

## Designing a Website to Support Students' Academic Writing Process

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### ABSTRACT

Academic writing skills are crucial when students, e.g., in teacher education programs, write their undergraduate theses. A multi-modal web-based and self-regulated learning resource on academic writing was developed, using texts, hypertext, moving images, podcasts and templates. A study, using surveys and a focus group, showed that students used the learning resource on numerous occasions, a resource reachable outside in-person mentor sessions. Students declared that the resources had been important for finishing their degree projects. Mentors highlighted structure, multidisciplinary overview and linking possibilities. Using digital learning resources supporting students' academic writing is doubtless a developmental area in higher education.

**Keywords:** academic writing; undergraduate thesis; digital resources; higher education; multimodal design.

### INTRODUCTION

This article draws on the project *Scientific process – Teacher education program, S-TEP*, which was undertaken at Stockholm University between 2012 and 2014. Three different departments at Stockholm University were involved in the project, the departments of Child and Youth Studies, Education and Special Education. Stockholm University has prioritized strengthening the social scientific quality of student teachers' undergraduate theses. It was in light of this priority that the *S-TEP* project was established, in order to further develop and improve digital resources and teaching support for students pursuing a teacher's degree generally, and, more specifically, to assist with the writing of undergraduate theses within the teacher education programs. Since 2001, writing an undergraduate thesis has become a constituent element of the teaching degree course. This has involved some important challenges during the implementation process of the reform. An important task has been to find the right balance between professional and social scientific perspectives. For its part, *S-TEP* took as its starting point the assumption of academic pluralism, namely that academic writing, in the context of different knowledge domains, is realized and transformed in multiple ways by particular students and mentors, all of whom are spread across a variety of learning environments. A website was developed, utilizing multiple modes and means; these were designed to complement the lectures, literature and supervision that traditionally serve as core parts in undergraduate thesis courses. The idea was to create digital learning tools which would enable students to work more independently in regard to both the structure and content of their undergraduate theses. In this article we will explore the following question:

- How do students and mentors perceive the learning resources on the website and their possibilities for supporting skills in academic writing?

### Background

Academic writing is a genre within the larger field of academic literacy. Academic literacy is more than the ability to read and write effectively. It also includes the capacity to adapt smoothly to the cultural, linguistic and social milieu of academic departments and institutions (Gijbels, Donche, Richardson & Vermunt, 2014; Lee, 2013). Students bring a cultural code from their previous education, and there is cultural currency embedded in each one of us (Loughran, 2006). Furthermore, the idea of a traditional academic student has been replaced by multicultural and heterogeneous students who bring diverse experiences to universities (Entwistle, 2009). The introduction of computers in higher education has led to a qualitative change for all writing. Information and

communication techniques (ICTs) provide new tools, which may be used individually or with groups of students. Web-based learning platforms are increasingly used, not only for distance learning, but also as educational tools in campus based courses. Online support is thus looked upon as a complement to classroom teaching. Hansson and Moberg (2011) developed online support for students who were writing their theses. According to their findings, a new generation of students takes the Internet, smart phones and computers for granted. Universities have to readjust and develop new ways of organizing their educational practices. Numerous initiatives, such as recorded lectures, recorded questions and answers, and checklists as well as supportive administrative systems were introduced. Results showed that students came better prepared to their supervisory sessions, where time can then be focused on discussing the problems studied, rather than spending time on basic research methodology. In addition, Hansson and Moberg (2011) report that, with these changes made, mentors and administrators spent their time more efficiently when working with undergraduate theses.

