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Writing in The Content Areas: A Scandinavian Perspective Combining Macro, Meso, and Micro Levels

Olga Dysthe

UNIVERSITETET I BERGEN, NORWAY

Frøydis Hertzberg

UNIVERSITETET I OSLO, NORWAY

Ellen Krogh

SYDDANSK UNIVERSITET, DENMARK

Birgitta Norberg Brorsson

MÄLARDALENS HÖGSKOLA, SWEDEN

Writing is one of the key competences defined by a number of inter-national bodies as being crucial for students' learning and work life qualifications. Scandinavian countries share a common goal of providing equal education for all and have a history of prioritizing extended essay writing as an assessment format in many subjects. The purpose of this chapter is to investigate writing in the content areas in Scandinavia by focusing on the connection between macro-level decisions and what actually happens in schools and classrooms. We first look at recent curriculum plans in the three countries and show how they have chosen different ways of encouraging or mandating writing in the disciplines. Three case studies exemplify what goes on at the meso/micro level: professionalization of science teachers in using writing in Sweden; student perspectives on the challenges and learning potential in mandated written research projects in Danish secondary and upper secondary schools; and teacher-initiated collaboration across content areas in Norway in order to develop better writing practices. We find that although the Scandinavian tradition of extended writing provides favorable conditions for writing in

the content areas, there are problems that must be overcome before a successful integration can be expected.

L'écriture est une des compétences-clés que bon nombre d'organismes internationaux reconnaissent comme étant cruciale pour les études et la future qualification professionnelle des étudiants. Les trois pays scandinaves ont pour objectif commun de fournir une éducation égale pour tous et privilégient historiquement l'écriture longue en tant que modalité d'évaluation pour de nombreuses matières. Le but de cet article est d'étudier l'écriture dans les domaines principaux en Scandinavie en se focalisant sur le lien entre les décisions prises au niveau macro et ce qui se passe réellement dans les écoles et les salles de classe. Nous examinons en premier lieu les programmes scolaires récents des trois pays et montrons comment ils ont choisi différentes façons d'encourager ou de prescrire l'écriture dans les disciplines. Puis trois études de cas, chacune basée sur des projets de recherche, illustrent ce qui se passe au niveau méso/micro: la manière dont les professeurs de sciences sont formés professionnellement à l'utilisation de l'écriture en Suède; les perspectives qu'ont les élèves en matière de défis et de potentialités d'apprentissage lors de la rédaction de projets de recherche dans les collèges et les lycées danois; les collaborations initiées par des professeurs de disciplines différentes afin de développer de meilleures pratiques d'écriture. Nous constatons que, bien que la tradition scandinave de l'écriture longue offre des conditions favorables pour écrire dans les différents domaines, il subsiste des problèmes qui doivent être surmontés pour qu'on puisse espérer une intégration réussie. L'un des obstacles est dû à la nécessité d'associer des compétences clés et des compétences instrumentales de base, l'autre tient au fait que l'idée d'écrire dans les différents domaines de contenu a été introduite de façon descendante. Notre conclusion est que la combinaison d'initiatives de niveau macro, méso et micro (top-down et bottom-up) est nécessaire.

1. Introduction

One key goal for all concerned with students' learning in general—and their writing competence in particular—is to make writing an integral part of disciplinary teaching and learning in schools. To some extent, students have

always used writing to learn and communicate in all disciplines, but the focus on writing as such has been largely dependent on the individual teacher. Furthermore, the responsibility for students' writing development has been assumed to lie solely with the language arts teacher. Though this has also been the situation in the Scandinavian countries, things are changing. (Please note that "Scandinavia" usually refers to Norway, Denmark, and Sweden. The term "Nordic countries" also includes Finland and Iceland.)

