UNIVERSITY OF HELSINKI

https://helda.helsinki.fi

What does wiki reveal about the knowledge processing strategies of school pupils? : Seventh-graders as users of wiki and processors of knowledge in a collaborative writing project

Ahlholm, Maria; Grünthal, Satu; Harjunen, Elina

2017
Routledge
http://hdl.handle.net/10138/310842
Ahlholm, M, Grünthal, S & Harjunen, E 2017, 'What does wiki reveal about the knowledge processing strategies of school pupils? Seventh-graders as users of wiki and processors of knowledge in a collaborative writing project', Scandinavian Journal of Educational Research, vol. 61, no. 4, pp. 448-464. https://doi.org/10.1080/00313831.2016.1172495

Downloaded from Helda, University of Helsinki institutional repository. https://helda.helsinki.fi
This is an electronic reprint of the original article.
This reprint may differ from the original in pagination and typographic detail.
Please cite the original version.

Authors and affiliations:

Maria Ahlholm, PhD, Title of Docent
Department of Teacher Education
PoB 9, Siltavuorenpenger 3
00014 University of Helsinki
Finland
maria.ahlholm@helsinki.fi

Satu Grünthal, PhD, Title of Docent
Department of Teacher Education
PoB 9, Siltavuorenpenger 3
00014 University of Helsinki
Finland
satu.grunthal@helsinki.fi

Elina Harjunen, PhD, Title of Docent, Senior Advisor
Finnish Education Evaluation Centre
P.O. Box 28, Mannerheiminaukio 1 A, 6th Floor,
100101 Helsinki
Finland
elina.harjunen@karvi.fi

Vitae:

Maria Ahlholm, PhD, Title of Docent in Finnish language, is university lecturer in the Department of Teacher Education at Helsinki University. She is a teacher trainer, training teachers of Finnish as a second language to immigrant learners in all age groups. Her ongoing research deals with newly immigrated children's second language learning. Formerly, her research interest covered translating metaphors in religious language.

Satu Grünthal, PhD, Title of Docent in Finnish literature, is university lecturer in the Department of Teacher Education at Helsinki University, where she teaches Finnish language and literature in education. Her main fields of interest and research are poetry and literature pedagogy, and both fields she has taught as well in Finland as abroad. In addition to publishing scientific research, Grünthal has participated as a co-author in writing text and exercise books for education.

Elina Harjunen, PhD, Title of Docent in Education, works as a Senior Advisor in the Finnish Education Evaluation Centre, where she concentrates on the assessment of learning outcomes in mother tongue and literature in compulsory basic education. Previously, she has taught Finnish and Finnish literature in education in the Department of Teacher Education at Helsinki University. Her main fields of interest and research are writing pedagogy, assessment and pedagogical authority. In addition to publishing scientific research, Harjunen has participated as a co-author in writing text and exercise books for education.

Key words

Collaborative writing, wiki platforms, teaching writing at school, mother tongue education

Abstract

On the basis of one teaching project carried out in a school, this article discusses collaborative writing in wiki platforms. It aims to try out what wiki reveals about pupils' knowledge construction, creation and division and their collaborative writing skills. In this project, wiki is treated as a useful tool for analyzing these processes because it gives us the possibility of studying those elements and stages of educative writing that are normally hidden from the teacher's or researcher's eye. Also, it shows us the interaction between pupils. The theoretical background of the project lies in collaborative writing and writing research.

Ahlholm, Maria, Grünthal, Satu & Harjunen, Elina[1]

What does wiki reveal about the knowledge processing strategies of school pupils?

Seventh-graders as users of wiki and processors of knowledge in a collaborative writing project

Introduction

This article focuses on questions concerning collaborative writing and knowledge processing in participatory media (in our case, wiki platforms) in schools. In recent years, the processes and facets of writing have attracted theoretical interest (see, e.g. Flower & Hayes 2009; Andrews & Smith 2011), and a growing awareness is also to be observed in issues concerning the participatory media as a platform for education and writing in the digital age (Kress 2003; Knight & Gandomi, 2010; Andrews & Smith, 2011). It has been claimed that the nature of writing is, to a greater and greater extent, becoming a social and shared event, not just a private process (ie Clark & Ivanič 1997; Ivanič 1998), and collaborative writing has been researched

from various aspects (e.g. Lopez Ortiz & al. 2009). The phenomenon is twofold: on the one hand it has become more common for texts to be written and produced in groups, and on the other, many writers writing alone are willing to share their texts with physical or Internet communities to get feedback and comments during the process of writing and before the final shaping of their texts. In spite of that, the planning process seems to be different in digital environment: The screen seems to function as a space for externalization of thinking, and pupils use the screen and the keyboard to organize their thoughts (Åkerfeldt 2014b; Nordmark 2014, p. 239–240). However, it must also be remembered that writing by its very nature is a highly individual and personal process and individuals vary significantly on the degree, stage and type of feedback they need or want for their own writing projects.

Although wiki is the platform for our research project, it is not regarded as an aim in itself and, consequently, our main interest is not focused on this particular medium and its specific technical advantages and disadvantages. Instead, wiki is treated as a useful tool for analyzing collaborative writing and knowledge creation processes because it gives us the possibility of studying such elements and stages of educative writing processes and interaction between pupils, which normally are hidden from the teacher's or researcher's eye. Further, it provides interesting insights into the processes of knowledge construction, creation and division, which is the second focal point in our article. Amazingly enough, not much is known about the reading patterns and cognitive processes readers use in nonlinear digital texts (Coiro & Dobler, 2007). As stated by Knight & Gandomi (2010, p. 15), research on wiki is still rather less common, although wikis did find their way quickly into the field of education.

The background to our research project lies in the 3-year Comenius project "An INTegral Teacher Training" carried out in six European countries from 2009 to 2012.[2] The project aimed at developing digital skills and competences in the participating teacher training units in the universities, which competences were then tested and implemented in similar projects in schools.

The main research question of this article is the following: What does the wiki writing process reveal about pupils' knowledge construction and collaborative writing skills? First, we shall illustrate the dimensions of collaboration by calculating all the comments given by peers and teachers. Second, we shall use content analysis for studying these comments – and special attention is paid in interpreting weak signals or listening to subjective, single voices. Third, we shall turn from the process to the product and investigate through text analysis how two pairs compile their articles and what the final products tell us about their knowledge construction and writing strategies.