### **Academic literacy**

Developing academic literacy involves acquiring the discursive repertoire of the sciences: critical thinking, reasoning, reading, writing and behaving like a scientist, in the humanities as well as in the social and natural sciences. Academic literacy, therefore, is supported in and through established ideological positions and intersects issues of identity. The process of becoming academically literate, however, seems to lean on a paradox: those involved appear to be afraid of writing; yet they have chosen a career in which, by definition, writing is a necessity (Cameron, Nairn & Higgins, 2009). Many people think about writing as a linear process; academic writing can rather be described as recursive. Academic writing is not carried out from page A to Z in a continuous process. Instead there exist multiple drafts, where drafts are shown to critical readers and the advice given most often calls for serious revisions and restructuring of the text. Braine (2002) has defined the content of academic literacy to include, *inter alia*: knowledge of one's chosen field of study; research skills, good reading and writing techniques, as well as a continued adaptation to both the academic and social cultures of the university. In addition, Braine pointed out that the personalities and demands of the lecturers and academic mentors also vary considerably; the same can be said about the multicultural group of student peers. Academic literacy is generally acquired over an extended period of time, sometimes already starting in secondary schools. The input comes from various sources, such as teachers, mentors, peers, research, style guides, textbooks and handbooks. There are multiple systems prescribed for how best to organize the text as well as manuals specializing in referencing. Often different systems run parallel at a higher institution, and even at one department. Different disciplines develop their own framework and rules, as can easily be noticed between for instance the natural and social sciences. Vermunt (2005) described the importance of recognizing students' individual learning patterns. A learning pattern is a complex result of a student's personal factors, conceptions and regulations of learning and motivation in relation to contextual factors. The different patterns are related to quality of outcome; i.e. unstructured and undirected patterns can easily lead to reproductive and repetitive writing, whereas possibilities to relate to previous experiences and to formulate meaning-making tasks were found to improve the overall quality of written text. An initial inventory of learning patterns and a continued focus on student participation and critical approaches are recommended (Gilbels et al., 2014; Vermunt, 2005). It has been suggested, by Cameron et al. (2009) that technical know-how be addressed in specific, optional workshops, addressing topics such as the outline, constructive alignment from aim and research questions to result and discussion, rhetoric, reference systems and so forth. Braine (2002) pointed out that shortcomings in academic literacy most often cannot be solved only by focusing on writing tasks alone. Data about the students has to be obtained from multiple sources for a more comprehensive understanding of the process by which academic literacy is acquired. Even with detailed, highly structured instructions, indicating that course instructors carefully controlled the assignments, students from other cultural backgrounds tended to misunderstand the assignments. There was a need on the students' part to interpret the assignments so as to better understand the instructors' expectations. Moreover, according to Braine (2002), a form of dialogical communication was found to be more productive than any relationship developed along hierarchical lines. Students seemed to become more receptive to a mentor when the latter assumed a co-worker and a co-learner role.

### **Writing degree papers**

In order to be awarded a degree, by the end of their education, most undergraduate students have to undertake an independent study. This affords the students an opportunity to direct their own studies. Since the study constitutes a minor research project, it often involves the independent collection and analysis of data. Compared to other course assignments, such research projects are extended over time. During this period students need various kinds of support so as to be able to achieve the expected learning outcomes (Todd, Bannister & Clegg, 2004). The ability to work independently is an important outcome of undergraduate studies, but it is also a necessary precondition for such work to get done. Indeed, if students have not developed such an ability before writing their undergraduate theses, then the task of the academy must surely be to provide the tools and the

teaching support for students' to further develop their abilities to work more effectively and independently. Todd et al. (2004) argued that the key issue, when students write undergraduate theses, is to handle the balance between encouraging freedom and independence, on the one hand, and writing within the established tradition of the academy, on the other. Often, students struggle with formulating a practicable research question and thus run into difficulties with time-management, that is, *how*, *what* and *when* to do certain things. The research of Todd et al. (2004) showed that students “appreciate structure within the dissertation process as it helped them to manage their workload and remain motivated” (Todd et al., 2004, p. 344). An interesting question is then: is it possible to support the writing of an undergraduate degree paper as well as to develop the student's ability to work independently? The aim of developing the website was to create digital learning tools, which would enable students to work more independently on questions surrounding structure and form.