The change is closely connected with international efforts over the last decade to define key competencies and core standards in education. One of these efforts is *DeSeCo*, the OECD's *Definition and Selection of Competencies* Project 2000-03, involving Austria, Belgium, Denmark, Finland, France, Germany, Netherlands, New Zealand, Norway, Sweden, Switzerland, and the US. Another is the EU's Common European Framework for linguistic competencies. Follow-up with these international initiatives has occurred in specific countries; for instance, the Norwegian Framework for Basic Skills (2004) and the Common Core State Standards Initiative (CCSE) in the US (2010). The rationale for focusing on core competencies, e.g., *literacies*, is two-fold. On the one hand, reading, writing, and talking are tools for learning in all disciplines, and on the other hand, they are workplace competencies which must be mastered for nearly any twenty-first-century job; writing-to-learn and learning-to-write discipline-related texts correspond to this necessity. An important question in this situation is how macro-level initiatives at the international and national levels influence what happens at the meso level of schools and the micro level of classrooms.

In this chapter, we have chosen the macro level as our point of departure and will therefore first look at *national curriculum plans and assessment* in the three Scandinavian countries. The underlying premise is that decisions made by policymaking bodies are vitally important for what takes place at the lower levels. However, it is not at all clear *how* the connection between the macro, meso, and micro level functions, nor is it given that changes in steering documents result in changes in classroom teaching. Our purpose in this chapter is to shed light on this connection and discuss how writing in the disciplines may be strengthened in classrooms. We will do this by first comparing some aspects of curriculum and assessment in the Scandinavian countries and then presenting an empirical case study from each of the three countries which illustrate different ways that writing is actualized in content areas.

The Swedish case focuses on the professionalization of science teachers in using writing. The context is a multinational European project aimed at promoting students' active involvement in thinking and doing science, but where science writing initially was surprisingly absent. The Danish case investigates

a strong link between the macro and the meso/micro level, exemplified by a change in the curriculum plan for upper secondary school which mandated a compulsory multidisciplinary written research project in grade 12. How do teachers and students rise to this challenge? Finally, the Norwegian case looks at the proliferation of local development projects in upper secondary schools where teachers from a variety of subjects voluntarily collaborated systematically over years in order to investigate the potentials of writing.

Brief Contextualization

The Scandinavian countries range in population from 5-9.5 million and are similar in many ways. Their shared ideological basis is to provide equal educational opportunities for all. Overarching, national steering documents (i.e., curriculum plans) are prepared by the Ministry of Education and voted on by Parliament. While Swedish curriculum plans have introduced national standards (detailed descriptions of what students at different levels are expected to master), Norwegian and Danish plans have competence goals, which are more general. Together with the assessment system, curriculum plans provide the framework for school owners and schools as well as for teachers' work in classrooms. In the context of our topic it is also important that "process writing," with an integrated focus on writing-to-learn, was introduced and widely adopted in the Scandinavian countries from the late 80s. Even though specific WAC (Writing Across the Curriculum) projects have been sporadic, strategies from WAC and WID (Writing in the Disciplines) have received considerable attention.

2. Macro-Level Influences on Writing in the Content Areas: A Surface Comparison of National Curriculum Plans and Assessment

Only a few aspects of the complexity of educational steering documents in the Scandinavian countries will be compared, with a particular focus on the following questions. (See Sivesind (2013a) for a comparison of curriculum plans in a number of countries.)

- To what extent has writing been targeted in curriculum plans as a "basic/core/key skill" or competence across content areas?
- Have changes in recent curriculum revisions affected writing in the disciplines at the upper secondary level?
- What are the characteristic features of assessment in the Scandinavian countries?

	Primary and Secondary	Upper Secondary
NORWAY	YES	YES 2006
DENMARK	NO	YES 2005
SWEDEN	NO	NO 2011

Figure 12.1. Writing targeted as a "basic/core/key skill" or competence across content areas?

The Norwegian National Curriculum of 2006 made writing instruction (together with reading, numeracy, oral skills, and digital skills) a responsibility for all teachers in all subject areas at all levels based on the document *Framework for Basic Skills*, 2004. This was a major change, and it was expected to make a difference in school practices in all disciplines. In Danish primary and lower secondary schools, writing has not been targeted as a skill to be addressed across content areas. In the 2005 upper secondary curriculum plan, however, writing was defined as a *study preparatory competence to be addressed in all subjects*. This was new in Danish plans, but other competencies were not included, as in Norway. The most important change was the introduction of mandatory *multidisciplinary "research" writing*. The Swedish curriculum plans do not target basic skills, but instead emphasize the importance of language for learning in more general terms.