Theoretical background

The Collaborative Writing Process in the New Digital Age

In a sense, there is nothing new in the ideas behind participatory media. At best, online environments—like wiki—allow suitable environments for student-centered studying, collaboration and knowledge construction. In recent years, research on new technologies, tools and services in the context of learning and education has been on the increase (see, for example Cress & Kimmerle, 2008; Kimmerle et al. 2015, p. 122). Nevertheless, Knight and Gondomi (2010, p. 8) note that "it is still unclear exactly how to use these tools effectively for education." and Cress and Kimmerle (2008, p. 106) stress the necessity of systematically analyzing the potential of wikis in knowledge building.

There have been many attempts to use and transfer social media applications to educational settings, and wikis have been an especially popular tool in these processes (Cress & Kimmerle 2008; Kimmerle et al. 2015, p. 122). Because wikis allow users to contribute and change content easily online, they allow a practical tool for collaborative writing—as well as for writing support and co-authorship (Cress & Kimmerle 2008, p. 106–107). Like Cress and Kimmerle (2008, p. 111) point out, inter-individual knowledge transfer and collaborative knowledge building take place in the wiki when people process its information and integrate it in their own knowledge. Through this internalization process, they develop new knowledge.

Sharples (1999, p. 170–173) divides co-authoring teamwork in collaborative writing into three general types: parallel, sequential and reciprocal. However, a tool is not able to teach how to work collaboratively and construct knowledge. López Ortiz et al (2009) noted in their online problem-based learning project that co-authoring in wiki was mostly done only by a minority of group members.

Planning is, of course, an essential part of the writing process. Planning strategies distinguish poor writers from the good, and experts from novices. Bereiter and Scardamalia (1987, p. 8–25) dissociate knowledge telling strategy from knowledge transformation strategy both in knowledge building as well as in the writing process. According to them, knowledge telling dominates the writing of young children and operates with a simple "what next" process of selecting the topic, locating relevant topic knowledge, filtering it through genre constraints, and writing it down. Yet in knowledge-transformation the main focus is not on content production and presenting knowledge but on adapting it to the rhetoric situation. Further, Linda Flower (1994, p. 130–147) distinguishes constructive planning from schema-driven and knowledge-driven planning and argues that complex and new rhetoric situations demand a new and appropriate rhetoric plan, which includes for example, establishing goals, imagining

readers, considering alternative moves, and being prepared for transformations of meaning. A constructive writer is thus aware of the rhetoric situation and social conventions; s/he analyses and designs the aims, chooses the content, takes the audience into account and considers alternative possibilities.

Andrews and Smith (2011, p. 80, 136, 156) argue that any person can be both a novice and an expert depending on the research frame: such scales are limited to identifying development in its location (e.g. social, moral, cognitive, experiential, communicational, and emotional development) rather than development of writing. The scales also ignore the rhetoric context and instruction. The immediacy and multimodality of the digitized environment have many effects on writing—for example, process and products are collapsed, composing and publication are united, writing is only one mode in multimodal communication, and genre is a design (Andrews & Smith 2011, p. 128; Kress 2010, p. 116–118). As Andrews and Smith (2011) state in their new theory of writing development, the new situation, that is the variety of communicational and rhetoric contexts, demands creative and critical framing of the text in the hands of the composer.

This means that the developing writer is also enhancing his or her authority and authorial presence—voice—in writing when practicing new discourses, contexts and functions. Ivanič (1997, p. 330, 340) observes that writer's voice, as a discoursal self, is an articulation of the socially available possibilities of self-hood, and in the sense of content—ideas and beliefs—voice is the writer's sense of authorship. In other words, the writer has the power to make decisions and say something that is important and meaningful for him or her. In the collaborative writing process, decisions should be made collegially—at least in an ideal co-authorship.

In spite of that, writing—as well as the other modes—allows unique affordances for

communication (Kress 2003, p. 12). This means that also previous (e.g. cognitive) theories of writing make sense in the new situation, as well.

Knowledge Construction

In today's world, the main demand for the human mind is less the storage of information than the quick and intelligent choice of relevant pieces of information and re-formulating of meaningful knowledge from scattered data. Siemens (2006, p. 79–96) presents eight features that describe today's knowledge: abundance, capacity for recombination, brevity of certainty, pace of development, representation through media, flow, spaces and structures of knowledge organization and dissemination, decentralization.

In the framework of education, all of these features, and especially the capacity for recombination, emphasize the importance of sophisticated literacy teaching in schools, because only the ability to reformulate ideas from the abundant and rapidly changing blizzard of information will enable individuals to benefit from the supply. As Siemens (2006, p. 82) continues: "No longer is convergence the cry of knowledge. Transvergence is the new reality."

For reasons stated above, the human mind has often been compared to the computer. The connectivist view on learning and knowledge promoted by Siemens (2006, p. 26–27) elaborates the metaphor of "mind as a computer" even further: mind is not a computer but an Internet. Also, in complexity theories the human mind is seen as a complex network with a set of nodes, and each time a new piece of information is acquired, the complex system is driven into a re-organization of the trajectories between the nodes (Larsen-Freeman & Cameron 2008, p. 26–42). It has also been claimed that human cognition can be shared not only between individuals but also with a computer and, finally, with the Internet.

Accordingly, both the socio-constructivist and the complexity-connectivist views on learning claim that the focus in teaching should more than ever be on the ability to seek, filter, combine and transfer information. Collaborative and cooperative means of writing reflect the ideology of socio-constructivist learning in an ideal way. Although these ideas are already well established in theoretical pedagogical discussion, they have not become standard procedure in classroom practices. Suitable pedagogical applications are needed for field practitioners. We see Web 2 technologies for participatory media offering a potential solution in the distribution of mental processes within a peer group.

In the Finnish educational discussion the constructivist view on learning has had a major role to play since the 1990s (e.g. Cole & Engeström 1993; Lonka 1997). Socio-constructivist views on learning emphasize the connectedness of the individual and the context, and the context is usually taken to be a social setting. The teacher performs the role of facilitator or guide who at best is able to assist the process of the learner (Hakkarainen, Lonka & Lipponen 2004).

Questions about the choice of relevant information and the re-formulation of meaning from scattered data are, of course, tightly connected to issues of power: who has authority over knowledge in education? In the socio-constructivist perception of good classroom activity the learner has subjectivity over her/his own learning process, and this subjectivity is not restricted by an authoritative teacher (Hakkarainen, Lonka & Lipponen 2004). In the socio-constructivist opinion, the teacher has no monopoly for epistemic authority in the classroom.

