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Abstract (180)

This article employ the dimensions of Michaels, O'Connor, and Resnick's (2008) *accountable talk* and Engle's (2006) *framing* to analyse teacher's framing as well as students negotiations and co-construction of knowing in practice. The case study that we report on explores how a teacher and students in a Norwegian lower secondary school negotiate and co-construct accountable ways of engaging with a wiki blog as a learning resource by drawing on everyday and informal experiences of students. Videorecorded sequences of an 8-week science project of using a collaborative wiki blog in school were conducted to interaction analysis. We found that when framing learning activities introduced as part of formal science teaching, but contextualized in relation to students experience outside-of-school, the teacher and students struggle to negotiate and co-construct accountable ways of engaging with the wiki blog as a learning resource. The introduction of a technical tool like wiki blog creates opportunities for collaboration, but also tensions in ways of renegotiating norms and expectations of accountable actions, objects and contributions in classroom activities for both teachers and students. Thus, the dynamics of framing and co-constructing in-situ displays how students' practices expand with new forms of accountability. Simultaneously, teacher's dilemma of inviting new practices creates tensions within the institutional framing of schooling. The study contributes to understand how the layers of accountable practices in institutional contexts function as intermediaries in classroom interactions.

Keywords: accountable talk, framing, wiki blog, science education, connected learning/intercontextuality.

Teachers, Trajectories and Accountable practices. Creating Intercontextuality with a Wiki-blog as a Learning Resources.

1. Introduction

The organisation of informal and formal learning are two diverse processes, representing two distinct paradigms, reflected in varied facets of approaches to learning (Rogoff, Callanan, Gutiérrez, & Erickson, 2016). Formal school contexts are typically directed towards highly regulated learning environments which reflect a deliberate intention towards learning (Bronkhorst & Akkerman, 2016). However, studies with an interest in the organisation of informal learning, criticize the notion of treating the informal as “non-formal” or just an alternative to formal or didactic instruction (Rogoff et al., 2016). Thus, studies of the organisation of informal learning practices emphasize that “it is nondidactic; is embedded in meaningful activity; builds on the learner’s initiative, interest, or choice (rather than resulting from external demands or requirements); and does not involve assessment external to the activity” (Rogoff et al., 2016, p. 358). Consequently, when teachers intend to frame and constitute learning activities by drawing on students engagements in informal activities towards more academic learning activities, tensions and challenges arise regarding accountable ways of engaging within and across these contexts of learning.

This study is grounded in sociocultural and dialogical perspectives on learning (Daniels, 2007; Linell, 1998; Säljö, 2001; Wertsch, 1998). From the perspectives applied in this article, accountable practices can “be studied as elements of situated knowing-in-practice i.e. as elements of knowing how to behave (Wittgenstein § 875; cf. Shotter, 1994),” (p. 496). This implies that when students experience and knowledge from informal learning activities is invited into educational purposes, the discrepancies in the views of learning i.e. what is addressed as relevant or accountable, and the goals of the different practices implicitly lead to tensions and practical challenges (A. Lantz-Andersson, Vigmo, & Bowen, 2013). Thus, the teachers’ framing of accountable ways of engaging with learning resources, seems to have a strong guiding significance on what students orient to as meaningful learning practices (Michaels, O’Connor, & Resnick, 2008; Michaels & O’Connor, 2015; Michaels, Sohmer, & O’Connor, 2004). Studies of how teachers frame informal and formal learning activities as related to one another when inviting new practices within the institutional framing of schooling, may illuminate how participants engage and “make themselves accountable in situ as interactional partners” (Mäkitalo, 2003, p. 496).

Students engagement in digital practices in their leisure time, is addressed as one of the key tools that might enable a pedagogy capable of bringing the everyday world into the classroom and contribute to a relevant educational practice for students of the 21st century (Drotner, 2008; Sefton-Green & Erstad, 2017). One known problem is that the majority of students need more support to negotiate and co-construct their new media engagement from informal learning practices toward more academic, civic and production-oriented activities (Ito et al., 2013; Reich & Ito, 2017). Thus, introducing digital technologies, such as a wiki blog in this study, creates opportunities for expanding students accountable ways of engaging with a wiki blog as a learning resource, but also tensions within the institutional framing of schooling (Säljö, 2010).