NORWAY	<i>Revision 2013</i> : More specific about what writing in each discipline means
DENMARK	<i>Revision 2010</i> : More specific formulations of goals, especially for cross-disciplinary writing
SWEDEN	<i>Revision 2011</i> : Writing as a competence was highlighted more, but there were no specific demands regarding writing in the plans for each subject A specialization writing project may be cross-disciplinary

Figure 12.2. Changes in the last curriculum revision (upper secondary)

In both Norway and Denmark, a research evaluation of the effects of the new emphasis on core competencies in the respective curriculum plans from 2005 and 2006 revealed that classroom practices were not greatly affected by the reform, with the exception of reading in primary school (Aasen et al., 2012, Krogh et al., 2009). In Norway the evaluation led to a revision of the curriculum, which included a much more detailed presentation of the importance of the five competencies as well as more specific descriptions of what

writing means in the curriculum plans for each subject. Also in Denmark the evaluation led to clarification of goals and more explicit formulations in the curriculum plans. In Sweden, however, there were no corresponding changes in the last revision. Writing as a learning tool is not explicitly mentioned, but competencies that imply various linguistic tools, including writing, are highlighted more.

Assessment, which is also a result of macro-level decisions in Scandinavia, has a crucial influence on teaching in classrooms. The amount and kind of writing that is prioritized in school is a direct result of the types of questions included in exams and high stakes tests. A hallmark in Scandinavia is that language arts exams (as well as social science and science) at the end of Upper Secondary school ask for *extended writing*. Multiple-choice questions are almost non-existent at all levels.

NORWAY	Grade 12: <i>Compulsory national five-hour written essay exam</i> (may not be given as an option to all students) + <i>written literary research paper</i> (presented orally)
DENMARK	Grade 12: <i>five-hour written essay exam. Compulsory written research project</i> (combining two subjects)
SWEDEN	<i>Two national tests</i> , written + oral (grades 10 & 12) + <i>compulsory research report</i> in grade 12

Figure 12.3. Assessment in upper secondary language arts and research papers

A summary of the findings shows an increasing amount of attention paid to writing in Norwegian and Danish curriculum plans. These two countries *explicitly* place the responsibility for students' writing development on teachers in all disciplines. A *general* allocation of such responsibility in curriculum plans alone, however, does not change classroom practices. Norway and Denmark have chosen two different ways of ensuring the connection between the macro and micro level: Norway has increased the specificity of writing competence goals in each of the subject plans (i.e., social science, mathematics, science), while Denmark has made a cross-disciplinary written research project compulsory in grade 12.

The advantage of the Danish model is as follows: 1) schools (meso level) have to ensure that students are trained to write *study specialization projects* in which they combine content and methods from at least two subjects, and 2) collaboration between subject teachers (micro level) is no longer optional. Thus teacher competence in disciplinary writing is gradually being developed

(see section III). In addition, goals for writing competence are incorporated in upper secondary subject plans.

The advantage of the Norwegian model is that specific writing goals in curriculum plans for each discipline *legitimize* school- or teacher-initiated development work (see section IV). In spite of the lack of specific demands of writing in the disciplines in Swedish curriculum plans, efforts are made to motivate and qualify teachers (see next section).

Assessment in upper secondary school in all the Scandinavian countries has historically prioritized *extended essay writing exams* over short answer and multiple choice, both in language arts and in other disciplines. In addition, there is a tradition of compulsory research projects, which are often cross-disciplinary. Extended writing means that students get experience in structuring texts, dealing with sources, and arguing particular points of view, thus providing a foundation for further education.

3. Professionalization of Swedish Science Teachers in the Context of an International Project

There are alarming signals of pupils' decreasing interest and results in science, both internationally and in Sweden. Among several possible reasons for this development, one seems to be linguistically conditioned, as science requires mastery of a special type of language use, especially in writing (Lemke, 1990). In an American study, Applebee and Langer (2011) conclude that explicit work on written texts in science is rare. However, among science teachers in Sweden, there are signs of a growing understanding of the potential of writing as described in the following presentation of the Swedish part of an EU project, S-TEAM (http://cordis.europa.eu/result/rcn/56347_en.html).