However, we know that in any human community leadership will always be taken over by somebody. Therefore, in an educational process, a teacher's pedagogical authority is needed to enable a safe, task-oriented, democratic and creative teaching-studying-learning process in the

classroom. The empowering potency of authority emanates from its evolving from personal relations, shared experiences and interactions: pedagogical authority needs students' voluntary consent to emerge (Harjunen 2009; 2010). In other words, a teacher's pedagogical authority and the students' consent go together and complement each other resulting in a distinctive power arrangement in which teacher and students manage to share power in pedagogical, deontic and didactic classroom interaction (Harjunen 2011; 2012). It could be pointed out that the less the authoritative role of a teacher, the more the authority of the social group of peer learners. The teacher's role as a pedagogical authority is needed to keep the social environment safe and task-oriented. This inevitably also includes teacher's epistemic authority: for example, the teacher preprocesses pedagogical tasks by choosing the topic and the methods, pointing out facts and focuses, and her pedagogical design must fit into a certain curriculum. The democratic part of knowledge construction is accomplished only after delimiting the area of knowledge guided by epistemic interests of some kind. This is a necessary proviso we must admit even inside the socio-constructivist view on learning. This being taken into account, we can freely state that in the socio-constructivist view the teacher is a participant in the process of knowledge construction, who may deliberately give away her/his role as the only guide in the process in order to open the way for fresh ideas. However, it does not contradict the subjectivity of a learner to emphasize the teacher's role as a pedagogical authority.

The collaborative article writing process including peer feedback and pedagogically structured but not contentually dictated by the teacher, which we discuss in this article, was planned in spirit of these theories and aims at testing them in practice.

Research methodology

Context and Participants in the Study

The research project described here was carried out in the University of Helsinki, Department of Teacher Education, during the academic year 2010–2011. Three university lecturers participated, along with a group of student teachers and a group of mentor teachers[3] from the two university training schools involved. Wiki projects were planned by student teachers and mentor teachers and classified into three different age groups: one each from the 7th and 8th grades of the lower secondary school and one from the upper secondary school. The school subject in question was Mother tongue (Finnish) and literature.

4

The research project was planned and analyzed in the Department of Teacher Education, but the actual field work, the school project part, took place in one of the Helsinki University training schools involved in the Comenius project mentioned above. Training schools are strongly research-oriented and promote co-operation in research with universities. The school project was carried out by a student teacher (guided by one mentor teacher) in one 7th grade class, consisting of 25 13–14-year-old pupils. The project consisted of five 75-minute lessons. During the project, the class was divided into groups of two pupils (10 groups) and three (1). Two pupils worked on their own. There was one student teacher, two mentor teachers of the Finnish language and literature and one ICT-teacher involved.[5]

The project was called "Collaborative article writing in pairs" and aimed at learning and practicing the main features of 'article' as a textual genre.[6] The process proceeded as follows:

- 1st lesson:[7] First the student teacher introduced the group to the main principles of 'article' as a textual genre. The pupils decided the topic and the point of view of their

own article text. They familiarized themselves with the wiki platform and started to gather information about their topic.

- 2nd lesson: Gathering more information, planning the text with a mind map. Most pairs started writing their article texts on the wiki board.
- 3rd lesson: The writing continued. After this lesson each pair was ready to present their first draft. Giving feedback was discussed. For homework, each pupil was asked to comment on one article in wiki.
- 4th lesson: The article texts were finished.
- 5th lesson: The texts were copy-pasted from wiki to Word-version. The pupils added pictures to their article texts and finalized them. The finalized articles were then printed out.

The main aim of the project was to model the schema—article as a genre—with the help of wiki: the students wrote about a topic (an interesting artist) from their own point of view, assimilating information into the text (not just copy pasting) and listing references at the end of the article.

The mentor teacher chose the new wiki method for this particular learning project because she knew that writing an article is a challenging task for 13–14 year old pupils who have only recently entered the lower secondary school. Therefore, social goals were important as well, the teacher hoping that the project would motivate pupils to collaborate in the new social environment.

Although pupils at this stage do have a basic knowledge of several textual genres, they have not as yet had instruction or practice in writing many of these. For this particular class, the wiki

project was the first occasion during which they were given specific tuition concerning the generic features of an article and during which they were supposed to write one.

The grading of the article project consisted of two parts: the article itself and the individual feedback each pupil gave to the other pair's article draft. Both the mentor teacher and the student teacher believed that the wiki platform could be helpful in gathering information, giving and receiving useful and reasonable feedback, as well as in modeling the process of article writing (through assignments, an article example and the student teacher's parallel article writing process) on that platform on which the process itself took place. (See Figure 1)

In school writing, the rhetoric context easily becomes unclear or intangible although the frame (e.g. the genre) is given, and the tool does not automatically change the manner. In the case of this project, the function (for which purpose has this been written) was quite abstract, and the instruction did not contain any hints about the audience (to whom the article is written), although pupils knew they would get feedback from their peers.

In a process like this, the ability to read is equally important to the ability to write: the composer has to find, select, organize and connect his or her readings. In the wiki at hand, only one person had the possibility to write and edit a text at a time which made the process a sequential one (Sharples 1999, p. 170) and led to the distribution of work. López Ortiz et al (2009) note that an asynchronous mode of working does not necessarily encourage responsibility for co-authorship or synergy in a shared cognition. However, the design, creation and commentary of writing were possible reciprocally and simultaneously in an online environment together with the comment tool, regardless of the place. Writing was easily shared and forced into the process.

Data Collection and Method

Our research data consists of the following elements picked up from the wiki platform:

- assignments
- principles of evaluation
- preliminary and final text versions
- comments in wiki

In order to get the work started, the teachers commented each pair's[8] viewpoint of the chosen topic. In addition, the student teacher commented on the work of four pairs, and the teacher—who had to go on sick leave—on one pair's work.[9] The mentor teacher used the comment tool 13 times and the student teacher 17 times. The student teacher aided continually in facilitating the pupils' process orally in the IT classroom.

Pupils used the comment tool 140 times. They gathered links and information from multiple sources (in their own words or just by copy-pasting; also, from books and journals, not only the Internet) using the comment tool (106 comments). Every pupil gave a feedback on another pair's text according to the assignment (25 comments), and some pupils either commented on the feedback which they had just given (5 comments) or on feedback they had received (4 comments).