An additional demand for support for students is the increasing number of students entering into Swedish higher education with a different mother tongue than Swedish. This may be the result of migration but also of academic ambitions, i.e. to recruit a high number of exchange students as part of internationalization strategies. Bükler (2003) stated that for most students academic writing becomes more difficult when it is done in a foreign language. However, it is not just language that creates a problem; cultural patterns in academic writing vary between disciplines, universities, languages and countries. International students are quickly supposed to adapt to the traditions at a specific institution (Vermunt, 2005). But there are other reasons for shortcomings in academic writing among international students. A lack of understanding of the writing process adds to the students' difficulties. There exists ignorance among mentors and teachers about process-related writing techniques, and even so about overall study techniques, which could be overcome by developing a practice that enables individual learning patterns (Entwistle, 2009; Vermunt, Bronkhorst, & Martínez-Fernández, 2014).

### **Degree papers in teacher education**

The demand for a degree thesis in teacher education was introduced in Sweden in 1993, and today teaching is looked upon as an academic profession. The thesis is meant to have both an academic and a professional orientation. Researchers indicate that even if a dynamic balance between these would be preferable, it is in reality difficult to achieve. For instance the rigid scientific structure of the thesis can reduce the transferability of knowledge to the teaching profession (Gustafsson, 2008; Reis-Jorge, 2007; Wallace, 1997), while, conversely, the professional orientation may cause deficiencies in any critical approach adopted and may also harbour inadequacies with respect to documentary evidence (Mattson, 2008; Meeus et al., 2004). There is also a tendency toward academic focus becoming more prominent than professional perspectives (Calander, 2005). The academically-oriented approach has a strong support in official policy documents and studies have shown that this orientation has grown in recent times (Gustafsson, 2008). An academically-oriented approach advocates a teacher education that focuses on social scientific preparation, where research methodological skills and connection to research is important (Andersson, 2002; Feiman-Nemser, 1990). An academic thesis gives students the opportunity to learn about research, giving them a greater understanding of the genre of social science theses and dissertations (Ersoy & Cengelci, 2008). However, Gustafsson (2008) analyzed policy documents and research on student teachers' degree theses and found that neither academic nor professional training have a consistent impact on the quality of the theses. What seems to be happening is that those who advocate for the established tradition in academic writing hope to preserve the thesis as an academic phenomenon, instead of seeing it as a way to develop the profession and prepare students for the teaching (Gustafsson, 2008). A review of teacher education degree theses found these to be of lower academic quality than in other studied programs (The Swedish Agency for Higher Education, 2006). The survey was based on an evaluation model (Härnqvist, 1999) covering six aspects of quality: research links, formulation of problems, theoretical awareness, research methodology, implementation and conclusions, linguistic design and format. Problems highlighted were strong normativity, weak links to research, lack of critical thinking and a predominance of qualitative methods. These identified problems have inspired the design of the website and digital tools in the present study.

## **MATERIAL AND METODS**

### **Scientific process S-TEP**

The project *S-TEP* has a design-based research approach (Andersson & Shattuck, 2012) and utilizes design-theoretical and multimodal perspectives on learning and communication (Kress & Selander, 2011). A principal purpose was to design resources for students' self-directed and self-regulated learning. The aim of the *S-TEP* project was to design and improve significant learning resources for academic writing and to make these resources available on the Internet. These perspectives adopt an approach in which learning is understood as a dynamic process, involving both design *for* learning and design *in* learning (Selander, 2009; Selander & Kress, 2010). Design refers to how people make use of the resources that are available at a given moment in a specific communicational environment to realize their interests as makers of a message/text (Kress & Jewitt, 2008, p.

17). Multimodal perspectives acknowledge different resources, a complex fabric of modes that to some extent are used to shape students' possibilities in the representation of their learning. Within that complexity, the use of a variety of resources and modes (such as text, speech, images and moving images) offers different possibilities and constraints for meaning-making and learning, and different ways of learning and representing knowledge in the subject matter. According to Selander and Kress (2010), people orchestrate meaning through their choices of resources and configuration of modes.