S-TEAM (Science—Teacher Education Advanced Methods) focused on inquiry-based science teaching and learning (IBST/L). Twenty-five European universities in 15 countries took part in the project which ran between 2010–2012. The participants were largely researchers of science; however, linguists from a few countries, including Sweden and Finland, also took part, focusing more on linguistic aspects and writing. The overarching objective was to introduce IBST/L and build a sustainable teacher training in science by letting schools and researchers work together for a long period of educational development. There are various definitions of inquiry-based science education, but it can briefly be described as a process where problems are analyzed, hypotheses are made, and science experiments are critically planned and carried through.

Already having a long tradition of using inquiry-based science education,

as an exception in the S-TEAM, the Swedish members of the project were instead directed toward a *dialogic* approach of instruction (Norberg Brorsson, Enghag & Engström, 2014). The reason for this was a need to deepen students' understanding of science. Dialogic inquiry stresses the importance of the dialogue between peers, the dialogue between teacher and pupils, and *writing* in dialogue. Inquiry in itself does not seem enough to guarantee pupils' meaning-making and learning.

In the first phase, four researchers in physics, technology, and Swedish cooperated with five teachers from primary and lower secondary schools. In the project, dialogic IBST/L was described, implemented, and analyzed. The participating teachers' science lessons were video recorded several times. Before the first video recording, each teacher was interviewed, and between classes feedback was given and research texts presented. After receiving feedback for the first lesson, the teachers were given the challenge to prepare a teaching sequence taking into account the analysis and feedback. In the second phase of the project, a Teacher Professional Development Program was framed, partly based on the material gathered during the first year of the project. Seven teachers from other schools, ranging from primary to upper secondary school, took part.

In the following paragraphs some of our findings are briefly presented. Before the start of the project neither the participating teachers of the first phase nor those of the second phase had used writing in the learning activities in their science instruction. Writing was mainly used to answer short questions in textbooks or to write experimental reports. There were even lessons where no writing whatsoever took place (among teachers and pupils alike). Gradually, however, there was an emerging interest and awareness among the participants of the learning potentials of writing, for example, to encourage pupils' oral activity. Being offered time to write before discussions, all the pupils seemed sufficiently prepared to participate, as in the description below of a science lesson on the water cycle in grade 5, based on an 80-minute video recording.

The focus of the lesson was on two experiments and the related experimental reports, both of which were preceded by and followed up with log book writing and discussions, where pupils made connections between the lesson and their everyday life. The writing activities sometimes gave the teacher important information regarding the pupils' learning, as in the following example.

The teacher had asked the pupils to write in their log books everything that came into their heads when they thought of the water cycle. All the pupils looked very concerned and none of them wrote anything. Finally, one boy

said “I don’t understand the water cycle. I understand the cycle of animals, but not the water cycle.” The whole class agreed that they did not understand. Consequently, the teacher had to explain once more. It is very probable that the teacher would not have discovered the lack of understanding if this writing activity had not taken place.

The Swedish members of the project contributed to implementing writing as a dialogic tool in science education, as demonstrated in the micro-level example above, where pupils’ writing was situated in a science classroom context. This shows how writing relates to both oral and other modes of instruction to support learning. In this lesson the writing constitutes part of the pupils’ assimilation of the scientific discourse and certain ways of writing. While writing as a type of learning activity easily attracted the participating teachers’ attention, textual aspects as such did not, in spite of the pupils’ sometimes great interest in linguistic matters.

Although researchers agree that a linguistic focus is vital for increased understanding and learning, writing in science was not highlighted as part of scientific literacies among the S-TEAM researchers in general. One of the overall aims of the S-TEAM project was to support teachers by providing training in, and access to, innovative methods and research-based knowledge. The Swedish members of the project chose to include writing as part of this teacher training and thus developed a sustainable model of professionalizing science teachers.