The research design is a single case study (Yin, 2014) where video-recorded sequences of naturally occurring teacher-student interactions are subjected to detailed analysis. The case is an eight-week science project in a ninth-grade science class (students aged 14–15) in a Norwegian lower secondary school [REMOVED]¹. This study aims to analyse how a teacher and students negotiate and co-construct accountable ways of engaging with a wiki blog² as a learning resource. The following research questions guide the study:

1. How does a teacher frame students experience as resources for academic learning activities?
2. How do the students orient themselves to the teacher's framing and co-construct meaning?

To address the research questions, a review of selected empirical studies on accountability is provided. Then, a description of the study and research design is presented. Finally, the results based on detailed analysis of video-recorded teacher-student interactions are presented. To conclude, the empirical findings and their significance are discussed.

2. Accountable practices in educational settings

Research in several fields and traditions, such as New Literacy Studies, Connected Learning or Boundary Crossing literature have designed and explored how teachers frame and constitute learning activities in educational settings that draw on everyday and informal

¹ [REMOVED FOR REVIEWERS]

² The class used freeware called WikiSpace in which is s a common tool in the Norwegian secondary school system.

experiences of students. Recent meta-reviews characterise the research field as diverse and discontinuous (Akkerman & Bakker, 2011; Leander, Phillips, & Taylor, 2010; Rajala, Kumpulainen, Hilppö, Paananen, & Lipponen, 2016; Rogoff et al., 2016). In their recent synthesis of empirical research building on boundary crossing literature, Bronkhorst and Akkerman (2016) illustrated that the field consists of small-scale studies with a variety of methods and subject areas. Thus, the complexity is “making it difficult to generalize from findings across typically small-scale studies” (Bronkhorst & Akkerman, 2016, p. 19).

Research with an interest in how participants enter into new social situations where they have to learn the accountable practices in which they engage, is sparse. Mäkitalo (2003), study accountable practices as institutional categories in a public employment office, while Michaels, O’Connor et. al. (2008) investigate a particular productive classroom talk. In addition, some studies focus on how accountable talk approaches such as particular talk moves can enhance reading instruction (Robin 2010) or science teaching (Molthabane, 2016). Of particular interest for this study, is Åberget, Mäkitalo and Säljö’s (2010) research on the issue of how students learn to argue, using Michaels et al.’s accountable talk dimensions as analytical concepts. In a study of an interdisciplinary project leading to a panel debate in a 9th grade class, seven video-recorded hours of dialogues between two students were analysed. The findings documented that the debate format had clear implications for how the students construed accountable knowledge and what they considered acceptable and relevant arguments. In addition, the study displayed that how students learned to argue, involved more than mastering a didactic model or a given technique. Their findings documented that how student learned to argue was based on the ability to use disciplinary forms of knowledge and use the resources available in accountable manners. “Thus, in relation to complex “real world” issues, the conception of what it means to be accountable also incorporates issues of responsiveness to the perspectives of others” (p. 26). The researchers called for more knowledge to understand the teachers role in supporting students and schools to open for opportunities to engage in pedagogical practices that give students “some ownership of the process of producing knowing in contemporary society” (p. 28). Thus, this study will contribute to the field by studying how a teacher frame everyday and informal experiences of students as relevant resources for academic learning activities. In addition, this study will contribute with a new dimension into accountability studies by focusing on how teachers and students negotiate and co-construct accountable ways of engaging with a wiki blog tool as a learning resource to create new accountable practices.