These perspectives were applied within the *S-TEP* project as approaches for enabling and recognizing design possibilities for students to shape meaning and represent knowledge within academic writing, by using a variety of modes and resources from a website. New technologies and digital resources may challenge us and make our perception of a given text or subject matter expand. For example, what has been referred to as the “the visual turn” in theoretical discourse has changed approaches to truth and authority (Jewitt, 2008, p. 9-10). The possibilities for designing and expressing knowledge, for example by using moving images, speech and pictures instead of written text, have increased considerably during recent years. So if students use various modes and resources in their learning process and if all these modes and semiotic resources have different affordances, what modes and resources represent the most appreciated tools by students and mentors in supporting academic writing and what kind of interactivity do they provide? We may argue that different digital resources have different potentials and constraints as learning resources, and these resources lead to certain aspects being foregrounded (in accordance with the subject matter) during the learning process. Given the digital and multimodal landscape of today, it is crucial to understand the potentials and constraints of such resources as well as the costs and benefits of their use in academic writing.

### **Designing resources for the website**

The *S-TEP* project's design experience arose out of the design *for* learning approach (Selander & Kress, 2010). This approach takes the perspective that designers construct and make available resources for learning with respect to epistemological and methodological considerations. On the website, different learning resources for academic writing were displayed in multiple media and modes, e.g. images, written texts, moving images and speeches which were distributed in templates, films and podcasts. The various modes and resources were set to perform different tasks in the students' design *for* learning process. This means that each mode or resource was designed with a particular meaning-making purpose in mind. The design of modes and resources also tells us something about how we as designers perceive the phenomena or issues being represented (Kress, 2003).

Within the *S-TEP* project, between 2012 and 2014, a collaborative design process took place involving a group of web designers, senior lecturers and teaching administrators. The aim was to come up with proposals for digital learning resources that would be supportive of students' academic writing. Within the design process, ideas, sketches and different multimodal learning resources were frequently discussed and evaluated in terms of their suitability for facilitating students' academic writing processes. During this process, professors and lecturers were invited to contribute with content, which could then be developed in the different modes and resources. Thus, the resources made available mirrored the variation of social scientific perspectives represented among faculty members. The design of the website was based on the assumptions that all modes have the potential to contribute to learning. The website was adapted to departmental concerns and placed on the three departments' home pages.



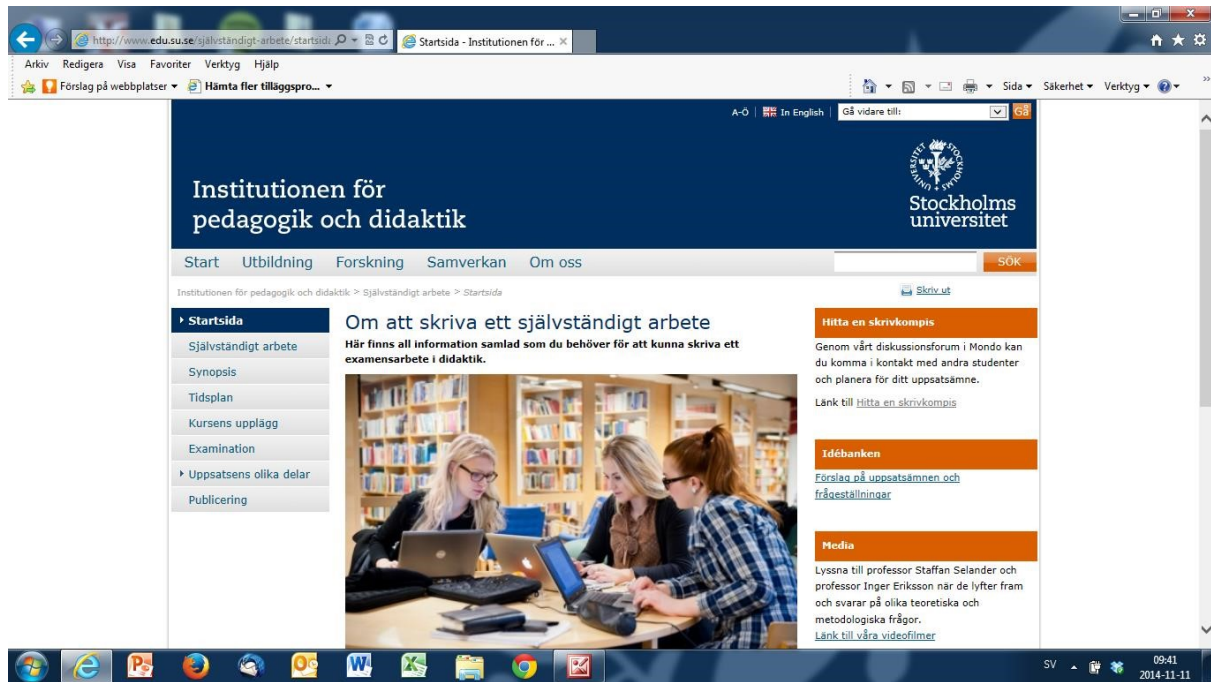


Figure 1: Example of the website designed within the project.