The assignment "How to give feedback" was formulated with 7 questions:

1) Is the viewpoint defined sufficiently? If not, how could it be better defined?
2) Is some point or section unclear?
3) Would you like to find more information about something?

4) Is something too extensively described?
5) Is the style of the article appropriate?
6) How well are the references assimilated into the text?
7) What is especially commendable about the article?

The pupils also wrote a draft on the main page where the text varied from 5–18 versions, except for three pairs who used the comment tool also for rewriting the text versions. They only copy-pasted the final draft onto the page.

The data is complemented with 11 final articles (Word-version) and one university lecturer's observation diary of 3 lessons as well as the evaluation of the project: the teacher's and student teacher's reflective essays on the project and the feedback questionnaires of the pupils.

The main focus of the research is on knowledge construction and collaborative writing skills. For this reason, two pairs' work will be under particular consideration (text analysis). Before that, we display a systematic content analysis of the comments (see, eg., Krippendorff, 1986, p. 99–108, 117–118) in order to get an overview of the case and provide preliminary answers to the research questions. Observation diaries are used to contextualize the notions.

Results

Overview on the Observations and Comments

The project took place in the IT class of the school, and there every pupil had his or her own computer. The partners discussed and negotiated mainly orally with each other, because the pairs sat next to each other in the classroom. This most obviously affected the number of spontaneous written comments pupils produced in wiki, because there were only 30 of them. Only two pairs conducted discourse in wiki, while some pupils asked the student teacher for

something, and responded mainly to the absent teacher's comments and wishes (thanked, wished for something, etc.) Although the participatory media allow the possibility of immediate feedback which does not need to be evaluative but participatory in nature (Andrews & Smith 2011, p. 128), the pupils did not really take advantage of this. Instead of that, they concentrated on their own work and gave the obligatory feedback to another pair as homework.

As stated earlier, the student teacher used the comment tool 17 and the teacher 13 times to comment on the pupils' texts (and work) mainly at the beginning of the process. Toward the end of the process, pupils' feedback was assigned and formulated with questions in order to guide them to give structured feedback to each other. This clearly helped them in feedback writing. Pupils answered the questions diligently.

The pupils briefed clearly and the teachers' more informal feedback comments were split into statements, which were then divided into three categories (see Table 1). The categorization was made according to different text genres in the data and according to the linguistic, rhetoric and argumentative criteria of the texts.

Both the pupils' and teachers' feedback mainly concerned the content of the text: suggestions, questions, opinions and evaluations, requests for clarification and, in the case of teachers, orders and information as well. In the student teacher's case the concentration on content is obvious because she tried to help the writers to find their view on the topic (e.g. *In this phase of the knowledge collection, you can copy-paste sequences suitable for your viewpoint directly from the web sites - - - You have to remember to quote the reference from which you found the information.* The teacher tended to concentrate on enclosures (see Table 2). Interestingly, 70 percent of the pupils' comments were evaluative—mainly positive—opinions or remarks on the content arising from questions 1–4, like *The framing of the text is really good =).*

Of especial interest is the large number of pupils' statements concerning rhetoric (63/78), structure (6/78) and spelling (9/78) compared to the teachers' (see Table 1), which is mainly due to questions 5 and 6 concerning style and referencing. In spite of this, only the pupils commented on spelling and structure, which has also of course much to do with the phase of the process: most of the teachers' comments are from the beginning of the process, and the pupils' from the latter part of the process. These comments were mainly evaluative—but often concerning some mistakes or weaknesses of the text and including a suggestion or reasoning. However, the comments mostly stuck to the superficial level of the text.

The style of the article is appropriate - - .

The references are assimilated very well into the text, but you could use e.g subtitle "references", which stand out from the text.

The black part of text [boldface] is a little bit unclear to read, could you remove it, please.

Table 1: Types of statements

In the pupils' case, meta statements (see Table 2) concern mainly the task (e.g. difficulties in understanding style or referencing (such as [*The text does not mention any references,] if I understood you right*.) or are signs. The pupils also comment on their reading (*When I read the text I got a feeling of* - -). The pupils' meta statements are neutral and participatory by nature compared to teachers'. The student teacher concentrates on the task, but in a more directive way (*Decide the viewpoint quickly!).* She also explains her thoughts more than pupils as, for example, in *Previously Miyazaki was completely strange to me, so that is why I cannot express my views right away.*

Table 2: Meta statement categories

As stated earlier, pupils were given a feedback form with 7 questions. It is clear that their feedback followed the lines of these questions: a clearly structured feedback form was a consequence of the aim of modeling. The pupils' comments and statements show that it probably made them more conscious of the scheme and knowledge construction—writers as authors who have the power of choosing and assimilating, although they had been unsure about their understanding of these things (style and referencing).

The article writing project included a variety of communicative skills: listening, reading, writing and finally, giving feedback. The process of giving feedback essentially consists of reading, evaluating and writing. If we analyze the pupils' tasks we can see how high the goals for this exercise really were set (Figure 2).

Text Analysis Results

Next, we shall take a closer look at the written data of two writing projects, using text analysis as our tool. Both the written interaction in wiki and the articles themselves will be discussed. The most active pairs have been chosen as informants for this analysis.

The pupils were given general instructions on how to proceed in their work. They were supposed to use certain sites for different stages of the work: first, one for planning the work, then the next site for writing the article. This plan did not work out too well, and pupils commented on adding information at the "wrong" site. The student teacher blamed herself for not providing clear enough information. However, these general instructions were to be kept in mind when analyzing the site discussions; for example, when pupils are told just to "add the piece of information you have found and its origin", often they only add a web site address.

Eeva & Saara[10]

This pair wrote 12 text versions, collected knowledge mainly in their own words in 18 comments and exchanged 15 comments between each other. The student teacher commented on this pair's work twice.

When planning their title, the girls start by dropping short suggestions without further justifications on the Comment-site of the wiki template:

(1)

Eli kirjoitetaan Beoncesta ☺

So let's write about Beonce

Siis Beoyncesta *[sic]*

You mean Beoynce [sic]

Rihanna: totta vai tarua?

Rihanna: fact or fiction?

J.K.Rowling. Näkökulma: Potterit muuttamassa Elämää.

