" [literally translated as "brain puncture"] (...) and then they got this [reading from a task sheet], Hjärnpunka, what is the text about and other persons that are important and this happens in the story and feelings, thoughts, err. All students understood that it was about mobbing and that kind of things, err, then I had made groups, err, and then we talked about this, kind of, and then we talked about gender in the text, so then I said like this, but if this would have been about a girl, what could the text have been like then (...) particularly [in relation to] what I’m working with in science studies too, I thought I didn’t have a lesson, but then [since] it was before the holiday [a week’s holiday] and we had finished, and the last lesson before the holiday, I felt like this, no but I read this book (Account C2-3).

The teacher explains that it was hard to relate the instructed teaching activity to the school subjects math and science studies, but since there was a spare lesson before a school holiday, it seemed reasonable to teach “a Swedish lesson” which aimed to develop the students’ ability to reflect on a fiction text from different perspectives, including power and gender. However, it can also be noted that both the teacher and the students questioned that this activity was performed within science studies. This suggests that there is an ideal that teaching activities should at least be thematically related to the school subject in order to warrant time in class. In this case, however, this ideal was outweighed by the ideal that a good professional development participant should enact instructed activities, and also the conviction that lessons in close proximity to holidays do not need to address curricular objectives.

In relation to this quote, it can also be said that the activity to critically review texts with special attention to power and gender seemed difficult to relate to the curricular objectives of the school subjects being taught. Two of the five teachers in this teacher group enacted the activity with no reference to their school subject, one teacher did not
enact the activity at all as it was perceived as being too inappropriate in relation to the course work, and two teachers enacted it in a manner loosely framed by the school subject. Thus, no teacher in the group included curricular objectives of their school subjects in their enactment. One way to understand this is that reviewing texts critically in this sense directs the students’ attention away from the aspects of the texts that are typically addressed in the course-work, and instead questions the credibility of the texts. While this may produce important knowledge, it is understandable that it is difficult to relate such an activity to ordinary subject teaching in a way that both content and literacy learning are enhanced.

Discussion

In summary, the results section shows that all the investigated teaching accounts included teaching objectives that concerned general meta-linguistic knowledge, and that most accounts concerned ordinary subject teaching in some sense. Thus, the studied teachers did make attempts to relate literacy teaching and subject teaching, and so the discussions section will focus on how these attempts may be understood.

Weak coherence between instructed literacy teaching activities and teachers’ ordinary subject teaching

Two of the four identified approaches, 3a and 3b, only included teaching objectives concerning school language in general, and no curricular objectives of the school subjects (see Table 3), which indicates a weak coherence between professional development content and teachers’ teaching practice. Possible ways to understand this result are discussed below.

Earlier research have shown that teachers are typically selective in what strategies they implement, based on their judgments of what is appropriate for their subjects or their students (Reed, 2009). In light of this, it may be seen as natural that teachers do not manage to integrate literacy and subject objectives in relation to all instructed teaching activities.

Another interpretation of the results is that the instructed literacy teaching activities may be seen as trial runs for teachers, such that in their future subject teaching, they can adapt the methods in a more meaningful way. The initial enactment may be part of an “implementation dip” (Desimone & Stuckey, 2014), where rounds of refinement could make the activity more adapted to subject teaching. However, research has indicated that perceptions of coherence between their own teaching and the professional development content not only influence the degree of initial enactment of professional development ideas, but also the sustainability of changes (Fishman et al., 2011).

Earlier research indicates that one reason that content-area teachers express resistance to content-area literacy is that it takes time away from content instruction (O’Brien, Stewart, & Moje, 1995). Although scholars have argued that teaching content-area literacy will improve both literacy and content-area learning (Cantrell, Burns, & Callaway, 2008), the results of this study suggest that this is not easily achieved. In this sense, the concerns of sceptical teachers are supported, as teaching objectives concerning the curriculum of school subjects often received little attention in the enacted literacy teaching activities.
Moreover, the fact that subject-specific language and objectives were given little attention in the participants’ teaching accounts may be due to that the suggested activities did not fit into the current lesson plans, so that attempts at adaptation could cause both an increased work-load for the teacher and confusion for the students. Teachers often enacted activities as additional tasks, which may be seen as a way to avoid the adaptation work needed for the integration of language and content. In these cases though, one might also ask why teachers chose to enact the activities at all, as they did not seem to contribute to the ordinary subject teaching. In addition to that activities may be seen as trial runs, teachers’ enactments may also be interpreted as loyalty to the CPD initiative.