The website may be characterized as a work-through site, designed *for* learning, with chronologically arranged web links, constructed in relation to academic writing objectives and quality aspects (Härnqvist, 1999). These links were displayed on each of the sides on the homepage. Every link was adapted to display specific semiotic work related to the particular objectives of the academic writing course. For example, the design of the mode *written text* communicated meaning concerning objectives, time frames, how to write a synopsis, examination routines as well as advice about the oral defense of the thesis. Additionally, a further text advised students about the required organization of academic writing and provided links also to templates and other *formalia* related to the academic presentation of texts. In the mode *written text*, students could read via *hypertext* about aspects such as: How to select theoretical perspectives suitable for specific knowledge domains, and What important methodological issues ought to be considered in different academic approaches and in writing? The mode of *colour* was designed to enhance structure and readability. All the *images* on the website represented collaborative and active students engaged in work processes.

The images were meant to be eye-catching; the sight of students socially engaged serves both an emotive and pragmatic function. The images were coloured, centrally framed and designed to enhance inspiration and dedication to the website. *Films and pods* were also available through links on the website, representing academic work in other modes (moving images and speech). These modes provided different affordances for meaning-making and learning. Different modes hold particular potentials and constraints for meaning-making and, indeed, the meaning of some content may be better expressed in one mode than another. Speech combined with gestures may orchestrate variability of meanings through both sound and bodily movements, and these can be used to enhance both meaning-making and learning. On the website a number of short films (each one approximately two minutes long) and podcasts (no longer than fifteen minutes) were displayed to stimulate the students' interest in academic work and academic writing. The topics in these films and podcasts illustrated several essential and important issues within social scientific work in general, and within the academic writing process in particular. For instance: How to transform ideas into research questions? What does the concept "coherence" mean in academic writing? And, what does "distributed time" facilitate in an interview setting? The digital films were identified within the design process as useful and successful resources for meta-reflection. With support of the website, students have the opportunity to become their own designers *in* learning.

### Data collections and analysis of the empirical data

To explore how students and mentors perceived the website, a trio of methods was adopted, including: (a) questionnaires to students; (b) a video-documented focus group with mentors and (c) questionnaires to mentors.

a) Questionnaires to students. All teacher students (n=157) who participated in the academic course for the undergraduate thesis during the spring and autumn semesters of 2013, across three different departments, received a questionnaire to fill in after their oral examination seminars. The learning outcomes of the

undergraduate thesis course are the same at the three departments. Of the total number of teacher students, 90 answered that they had used the website. Students not using the website indicated that the main reasons for not doing so was because it was unknown to them and/or that they received their help exclusively from their mentors. We asked the students in what ways and how often they used the learning resources, to rate how useful the different resources and modes were, and whether they deemed these resources as satisfactorily supportive for students' independent work. Responses were compiled partly by descriptive statistics concerning utilized resources, and partly through an analysis of those survey questions that solicited open-ended responses. The subsequent analysis focused on potential issues and prospects in using website resources as well as any further development opportunities.

b) A video-documented focus group with mentors. In order to gain an insight into mentors' opinions of the website resources, we arranged a focus group with four mentors at the Department of Education. They were instructed to use the website and then give their views. A research room with one prepared computer and a film camera documented their working process and discussions. We wanted to observe how they navigated through the website without any initial guidance or distractions. Conversations, body language and typing on the keyboard were all documented by the film camera. All conversations were transcribed. The analysis focused on issues and opportunities raised through website interaction. Particular attention was given to problems in orienting oneself on the site, comments about website content and opinions about possible improvements.

c) Questionnaires to mentors. To know more about how mentors from all three departments perceived the site, an open-ended questionnaire was constructed based on the analysis of the focus group. 14 mentors answered the questionnaire. A few of them hadn't used the website, but took the opportunity afforded them by the questionnaire and went through the website, answering most of the questions. We asked whether mentors used the site when supervising students and what they perceived as useful. The questionnaire also dealt with design and content, ambiguities and requests for development. The subsequent analysis focused on potential issues and prospects concerning the use and development of the website.