Few studies have aimed at exploring how teacher's frame tasks and facilitate activities that draw on students' engagement with wikis and blogs from informal learning activities. Still, findings from two Nordic studies are of particular relevance. In a Norwegian study exploring the teacher's role and the instructional setting of designed WebSpaces, Rasmussen, Lund, and Smordal (2012) unpacked the mechanisms that create or hamper opportunities for engagement and learning. To provide opportunities to create new practices in classroom settings, their research has concluded that it depended both on the teachers' and students' appropriation of the new tools and the expansion of existing repertoires, that is, new tasks and new ways of participating. Consequently, the study can serve to illustrate that when new media practices are brought into existing classroom practices; they challenge and transform the conditions for communicating and learning, highlighting the need for the teacher to create new tasks and new ways of participating within the learning activities. Thus, the study calls for more knowledge regarding the role of teachers and the instructional setting to explore how the use of technology can expand the knowledge and experiences of students' everyday lives in regular educational settings (Lund, 2008; Rasmussen et al., 2012). Moreover, there is a lack of studies addressing the challenges concerning the dialectic relationship between personal and collaborative learning, learners' objectives and participation, and the design of pedagogical practices capable of supporting Web 2.0 technologies (Lund & Rasmussen, 2008; Rasmussen et al., 2012; Strømme & Furberg, 2015).

Finally, in a study focusing on two Swedish upper secondary students negotiation and co-construction of meaning in a blog shared with Thai students, A. Lantz-Andersson, Vigmo, and Bowen (2016) found that the students struggled to understand how to frame the task. When the students encountered a task introduced as part of English as second language learning, but contextualized in social media as blog, students framed the activities in relation to what they negotiated as relevant practices. Initially, they framed the activity as a conventional language-learning practice, but after reading classmates blogposts more in line with social media contexts, they shifted framing and experimented with language in more spontaneous ways. The study is relevant because it documents how participants struggle to negotiate what counts as appropriate knowledge in school tasks. The study focus on a detailed interaction analysis of two students, and document a need for more knowledge of the teachers role in framing students new media practices as relevant resources for academic learning activities in classroom settings.

In sum, research indicates that for creating accountable practices with digital tools as learning resources, teaching needs to provide relevant tasks and connect students' everyday

experiences towards more academic activities (Ito et al., 2013). To address these findings, the present study points to the importance of researching the interactional contexts where participants negotiate accountable practices while using wiki blogs as learning resources.

This leads to the theoretical premises that form the basis of the current study.

3. Sociocultural and sociolinguistic approaches to classroom discourse

The study employs social activity and discourse as main units of analysis (Cole, 1996; Vygotsky, 1934/1962, 1939/1978). Our approach emphasizes the importance of understanding learning as a matter of participation in a social process of knowledge construction, shaped by cultural and historical factors (Daniels, 2007; Lave, 2012; N. Mercer, Hennessy, & Warwick, 2017; Rogoff, 2003). From this perspective, learning can never be separated from the context in which they take place and the artefacts that mediate them (Sfard, 1998; Säljö, 2010).

The continuous development of cultural tools implies that our learning, reasoning and knowing are transformed as new resources become available (Säljö, 2010). In order to study how people learn in a practice, it is necessary to study how people interact with each other and the different mediational means that are at their disposal for engagement in specific activities (Wertsch, 1991). Analysing social interaction is a productive way of understanding the mediating role of digital technologies in enabling the joint construction of knowledge in classrooms (Mercer et al., 2017).

In this study, the notion of ‘accountable talk’³ (Michaels, O’Connor, et al., 2008; Resnick, 1995) serves as the conceptual tool for understanding the teachers role in framing opportunities for creating intercontextuality dialogically while utilizing a wiki blog as a learning resource. ‘Accountable Talk is classroom talk that is accountable to community, to rigorous reasoning and to accurate knowledge’ (O’Connor, Michaels, & Chapin, 2015, p. 112). Accountable talk grows out of a Vygotskian theoretical framework (Wertsch, 1991) that emphasizes that the acquisition and use of language transforms children’s thinking, emphasizing ‘the social formation of mind,’ that is, the importance of social interaction in the development of individual mental processes (Michaels, O’Connor, et al., 2008). Accountable talk takes into account the sociocultural nature of learning and examines how learning offers