4. Danish Writing Projects in Multiple Subject Areas—A Student Perspective

In 2005, the Danish reform of upper secondary education introduced writing as an overall responsibility for all subjects and a crucial part of study competence. Previously, writing was addressed only at the subject-plan level. Instrumental in this lift of writing to the general level was another ambitious innovation, the multi-subject construct, requiring writing as part of multi-subject coursework. Most important in this regard is the mandatory cross-disciplinary study specialization project. Behind this curriculum reform is the concept of *Bildung*, in the sense of being able to apply and combine disciplinaryities in competent ways.

Although cross-disciplinary projects are also mandatory in Danish lower secondary school, there is a difference with regard to focus. In grade 9 (last year of lower secondary school) the key word is *project*. Students are to raise problem statements within cross-disciplinary topics, but disciplinary knowl-

edge is mainly regarded as a tool. A wide register of modes, media, and genres is suggested, inviting creativity. In upper secondary projects, however, the key word is *disciplinarity*. Students are required both to actualize disciplinary knowledge areas and to understand the affordances of different disciplinary approaches. Genre experiments are not invited.

A major difference between lower and upper secondary school lies in the demand for extended writing. In grade 9 an extended written text is just one of several possibilities for presenting the project; in grades 10-12, the project reports require a considerable amount of academic writing.

In the present study two students are traced through four multi-subject “research” projects across the gap of lower and upper secondary school. The aim is to identify the learning challenges and potentials of these projects as viewed from the students’ perspectives. The study is part of the longitudinal ethnographic research project, “Writing to learn, learning to write,”¹ in which student writers were traced from grade 9 through grade 12, aiming at creating new knowledge about students’ ways of learning subjects through writing and of learning writing through subjects (Krogh, Christensen & Jakobsen, 2015; Krogh, forthcoming 2016).

The learning trajectories of Jens and Sofia are illustrated in Figure 12.4. For their projects in grade 9, Jens and Sofia selected issues which were topical and close to their personal experience; the semiotic registers applied only to a limited degree included verbal writing. In upper secondary school, their projects grew increasingly sophisticated, both in terms of the disciplinary requirements and academic presentation. Extended writing constituted the basic standard of papers, and personal experience and topicality were no longer relevant criteria when selecting topics.

Interview data reveal that in grade 9, Jens spent most of the week “nerding” with the video on COP 15 submitted by his group. He was enthusiastic about the self-regulated organization of the work that made this possible. In upper secondary school, the challenge of the history assignment was how to get a grip on the text sources. This assignment did not mean much to Jens on a personal level; still, he appreciated the concentrated work period. In the study specialization project his challenge was to understand the mathematical theory, but nevertheless he found this part of the project the most exciting. He said that it was a victory to be able to understand Euler’s theory.

In their grade 9 project, Sofia and her partner drew on personal experience and a questionnaire. In their presentation they applied several media and a range of rhetorical and dramatic effects. Sofia especially enjoyed these opportunities for creative experimentation. In the history/Danish assignment, Sofia studied public speeches. What fascinated her was analyzing rhetorical strat-

egies. In her study specialization assignment, Sofia struggled with the math part and eventually had to refrain from solving some of the mathematical problems, but still she expressed a feeling of pride in having done “such a long assignment in math.” For the study specialization project, Sofia decided to go back to more verbal registers in biotechnology and Danish. She was able to handle the challenge this time and was especially satisfied with having dug out an article presenting new knowledge about Chlamydia.

	Jens	Sofia
Grade 9 Project assignment	“COP 15” A 15-minute sampled video Oral presentation supported by PowerPoint	“Young people’s leisure time” Manuscript and storyboard for video, plus brochure Oral presentation, supported by PowerPoint and video sequences
Grade 11 History/Danish assignment	History “The American revolution” Book sources Ten pages, including illustrations	Danish “Danishness” Rhetorical analysis of two speeches Eight pages
Grade 11 Study specialization assignment	Biotechnology and Physics “The function and application of the ELISA method of analysis” Twenty-eight pages, including photos, graphs, and diagrams	Math and Physics “The trajectory of a projectile” Twenty-four pages, including mathematical symbols and formula, graphs, and photo
Grade 12 Study specialization project	Biotechnology and Math “Population Dynamic Models” Twenty-eight pages, including photos, graphs, and diagrams	Biotechnology and Danish “Chlamydia” Thirty pages, including diagrams, tables, graphs, and photos