J. K. Rowling. The viewpoint: Potters changing her Life.

After this, they send each other a couple of e-mail addresses on other topics (concerning one Finnish author, for example), but very soon they decide to continue with the Potter topic. This decision and the focus are reinforced by a statement:

(2)

Eli Pottereiden synnystä ja miten ne muutti Rowlingin elämää.

So about the generation of the Potters and how they changed Rowling's life.

The planning discussion consists mostly of e-mail addresses only. The girls end up agreeing to do the work properly:

(3)

MUISTA SITTEN KÄYDÄ KIRJOITTELEMASSA!!!!!!!!!!!!!!!!

Remember then to keep on writing

JEPA, JEPA ☺

yeah, yeah

The student teacher joins in and encourages the girls to look for information outside the Internet, too:

(4)

Rowlingista on kirjoitettu kirjojakin, joten teidän kannattaa käydä kirjastossa.

There are also books written about Rowling so it's worth visiting the library.

- - *Kannattaa ehkä ottaa kirjat mukaan ensi tunnille, jos ne eivät ole hirveän painavia.*

- - It might be a good idea to take the books with you to the next lesson, if they are not awfully heavy.

The student teacher may be worried about pupils drifting sideways in the Internet (she constantly reminds them of the need to clarify their focus, too), and she reminds them of the given assignment. Perhaps she also thinks it is her duty to remind them of the traditional print

media as well.

Research has shown that pupils in this age group experience many challenges in information seeking in open Internet text environments. They have difficulties associated with (a) ineffective and inefficient search processes, (b) cognitive overload and disorientation, (c) a tendency to drift from one search question to another and (d) an inability to know how to use the information once it has been located (quoted in Coiro & Dobler, 2007, p. 220–221).

During the following lesson, girls start work on their text about the author J.K. Rowling. They take information from the Internet and compile a text of their own, also answering the student teacher's suggestion:

(5)

Yritin tehdä yhteenvedon… Ja käyn tänään kirjastossa ☺

I tried to make a summary… And today I'll go to the library ☺

Mostly their postings consist of text paragraphs only, but in some cases they add personal comments, too:

(6)

aika kiva et Tylypahkan mukaan on nimetty dinosauruslaji :D

It's cute that they have named a dinosaur species according to Hogwart :D

It is striking that practically all personal comments end in an emoticon, which, in this case, becomes a marker: it distinguishes the "official" text from the personal commenting and discussion. As Vauras notes (2008, p. 214), facial expressions, gestures and phonetic devices are replaced by emoticons in web discussions, and these become a virtual body language.

Another means of distinguishing personal comments from the main text used by the girls is the changing of the linguistic code from written language into slang. The student teacher sticks to the written language in her answers.

The girls received written feedback about their text from two other pupils. The central issue of "own" vs. "alien" text comes up in three comments, which are partly contradictory (the two first comments are written by one pupil and the last comment by the other):

(7)

Epäselvää oli ainoastaan lähteiden merkintä - -.

Only origins of text sources were unclear - -.

Jos en paremmin tietäisi sanoisin että koko teksti on kirjoitettu kokonaan itse.

If I didn't know better I would say the whole text has been written by yourselves.

Todella hyvin.

[The origins] are embedded really well [into the text] - -.

Of course, pupils are here discussing the crucial points of referring to source materials and making distinctions between "own" and "alien" clear. There are no comments by the student teacher on this matter at this point.[11] Referring to the source text is not an easy skill even for 9th graders (Harjunen & Rautopuro 2015, p. 14). In the final version, the girls list their sources at the end of their text. All of them are sites from the Internet; no books are included despite the discussion which took place earlier. Other feedback given by the peers focuses on some spelling mistakes or is just generally encouraging (as the assignment also proposes):

(8)

Teksti oli mielenkiintoinen ja siitä sai paljon lisätietoa mitä ei aikaisemmin ole Rowlingista kuullut.

The text was interesting and provided much information I didn't know about Rowling before.

Teksti oli hyvä.

The text was good.

As stated above, during their writing process the pair produced 12 text versions. Analysis of these different versions shows that the pair constructs the texts paragraph by paragraph; once they added one paragraph in the middle of the text already written. Interestingly, their writing process was linear and did not differ a lot from writing with pen and paper. Research shows that when writing in digital space and despite of their teacher's orders, pupils tend to start writing their text without planning it. They plan and process the text simultaneously when they are writing it on the screen (Nordmark 2014, p. 191–192).

In the final stages of text production, Eeva and Saara make some minor changes to the wording or spelling of their text and add one photo, but otherwise their article remains the same.[12] These changes were not suggested by peers or teachers. Also, there are no traces of negotiation between pair members in wiki concerning these changes.

The pair clearly follows the knowledge-driven strategy, which is the default strategy in most school-sponsored writing (Flower, 1994, p. 140). Their aim is to write down certain important facts about their topic, not to consider them critically or add personal views. It must be

remembered, however, that the assignment they were given was just as knowledge driven.

Laura & Sofia

The second pair was quite active as well: 6 text versions, 9 informative comments, 10 comments to each other. Like Eeva and Saara they got two comments from the student teacher. For their topic, they chose Marilyn Monroe.

From the very beginning, this pair was ironic and critical about using wiki for the writing project. They start their opening discussion on the Comment-site as follows, parodizing the instructions they get from the site:

(9)

Uu la la oma suunnittelupaikka –

Oh la la we have a site on our own for planning...

lollollollollol "kommenttialustalla voitte keskustella"

lollollollollol "you can carry out a discussion on the comment site"

Accordingly, there is practically no discussion between the girls after this: they just add text paragraphs and compile the final text at the end. After their opening comments, the student teacher, who is obviously worried about the working spirit of the class, responds:

(10)

PS. Kannattaa muistaa, että se, mitä kirjoitatte tänne, tulee kaikkien nähtäville.

PS. It is worth remembering that everybody can read what you write here.

Käyttäytykää siis ihmisiksi.

Therefore, behave yourselves!

Participatory media gives new ways to test the teacher and shift the atmosphere into a more democratic mood. This kind of students' on-task behaviour can be interpreted as constructive resistance— designed to help studying and learning— which is perceived as "destructive" and negative by most teachers. However, these testing techniques can lead to the desire to study and learn, to students' pedagogical thinking. (Kearney & Plax 1992, p. 86; Harjunen 2011, p. 2012.) In the case of Laura and Sofia, their comment could be interpreted as constructive or destructive resistance. This is also a rare occasion when the mentor teacher reacts, supporting the student teacher (but, like her, not in the comment itself but as a post scriptum):

(11)

PS. Tosiaan kannattaa käyttäytyä—hyvin.