This study draws on an empirical sample of students, N=90, who answered (a) and mentors, N=18, who answered (b) or (c). The data does not allow us to assess the influence of website exposure on the written quality of undergraduate theses.

## RESULTS

How do students and mentors perceive the learning resources at the website and its possibilities to support skills in academic writing?

The results of the survey show both the possibilities and constraints when using a website to support the writing of an undergraduate thesis. Examples of possibilities mentioned include the following. First, time is not a limiting factor when visiting the website, a student can visit the site as often and at whatever time s/he likes. Second, there are unlimited possibilities with respect to linkages students might make to different knowledge bases. Third, the site offers multiple modes for where and how knowledge can be sought. Moreover, according to informants, the layout of the website ensured easy access to knowledge. At the same time constraints were also reported. These drawbacks included that the information on the website is too limited, and that suggested templates can prove to be too inhibiting for students. Moreover, informants pointed out that a website is changeable, recognizing the modus operandi of web-based knowledge.

### Students' usage of the Website

Initially we asked the students to what extent they had used the learning resources on the website. A significant number of students entered the website five times or more. Some used it even more frequently, returning to the website more than twenty times. It's clear that students experienced the information to be useful, returning repeatedly to the website to gather new information or to check that they had comprehended the information correctly.

Writing an undergraduate thesis is a major task, and one-third of the students said that the web-based resources contributed to their fulfilling the requirements of the degree paper. The results indicate that most of the students considered the information to be useful, especially in the initial phase of their working process. Concerning questions about what specific modes and parts of the website the students liked and used most, identified preferences included the text-based resources, such as different informative texts, descriptions of content, texts with focused explanations, and templates, etc. Students also liked the films, representing both visual and auditory modes. The clear and structured design was a further quality students appreciated.

While students seemingly used the traditional modes of learning most, they nonetheless gave appreciation to the information/knowledge given in the other modes. The variety of modes available was one of the qualities associated with the website. In the course of writing the degree thesis, the multimodal approach adopted by the website offered students semiotic potentials. The students were also asked to rate how useful they had found the resources to be in terms of improving skills in academic writing and strengthening possibilities for independent work. On these issues, students found the website particularly useful for their academic writing. Some students turned to the website for supervision rather than getting in touch with their mentor. This study did not investigate the connection between the mentors' knowledge of the website, and the students' usage of it. However there are indications that the mentors' attitudes affected student usage. Student requests for further development of the website included adding more information about technical know-how, and more information concerning their course. Some of the students' responses indicated a wish to get "the right answer" to dilemmas that occur during the writing process. This shows the central challenge facing academia. How can mentoring of students help to foster independence in the research process, that is, in finding knowledge, thinking and consequent decision-making?

### **Mentors' usage of the Website**

Mentors were asked if and how they had used the website while mentoring teacher students' thesis writing, and why they chose to do so. They were also asked for their opinions about the website. Possibilities and constraints associated with using web-based learning resources were drawn from a content analysis of their answers. Around half of the mentors had referred the students to the website, especially at the beginning of the course. They found it to be a good starting point, giving the students an idea about the expected structure of the work. Most of the mentors had a positive attitude to the newly developed website. They described it as clear and accessible; particularly merit-worthy was the fact that it was specially adapted for student teachers. The mentors also mentioned that the visual presentation gave students an overview of the expectations of the course. Most of the mentors experienced the website as a complement both to their mentor tasks, and to textbook-based learning. Mentors have limited possibilities and resources to guide students; there is only a certain amount of time for group mentoring and supervising each individual student. The website is, on the other hand, accessible at any time and place. It is possible to go back and view the same information over and over again. The students' own working pace can thus be acknowledged. If the students get to know about the website at an early stage in the program, they also have the possibility to prepare in advance. A variety of information is gathered on the website. The texts on the site are compact and selective and, in that sense, when compared with what is presented in a textbook, information can be understood and assimilated more quickly. Mentors also encourage students to seek information by themselves, using other systems and databases that are presented via links on the website.