Figure 12.4. The projects of Jens and Sofia

From these two students’ perspectives, learning challenges and experiences were tied to the “research” aspects of the projects. There was, however, an interesting progression in this respect. In grade 9, Jens and Sofia mainly foregrounded the *self-regulated organization* of the work, the *liberty of choice*, both with respect to topic and resources, and the *personal relevance* of projects. In interviews on the upper secondary projects, more importance was attached to issues of *overcoming challenges* and *exploring new knowledge*. Evidently, there were both losses and gains in the trajectory from secondary to upper secondary school.

In conclusion, cross-disciplinary “research” writing holds obvious learning and *Bildung* potentials, not just with respect to the curricula, but also from students’ viewpoints. Although both lower and upper secondary schools would benefit from learning from each other, the empirical data indicate that students appreciate the progressive challenges of research projects. There is also a strong indication that important learning potentials of these projects are tied to increasing demands of cross-disciplinarity as well as to requirements of extended writing.

5. Challenges with Implementing Writing in All Disciplines in Norwegian Schools—A Cross-Level Perspective

Although writing has been mandated as an integrated part of all subject areas in Norwegian schools since 2006, evaluation reports show that teachers in general seem to be little affected by the reform (Hertzberg, 2012; Aasen et al., 2012). Very few subject content teachers, particularly at the upper secondary level, consider teaching writing their responsibility; they feel they have neither the competence nor the time for it. With the exception of reading, which is strongly focused on at the primary school level, these findings were also representative of the other competencies (numeracy, orality, and digital skills). As a consequence, the curriculum was revised in 2013, involving a more detailed presentation of the idea behind the integration of the five competencies together with more specific suggestions for implementation. The results are yet to be seen.

However, these rather negative findings do not give the whole picture. Today, an increasing number of upper secondary schools are establishing school-based writing projects across content areas. Already in the year of the reform (2006), a group of teachers at “Fagerbakken” upper secondary school decided to establish a project aiming to gain deeper insight into what counts as text quality in the different subject content areas. The project soon received great attention in the media. After four years, the project was documented through a book published as a joint effort between the school and the Department of Teacher Education at Oslo University (Flyum & Hertzberg, 2011). Today, several other secondary schools in the Oslo area have started similar projects. Since these schools represent a very different picture from the schools in the evaluation report, a research study was designed to find out how they did it and why they succeeded.

In search of an answer, participants of writing projects at four different schools were interviewed. The following schools were chosen strategically to represent the diversity found among Norwegian secondary schools: “Marka”

(11-13), a traditional upper secondary school focusing on vocational strands; “Fjordbyen” (11-13), a traditional upper secondary school focusing on academic strands; “Skogen” (8-10), an innovative school with a long tradition of project work and entrepreneurship; and “Plassen” (8-13), a brand new school with a strong media and communication strand. The interview dealt with organizational structure, aspects of disciplinary writing in focus, classroom practices at play, and critical conditions for success (for an expanded version of the study see Hertzberg & Roe, 2016). Below we list some of the main findings.

Organization: All four projects were initiated from below and quickly received support from the principal. Two of the projects involve the whole staff; the other two involve only part of the staff (and on a voluntary basis). Whereas the projects that involve the whole staff naturally include the whole range of school subjects, the other type of project may be more restricted. In particular, there is a tendency for science and math teachers to be more reluctant than social science and language arts teachers.

Focus of disciplinary writing in the project meetings: There seem to be two main concerns: discussions of student texts and the sharing of “best practice” examples. Text discussions typically center on text norms in the various content areas and the grading of student work, whereas “best practice” sharing includes discussions of types of assignments, feedback strategies, students’ use of sources, the pros and cons of providing students with model texts, and writing frames.