PS. It is really worth behaving well.

The girls react by discontinuing the personal written interaction totally. However, they continue in their ironic mode when commenting on the feedback given to them by peers, but this time there is a softening emoticon at the end:

(12)

Ai että illalla myöhään lueskellaan muiden artikkeleita?:D

So you are reading articles by others late at night? :D

Again, the feedback given to the pair by peers was mostly positive, pointing out some spelling mistakes. The mentor teacher even thought in her reflective essay that the pupils' feedback was too kind and civilized. She also mentioned that kindness and praising could be due to the demanding new genre the pupils were practicing: the article. However, it is also possible to think that peer feedback was not just "kind" and "polite", but it was actually shallow. The pupils were not able to present any deeper insights in their feedback, but continued on the small talk level. The "newness" of the article as a genre might also be questioned, as pupils also do similar information seeking while writing exercises in lower-grade education (*National Core Curriculum for Basic Education,* 2004). Of course, pupils in lower secondary school are supposed to develop their abilities in knowledge processing and source criticism and relate new information to their own knowledge and context.

Laura and Sofia compiled their article on the basis of wikipedia, Marilyn Monroe's official website and an article in Vanity Fair (the only non-electronic source of information they used).[13] Interestingly enough, the text they produced in the first stage of their work remained practically the same during the whole process (the six text versions they produced); like Eeva and Saara they follow the knowledge-driven writing strategy (Flower 1994, p. 140). In her final comment the student teacher encourages the girls to reformulate the titles of the article in order to clarify its focus and raise interest in the readers. After this, the girls add the name of their subject person, Marilyn Monroe, to many of their titles, and some adjectives as well ("Death" became "The tragic death" and "Additional information" became "Additional interesting information").

At the very end of the process, the pair also added photos to their text. In their case, speaking about text versions is clearly misleading, because the pair produced only one version and made

some minor changes to this. Even some spelling mistakes in the first version remained untouched until the final version.

Conclusion

Our data show that the planning processes of the two pairs were both schematic and knowledge-driven and did not fulfill the requirements of collaborative planning as described by Flower (1994). Flower (1994, p. 141–143) states that in a collaborative planning project, pupils succeed in going beyond the idea of just "saying something" and create rhetorical plans in order "to do" something in writing. They (1) focus on purposes, key points, audience, and textual conventions, (2) try to consolidate these goals, and (3) reflect on their thinking. Both pairs did, however, produce their articles according to textual conventions and focus on the key points of their topic. In this sense, for them the project was a success, and they fulfilled the requirements of the assignment given to them.

Our data—and, interestingly enough, that what is *not* there—lead us to ponder upon the knowledge construction process. It grows towards more demanding phases as the need for dialogue increases: dialogue with the literature or peers. Figure 3 shows the phases of the pupils' knowledge construction process:

Figure 3. The phases of pupils' knowledge construction.

This figure shows the different phases of the knowledge construction process. In the real-life-project discussed in this article, some phases were rather short or almost omitted.

According to our data, the pupils spent most of their time reading and writing the texts. Reading includes finding the topic and discussing the distribution of tasks as well as the focus of the article. Writing includes composing the sketch, discussing it and re-writing a new version, then possibly discussing and re-writing it again.

The smaller arrows inside the figure show how the feedback is circulating the process backwards and further ahead: after writing a version the pairs have to check something from the sources before they can re-write the next version. Again, on receiving feedback the pairs return to their newest versions to correct them.

The large arrow rises to indicate the growing demands of the process: the longer the project lasts the more voices there will be for the pupils to harmonize, if a coherent article is to be forthcoming. In the end they should put themselves in the position of another article-composing pair in order to be able to give them relevant feedback in an appropriate way.

In giving feedback the pupils prefer good manners to straightforward corrections and seem to be unnecessarily polite and a bit shallow in their reviews—this could also be called loyalty to form rather than function. This phenomenon can also be due to the moment of the project: the pupils had recently started their 7th grade in a new school with new classmates and teachers: does honest feedback in a class need safe and familiar environment?

Discussion

The writing project described in this article was relatively short[14] and our data are small. Therefore, no definite conclusions can be made on the basis of this project, and we are aware of its shortcomings (regarding, for example, giving clear enough instructions to the pupils and defining the feedback part more precisely). As far as the quantitative analysis of the data is concerned, no interrater reliability was counted, which can also be seen as a limitation. The project can, however, serve to raise questions about using wiki and other digital environments in teaching writing and knowledge construction.

Knowledge construction in electronic text environments turned out to be an interesting topic

and it will definitely need more research. Coiro and Dobler (2007), among others, suggest that new types of reading strategies are necessary to learn within the interactive, informationally rich, and relatively new digital text environment. According to them, the Internet requires readers to draw from and integrate multiple knowledge structures while adapting to the rapid changes from one reading situation to the next. They stress (2007, p. 31), however, that it is possible that such new comprehension strategies used in the Internet do not represent fundamentally *new* literacies as much as more complex versions of traditionally conceived printed text literacies. In the case of writing, Åkerfeldt (2014a, p. 87) underlines that digitalization challenges the notion of competence: what kind of skills will be recognized as competences — or digital literacies (Poe 2013)? This also means that assessment should change: e.g. we cannot treat and assess new-media texts with same criteria as print texts. Instead, we should use clear and appropriate assessment criteria which motivate pupils to take risks while learning new proficiencies necessary for effective digital composing (Reilly & Atkins 2013; Neal 2011, p. 11, 23.)

Interestingly enough, the two text production processes we discuss above revealed no similar difficulties that had been discovered in some earlier studies (see, Coiro & Dobler, 2007, p. 220–221). On the contrary, both pairs carried out an effective and efficient search process in the Internet, did not drift from one search question to another and were able to use the information once it had been located. Also, they produced an almost final text at a very early stage of the writing process. It can be stated, however, that once the first text version was ready the pupils did not have the time, the ability or the motivation to continue working on it (the potential offered by the wiki environment was not used to the full).