Some mentors raised the problem that the website and its templates can inhibit creative solutions, and this might be a hindrance, especially for students studying at an advanced level. Generally, a high variation between different media and modes was recommended. In many respects, the website offers unlimited resources, but, still, the fact remains that someone always decides which information is to be displayed. The ways to go about finding knowledge will therefore always be, to a greater or lesser extent, limited. Some mentors wanted to make more use of the different modes on the website. In particular, several mentors mentioned wanting to use more visual and auditory sources. In order to present a variety of research perspectives and traditions, more films were suggested. Several mentors also asked for films about the assessment procedures and seminars. The mentors wanted to use ICT as a communication tool for how they want students to work with their theses. Methodology books provide general information but this website is seen as tailored by the mentors' perceptions.

### **DISCUSSION AND CONCLUSIONS**

This concluding section will point towards some possibilities as well as indicate some constraints that were perceived by both the students and the mentors interviewed about a website dedicated to the writing of undergraduate theses. It is hoped that these findings will be of importance in the continued development of this website initiative and others like it.

In the project *S-TEP*, multimodality was applied as an approach to enable and recognize design possibilities for students to shape meaning and present knowledge within academic writing, by using a variety of modes and resources. A website was designed for students to be able to use several resources for learning to write academic texts. Selander & Kress (2010) and Kress & van Leuween (2001, 2002) discuss the potentials of different modes and argue that all modes (e.g., written text, images, moving images) carry potential for meaning-making in different ways. As we see it, the modes and resources available at the website may realize different meanings, different usages and give different ideological or epistemological implications for the academic writing process. The design-theoretical and multimodal approach gives a dimension to understand the design *for* learning by

taking into account how students actively choose and use different modes and resources in the writing process. The perspective offered us a theoretical framework and notions for analyzing modes, resources and ideas of their respective roles of facilitating students' learning processes. The framework gave us, as designers-as-producers (Kress & Selander, 2011), a theoretical ground for discussing the design process and deepening our understanding of how a website can be designed to support academic writing. We were thus given the opportunity to reflect on the values and the perceptions of what is recognized as quality in academic writing. Our own cultures of recognition were scrutinized and critically discussed, e.g., interpretations of different resources and analyses of available prompts and their potential for meaning-making.

Drawing on the findings presented above, this section also summarizes a few of the gains some students made in taking this course with these web tools at their disposal. Finally, the mentors' perceptions of the website are also summarized. It is arguably still relatively new, in the context of teacher education, to introduce technology as a central part of the process of learning and mentoring academic writing. Writing a degree thesis is often considered an important milestone in any higher education program.

### **Multimodal design for independent learning**

Traditionally, university students have received guidance from mentors whenever needs and problems crop up during their writing processes. Often, such guidance has been situational, contextual and problem-oriented, organized in face-to-face sessions between mentors and students on campus. Additionally, multiple e-mails go back and forth between student and mentor, a time-consuming but yet not always satisfying way to help students. The findings in this project, drawn from a specific website initiative, suggest that web-based resources may promote the utilization of resources which are both multimodal and of a wider range. These resources have been shown to support the possibility of "flipped" supervision and self-regulated learning (cf. Fulton, 2012). In the context of the *S-TEP* project, available resources influenced students' engagement and helped them to become more familiar, and more at ease, with academic writing traditions. The results indicate that a website offers multimodal design *for* learning in ways that help students become less dependent on their mentors. The resources presented on the website offer possibilities for different kinds of representations and communication. They also provide additional tools for students to investigate their own interests and particular meaning-making practices. Moreover these assembled resources allow new ways for mentors to support the students' ways of learning the techniques necessary for academic writing. Many other digital resources, e.g., databases for methodological approaches or for searching articles in online journals, have been characteristic elements of the writing process as well as being objects about which students and mentors have often communicated.