Teaching repertoire/tool kit at play: All interviewees report extended work in the pre-writing phase, including the use of models and writing frames. Teacher response during writing is practiced in some form or another by most participants, and peer response is a regular method in two of the schools. All participants stress the importance of discipline-specific concepts. Writing events typically include reading, oral activities, and the use of digital resources, and the students are asked to complete extended writing assignments several times per semester.

Critical conditions: All four groups highlight the need for a fixed meeting schedule, mental and organizational support from the principal, and a certain amount of devoted teachers.

In light of the enthusiasm and creativity that we found characterized the network schools, a crucial question is why schools in general seem to be relatively untouched by the reform. An explanation may be found in the dichotomy of *top-down vs bottom-up*. Research on reform implementation contains overwhelming evidence that top-down reforms have little chances to succeed unless they are anchored in felt needs among those who must carry out the reform (Cuban, 1998; Tyack & Cuban, 1995; Klette, 2002). In Norway, the

introduction of the five basic competencies has been a typical top-down process, grounded in the European DeSeCo framework, formulated in curriculum plans, and introduced by bureaucrats and politicians. At the micro level, neither school principals nor teachers had asked for it, and teachers felt no ownership of it. In the network schools, however, the engagement started at the micro level, initiated by devoted teachers who saw writing as a means of learning content knowledge.

An interesting point is the similarities between the process writing wave in Norway during the 1980s and today's engagement with writing in the content areas. In both cases, school-based projects have been initiated from below and spread from person-to-person, and in both cases the result has been a broadening of teachers' instruction repertoires. But whereas process writing was implemented in classrooms without support of steering documents, the initiatives referred to above would hardly have succeeded without the introduction of the five basic competencies in the national curriculum. What we are seeing is an interesting blend of top-down and bottom-up initiatives which create a future potential for widespread adoption.

6. Conclusion

We opened this chapter by pointing to an international trend toward highlighting general competencies and skills that are desirable outcomes of education. Writing, as one of the literacy competencies agreed on as being vital for both learning and future work, can only be achieved by concerted efforts by teachers across content areas. However, international research has shown that global concepts like "skills" and "competencies" are still associated with instrumental, basic skills, and that they are not well connected to the best practices that already exist (Sivesind, 2013 b). This challenge needs to be taken seriously in order to implement large-scale changes in practice that informed writing teachers have advocated for decades.

Our three case studies add up to a picture that bodes well for the future of writing across content areas in the Scandinavian countries, even though it will take time. We have emphasized the importance of combining macro, meso and micro levels, but the three countries exemplify quite different combinations. In the Swedish study, an international science project provides the macro level incentive for participating schools, but it is the local interpretation of the project that adds the writing-to-learn. The classroom study shows the importance of helping teachers learn how to integrate writing into a dialogic, inquiry-based teaching of science. In Denmark, the macro level pressure is strongest as a curriculum reform *mandated* the implementation of

cross-disciplinary written research projects in schools. But the challenge had to be taken up by the subject teachers at the micro level of classrooms in order to work in practice. The longitudinal case study exemplifies this macro-level reform's gradually increasing learning potential for students. Norway is the country where the curriculum documents most clearly state that teachers in all disciplines are responsible for teaching basic competencies—in primary, secondary and upper secondary. Bottom-up writing-in-the disciplines initiatives are spreading, being legitimized by the new emphasis on writing in curriculum plans for a number of subjects. This study thus indicates a viable, but less certain alternative to mandating writing in the content areas.

Maybe the most important overarching conclusion of our studies is that they confirm the value of extended writing. Different from the situation in e.g. the US (Applebee and Langer 2011), assignments requiring *writing at length* have long traditions in Scandinavian schools. This cannot be overestimated as a contribution to meaningful writing in the content areas. From a teacher perspective, extended writing provides opportunities for the training of disciplinary discourses and knowledge. For students, extended writing—and in particular “research writing”—offers experiences of agency and knowledge crafting, which are basic prerequisites for learning and *Bildung*.

Note

1. Literacy and Disciplinarity in upper secondary education, www.sdu.dk/fos. The project was funded by the Danish Research Council for the Humanities 2010-2014.

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