One of the aims of the wiki project was to make the planning and writing phases of the pupils visible. The end result showed, however, surprisingly little planning and working on the texts (as stated earlier, they were constructed more or less paragraph by paragraph). The pairs did not rewrite their drafts effectively, which can mean that they used Internet (and other sources)

for choosing content suitable for their point of view and constructed their text according to their findings. It is hard to say if their planning process resembled knowledge narration or knowledge transformation (Bereiter & Scardamalia 1987). It was schema-driven in the sense that pupils were supposed to produce their texts in lines forming a certain genre (article). Simultaneously, it was information-driven, because the main strategy the girls used was to gather information and forward it. (Flower, 1994.) Coiro and Dobler (2007) call the new online reading phenomenon "self-directed text construction", a kind of knowledge construction. In our case, reading (mainly in the Internet) interacted with writing (texts found in the Internet were copy pasted and transformed). Their "Wikipedia-style" could also be interpreted as their desire to identify with the informative discourse community, and their effort to try to construct their own discoursal self (see Ivanič 1997, p. 330).

Although the planning processes can not be called collaborative in the true sense of the word (Flower, 1994, p. 142), co-operation between girls in both pairs worked excellently, and both pairs got their work done on time and according to the assignment. In this respect, both writing projects were a success. It can be stated, then, that although the wiki platform would theoretically enable efficient collaborative planning, this did not materialize in this particular project. Reasons for this can partly be sought from the newness of the medium (although pupils were accustomed to working with computers, wiki as a platform was new to them and from the assignment's emphasis on information-driven work. Supposedly, working in participatory media needs also rearrangement of instruction and assignments, especially more attention to the rhetorical context (see also Andrews & Smith 2011). In addition, the different phases of knowledge construction (see Figure 3) and writing process need attention and practice, one by one—before combining them together.

Also, as Flower notes (1994, p. 140) school fosters knowledge-driven planning and writing. It must be remembered, however, that the 7th graders had just recently entered lower secondary

school, where the demands on pupils related to writing and individual knowledge processing increase (*National Core Curriculum for Basic Education 2004*). It is clear that writing, knowledge processing and collaborative skills are all fruits of long—probably life-long—processes.

It is also worth noting that the data present no evidence that pupils would have been critical of the source material they read in the Internet or in the media (mainly magazines and newspapers are mentioned). This, of course, is contradictory to aims described in the *National Core Curriculum for Basic Education 2004* (see, e.g. p. 38). Simultaneously, the ability and efficiency with which pupils used Internet sources fulfills the aims of the same Curriculum (2004, p. 37–38 and elsewhere).

Our results also reveal that the processes of giving and taking feedback clearly need more planning, tuition and practice. There were probably many other reasons for giving almost exclusively positive feedback. First, and probably most meaningfully, pupils were encouraged to give positive feedback. However, they ended up mainly stating that the text was good or okay, which may also have been just the easy way out (and not only polite as the mentor teacher suggested, although the intersubjective relations between students should also be taken into account). The feedback formula they were given may also have encouraged short, non-informative answers.

(Word count 8325)

REFERENCES

Andrews, R. & Smith, A. (2011). *Developing writers. Teaching and learning in the digital age*. Maidenhead, UK: Mc Graw-Hil.

Bereiter C. & Scardamalia, M. (1987). *The psychology of written composition*. Hillsdale, NJ: Erlbaum.

Cole, M.l & Engeström, Y. (1993). A cultural-historical interpretation of distributed cognition. In: G. Salomon (Ed.). *Distributed Cognitions. Psychological and Educational Considerations.* Cambridge, UK: Cambridge University Press.

Clark, R. & Ivanič , R. (1997). *The Politics of Writing.* London, UK: Routledge.

Coiro, J. & Dobler, E. (2007). Exploring the online reading comprehension strategies used by sixth-grade skilled readers to search for and locate information on the Internet. *Reading Research Quarterly, 42*(2), 214–257.

Cress, U. and Kimmerle, U. (2008). A systemic and cognitive view on collaborative knowledge building with wikis. *Computer-Supported Collaborative Learning*, 3(2), 105–122. Retrieved from http://link.springer.com/article/10.1007/s11412-007-9035-z

Flower, L. (1994). *The construction of negotiated meaning: A social cognitive theory of writing*. Carbondale, IL: Southern Illinois University Press.

Flower, L- & Hayes, J. (2009). A Cognitive Process Theory of Writing. *College Composition and Communication, 32*(4), 365–387. Retrieved from http://links.jstor.org/sici?sici=0010-096X%28198112%2932%3A4%3C365%3AACPTOW%3E2.0.CO%3B2-A

Hakkarainen, K., Lonka, K. & Lipponen, L. (2004). *Tutkiva oppiminen: järki, tunteet ja kulttuuri oppimisen sytyttäjinä.* Helsinki, Finland: WSOY.

Harjunen, E. (2009). How do teachers view their own pedagogical authority? *Teachers and Teaching: Theory and Practice, 15*(1), 109–130.

Harjunen, E. (2011). Students' consent to a teacher's pedagogical authority. *Scandinavian Journal of Educational Research, 55*(4), 403–424.

Harjunen, E. (2012). Patterns of control over the teaching-studying-learning process and classroom as complex dynamic environments: a theoretical framework. *European Journal of Teacher Education, 35*(2), 139–161.

Harjunen, E. & Rautopuro, J. (2015). Thinking about language use and languaging thinking. Learning outcomes in mother tongue and literature at the end of basic education in 2014. Helsinki: Finnish Education Evaluation Centre.

Ivanič , R. (1998) *Writing and Identity: The discoursal construction of identity in academic writing*. Amsterdam, The Netherlands: John Benjamins.

Kearney, P. & Plax, T. G. (1992). Student resistance to control. In V.P. Richmond & J.C. McCroskey (Eds.), *Power in the classroom: Communication, control and concern* (p. 85–100). Hillsdale, New Jersey: Lawrence Erlbaum Associates, Inc.

Kimmerle, J., Moskaliuk, J., Oeberst, A. and Cress, U. (2015). Learning and Collective Knowledge Construction With Social Media: A Process-Oriented Perspective. *Educational Psychologist*, 50(2), 120–137. Retrieved from http://www.tandfonline.com/doi/abs/10.1080/00461520.2015.1036273

Knight, E. and Gandomi, N. (2010). *Participatory media for education: Next generation teaching and learning.* School of Information, UC Berkley. Retrieved from http://ngtl.ischool.berkeley.edu/publications/participatory-media-for-education

Kress, G. (2003). *Literacy in the New Media Age*. London: Routledge.