For some students the available website and its digital resources offer the possibility of viewing and re-interpreting the entire academic writing process, through utilizing the website as a virtual gallery for a constant design *in* learning (cf. Kress, 2003; Kress & Selander, 2011). Overall, the students and mentors were satisfied with the existence of the website and some students even pointed out that their skills in academic writing had been developed by the use of these web-based resources. Expectations of learning objectives were communicated on the website in a clear way. The academic writing process also became more transparent via the informative texts, templates, films and podcasts (cf. Todd, Bannister & Clegg, 2004). Although the students often used monitory templates, these were to a large extent open for students to design their own learning, rather than to reproduce knowledge from others. Students chose different modes and resources based on their interests and level of engagement, in order to develop their understandings of topics and knowledge. These resources offered students a multimodal world of images, speech and printed text. These findings suggest that the website had the potential to support:

- Independence during the initial phase of the course
- Individual learning pathways and different ways of learning academic writing
- Multimodal variation and resources for flipped learning
- Around-the-clock online guidance
- Access to the knowledge and experience of many mentors
- Transparency regarding expected learning outcomes and academic criteria
- Students' ability to complete the degree thesis

### **Challenges in implementing new tools**

The students', as well as the mentors', use of the website varied. For some students, the website became an appreciated and frequently utilized tool, for others it served as a complement to other means of learning. For a significant proportion of the students, though, the website was not utilized, and in some cases students were in fact unaware of it. Implementing new educational resources, such as the website discussed here, must be carefully planned over time. There is a need for systematic implementation efforts over an extended duration, so



as to reach and teach new ways of learning in an educational system of a larger size. As shown above, there were differences in understandings of the affordances of the website. There is, in constructing a new web-based resource, always a balancing act between providing correct and adequate information while not overwhelming students with too many details. Both students and mentors asked for more information concerning different aspects of writing a degree paper. Some of this information is easily found in textbooks dealing with academic writing and research. In a website, there are a variety of possibilities to link to other Internet sources, this was a point also suggested by some mentors. Both students and mentors have suggestions about what could be developed on the website, which may be interpreted, fundamentally, as a sign of appreciation of the website. There are different opinions about what to develop. Should there be more detailed and/or additional information? How many links to external websites should there be, e.g., compared to developing our own production of additional visual and auditory modes?

Another driver for the furtherance of this project is the question: What modes and semiotic resources are the most appreciated tools by (different groups of) students and mentors in supporting academic writing? These questions illustrate that the website affords multiple perspectives that may be further developed, as well as clear and framing formats for meaning-making. In this way, the web resources encompass both critical thinking and academic writing, since the students need to critically examine and choose the most relevant perspectives and methods, a process which underpins quality (Loughrain, 2006). Working with a website, like the presented one, gives opportunities for continuous development, which is not possible with published textbooks. This may also be realized during mentoring. Just as mentors need professional learning in order to deepen their fields of expertise, a website needs maintenance, up-dating and the incorporation of new knowledge, as well as the highlighting of aspects suggested by students and mentors. The process of updating would invite mentors to participate in an ongoing discussion about what students need to know and need have easy access to, in order to write an undergraduate thesis. Such an on-going discussion has been shown to strengthen the mentors in their work as well (Todd, Smith & Bannister, 2006). Web-based teaching offers a lot of unused possibilities, but the results from this study show that students and mentors have only started to realize the potential of web-based learning resources.

Drawing on the results from our study, the resource of a tailor-made website can actually constitute something analogous to a third party, mediating between the on-going dialogue between student and mentor, and thereby complementing the supervisee-supervisor interaction. Mentoring can be realized through a multimodal website. As a consequence, more faculty researchers become available, with each mentor potentially reaching more students. In the context of a website, each student could meet and benefit from the expertise of multiple researchers. The purpose would be to loosen the dyad of student-mentor, and to convert the relation into a triad; student-mentor-website. However, we would like to underline that implementing a website, such as ours, takes time and effort, and there is always a “takeoff-period” to take into account.

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