**Supporting integration of literacy and subject teaching**

One conclusion that could be drawn from the results is that adaptation of general literacy teaching into subject teaching is a difficult task, and a task that would require more support than only instructions to use texts currently addressed in the school subjects. Some aspects of the professional development initiative even hinder adaptation into school subjects. One such aspect is that most teacher groups in the initiative (and all in this study) were composed of teachers in different school subjects. Scholars have argued that content-area literacy is a fruitful approach since dialogue between subject teachers and literacy experts may be productive (Brozo, Moorman, Meyer, & Stewart, 2013). When teacher groups are composed of teachers of different subjects, however, there is little room for discussion of how literacy strategies may be used meaningfully in specific school subjects. Studies have shown that teacher groups need to be discipline-specific for discussions to go deeper into the complexities of teaching subject-specific educational content (Horn & Little, 2010), and that students in pre-service teacher education who participate in literacy courses that are organised by discipline take up literacy strategies to a higher degree than their fellow students in interdisciplinary literacy courses (Dillon et al., 2010).

**Little attention is given to disciplinary literacy**

As can be seen in Table 3, few teaching accounts expressed teaching objectives concerning subject-specific language. The teachers who did express teaching objectives concerning subject-specific language focused only on subject vocabulary. Earlier research has shown that it is common for teachers to only address this aspect of subject-specific language (Cantrell et al., 2008; Creese, 2005; Shanahan & Shanahan, 2012). These researchers argue that vocabulary may be the easiest aspect of disciplinary literacy to grasp for a novice, but there are several other aspects of subject-specific language that may also help student learning. For teachers to address more aspects, they would probably need instruction as to what characterises the language of their subject.

The little attention that is given to disciplinary literacy in the studied CPD initiative may also be an explanation for the resulting weak relationship between literacy teaching and subject teaching. A disciplinary literacy approach could make the task of adapting literacy messages into subject teaching less of a problem, as disciplinary literacy
messages are already adapted for particular school subjects, although not for the specific teaching contexts experienced by teachers.

Final remarks

Several studies have reported a lack of research into professional development with regard to literacy teaching (Anders, Hoffman, & Duffy, 2000; Dillon et al., 2010; Reed, 2009). Based on the results reported in this article, it seems especially important to study how teachers could be supported in integrating literacy teaching with their ordinary subject teaching in a way that emphasises the objectives of the school subjects. What impact would measures such as needs assessment, discipline-specific messages, discipline-specific expertise and discipline-specific teacher groups have?

A typical suggestion that is offered in studies of professional development is that more time, support and resources should be offered to teachers for positive effects to occur. While this in many cases may be true, it would simultaneously take resources away from other potentially important issues. This is somewhat sensitive in this case as many content-area teachers already show scepticism towards literacy instruction. Improving the professional development content and processes within the resources that are available may, in many cases, be a better solution. The results of this article suggest that one important area for such improvement would be to give a higher priority to discipline-specific differences in how texts are used and interpreted in the design of both content and form of professional development initiatives.

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Notes

1. However, the most recent PISA and PIRLS reading scores (in 2015 and 2016, respectively) showed improved results for Swedish students. The Literacy Boost was initiated before those results, in 2013.
2. Principal organiser means municipalities or private school owners. The task of appointing CPD coaches is typically delegated to school principals.
3. See Table 1 for a list of the modules used by the studied teacher groups.
4. See supplementary material for a list of school characteristics.
5. See supplementary material for a full version of the instructions.
6. Designations such as “B3-3” indicate that this was teaching account 3 at meeting B3 (see Table 1 for a description of meetings).
7. See supplementary material for a full version of the instructions.
8. See supplementary material for a full version of the instructions.
9. See supplementary material for a full version of the instructions.
10. Designations such as “A1” indicate that this was meeting 1 at school A (see Table 1 for descriptions of studied schools). At each school 3–4 meetings were observed, but only those meetings which included teachers’ accounts of enacted teaching activities were included in this study.
11. This group worked with two parallel modules, so that teachers in science and social studies could choose the module most adapted to them. The design, topics and instructions in these two modules were similar though, with the greatest difference that examples in the CPD material were specific for the two content areas.
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