Krippendorff, K. (1986). *Content analysis: An introduction to its methodology* (6th ed.). Beverly Hills, CA: Sage.

Larsen-Freeman, D. & Cameron, L. (2008). *Complex systems and applied linguistics*. Oxford, UK: Oxford University Press.

Lonka, K. (1997). *Explorations of Constructive Processes in Student Learning.* Department of Psychology, University of Helsinki. Helsinki, Finland: Yliopistopaino.

Lopez Ortiz, B: I., Lin, L. & Tipton, M. (2009). Co-Authoring in Online Problem-based Learning: Collaborative Approaches and Challenges. *MERLOT Journal of Online Learning and Teaching, 5(*2), 293–303. Retrieved from http://jolt.merlot.org/vol5no2/ortiz_0609.pdf

National Core Curriculum for Basic Education 2004. Finnish National Board of Education. Retrieved from http://www.oph.fi/english/sources_of_information/core_curricula_and_qualification_requirements/basic_education

Neal, M. R. 2011. *Writing assessment and re revolution in digital texts and technologies*. New York: Teachers College, Columbia University.

Nordmark, M. (2014). ”Digitalt skrivande I gymnasieskolans svenskundervisning. En ämnesdidaktisk studie av skrivprocessen”. *Örebro studies in Education 45. Örebro Studies in Educational Sciences an Emphasis on Didactics 9*. Örebro: Örebro universitet.

Poe, M. (2013). Making digital writing assessment fair for diverse writers. In H. A. McKee & D. N. DeVoss (Eds.) *Digital writing. Assessment and evaluation. Computers and Composition.* Digital Press/Utah State University Press. Retrieved from: http://ccdigitalpress.org/dwae/index.html.

Reilly, C: A. & Atkins, A. T. (2013). Rewarding Risk: Designing Aspirational Assessment Processes for Digital Writing Projects. In H. A. McKee & D. N. DeVoss (Eds.) *Digital writing. Assessment and evaluation. Computers and Composition*. Digital Press/Utah State University Press. Retrieved from: http://ccdigitalpress.org/dwae/index.html.

Salomon, G. (Ed.). (1993). *Distributed Cognitions. Psychological and Educational Considerations.* (1993). Cambridge, UK: Cambridge University Press.

Sharples, M. (1999). *How we write: Writing as creative design*. London, UK: Routledge.

Siemens, G.. (2006). Knowing knowledge. Retrieved from http://www.elearnspace.org/KnowingKnowledge_LowRes.pdf

Tainio, L. & Grünthal, S. (2012). Language and literature education: Principles and reflections on mother tongue and literature. In: H. Niemi, A. Toom & A, Kallioniemi. (Eds.), *Miracle of Education. The Principles and Practices of Teaching and Learning in Finnish Schools.* (p. 149–160). Rotterdam, The Netherlands: Sense Publishers.

Vauras, I. (2008). Tunneikonit verkkokeskustelussa? -) [Emoticons in virtual conversations? -)] Routarinne, S. and Uusi-Hallila, T. (Eds.), *Nuoret kielikuvassa. Kouluikäisten kieli 2000-luvulla.* [The language of young people in the 21st century] (pp. 210–221). Helsinki, Finland: Suomalaisen Kirjallisuuden Seura.

Åkerfeldt, A. (2014a). ”Didaktisk design med digitala resurser. En studie av kunskaprepresentationer I en digitaliserad skola”. *Doktors avhandlingar från Institutionen för pedagogic och didaktik* 32. Stockholm: Stockholm universitet.

Åkerfeldt, A. (2014b). “Re-shaping of writing in the digital age. A study of pupils’ writing with different resources.” *Nordic Journal of Digital Literacy*, 4 (3), 172–193.

---

[1] Authors of this article are in alphabetic order, and they have all contributed equally to the research process.

[2] The universities and teacher training units involved are: University of Leicester, UK, University of Alcalá, Spain, University of Lisboa, Portugal, Comenius University, Slovakia, Karadeniz Technical University, Turkey, and University of Helsinki, Finland.

3 Mentor teachers are subject teachers working in the University Training Schools. In addition to their subject expertise, they are qualified teacher educators.

[4] For more detailed background information on the subject and its educational principles in the Finnish Curriculum, see Tainio and Grünthal, 2012.

[5]The teachers received technical preparation and help prior to the project by attending a wiki demonstration of 90 minutes in the Department of Teacher Education (University of Helsinki). One student teacher created and planned the platform, and the IT-teacher assisted in the classroom during most of the lessons.

6 Within the scope of this article, we do not have the possibility to discuss the parallel research projects in detail. The subject matter for the 8th grade were genres of fiction, whereas “gymnasium” students rehearsed writing

letters to the editor of a newspaper.

[7] In this school, all lessons lasted for 75 minutes.

8 Henceforth we use the term ‘pair’, by which we refer also to those two single pupils who did not wish to work in pairs and to one group consisting of three pupils.

9 Despite of her sick leave, the mentor teacher continued following the project in wiki and participated in discussions at some points. This, of course, is not usual, but shows the commitment of the teacher and her motivation to participate in the project. Understandably, Internet with its e-mail and possibilities for digital homework have also been the subject of much criticism amongst teachers.

[10] We use pseudonyms for the pupils involved in the project.

[11] As we have earlier, the mentor teacher and the student teacher only commented on the starting phases and the choice of focus at the beginning of the project. They had decided not to comment on the later stages of the writing process.

[12] It is worth noticing that neither the student teacher nor the mentor teacher point out spelling mistakes in any of the articles (in contrast to peers, as stated earlier in this article). As becomes clear in both cases discussed in this article, both final texts include spelling and/or grammatical errors which remain untouched from the very beginning until the final versions.

13 The role of wikipedia as a source of information is controversial, but we do not have the possibility of discussing this more closely in the scope of this article. In the project described here, pupils were allowed to use wikipedia, and it was regarded as an equally authoritative source of information as others. The student teacher did, as we notify, remind pupils about real books, although the pupils did not use them.

[14] Brevity is, of course, a relative matter. From an academic perspective the project was short, but not in terms of lessons student teachers conduct during their first phase of school practice. In this case the mentor teacher was willing to give the student teacher a larger number of lessons in order to provide her with the experience of carrying out a complete project.

(Word count 547)