³ Lauren Resnick (1995, 1999) first mentioned “Accountable Talk” as one of nine “principles of learning”. In the mid-1990s, O’Connor and Michaels who had conducted qualitative research on the ways effective teachers used various discourse practices and utterances to orchestrate classroom discussions, began collaboration with Resnick. Together they further developed Accountable Talk or simply “academically productive talk” (Chapin & O’Connor, 2007).

students the potential to create relationships between events and contexts that are relevant for learning (Bloome, Beierle, Grigorenko, & Goldman, 2009; Engle, 2006; Floriani, 1993). Consequently, “through talk, students are encouraged to draw on their home-based genres of argument and explication, while practicing and honing new representational and discursive tools” (Michaels, O’Connor, et al., 2008, p. 286). For that reason, the term ‘framing’ (Goffman, 1974/1986) learning contexts is applied as the analytical lens to describe the communicative processes when establishing a common ground of understanding. According to Engle (2006), ‘a context has been framed when someone uses meta-communicative signals that help establish what the participants are doing together in it, when and where they are doing it, and how each person is participating in it, thus creating a “frame” in which their activities can be interpreted’ (p. 456). As a result, through talk, the teacher frames interactions and utilizes relevant resources in which the participants listen to and build their contributions in response to the social construction of relationships among events and contexts, that is, creating intercontextuality dialogically (Bloome et al., 2009).

Thus, the concepts of framing and accountability will be used to analyse how teachers and students negotiate and co-construct accountable ways of engaging with a wiki blog as a learning resource.

4. Research Design

4.1. The case

The research design was a single case study (Yin, 2006, 2009, 2014) where video-recorded sequences of naturally occurring teacher-student interactions are subjected to detailed analysis. According to Yin (2006) the case-study method provides abilities to examine “in depth, a “case” within its real-life context” (p. 111). The case is an eight-week science project in a science class with a Wiki-blog as the primary learning resource. The setting is a comprehensive public school setting, in a Norwegian medium-sized city. One teacher and 26 ninth-grade students, 11 boys and 15 girls (aged 14–15), volunteered to participate in the project by informed consent.

The case project aimed to increase the student’s interest and everyday experience with the phenomenon of electricity. In curricular terms, it covered the subject of natural science and the five basic skills (oral, reading, writing, digital and numeracy) (Norwegian Directorate for Education and Training, 2015). Both students and the teacher had experience with Wiki-blogs and other digital tools such as the learning management system called Fronter, Facebook and digital programs for science and mathematics lessons. Taking into account the

digital nature of the project, the teacher anticipated that the students would approach the project using their existing experience and knowledge of Wiki-blogs from both inside and out-of-school contexts.

Wiki's can be characterized as interlinked web pages, where any user easily edits each page (Leuf & Cunningham, 2001). In wikis, content and networked structures are built from within as users add material and create texts and links and discuss the content of others. Utilizing WikiSpace, the teacher constructed a structure in a closed, restricted space and invited all students to participate. On the right-hand side, the names of the students were listed, and each student could open their individual space and create their blogs. They could also open the blogs of peers, upload pictures and videos and write comments on each other's blogs. During the science project, the wiki blog was the main tool for learning and conducting scientific laboratory reports.

The Electricity Project unfolded in two to three lessons per week and was divided into three distinct sections of assignments and examinations. In the first phase, the teacher facilitated activities that encouraged students to create and reflect upon the rules and norms of digitally conducting scientific laboratory reports. During the second phase, the teacher facilitated diverse group activities for the students to discuss, read, edit and modify their Wiki-blogs. In the final phase, the teacher facilitated activities that involved preparations and enactment of a group test where the students used their wiki blogs as resources for writing a collaborative text. In this last phase, the teacher also gave an individual test with marks and facilitated a whole-class oral evaluation posting commentaries into the wiki blog. Fig. nn summarize the phases and timeline of the Electricity Project.

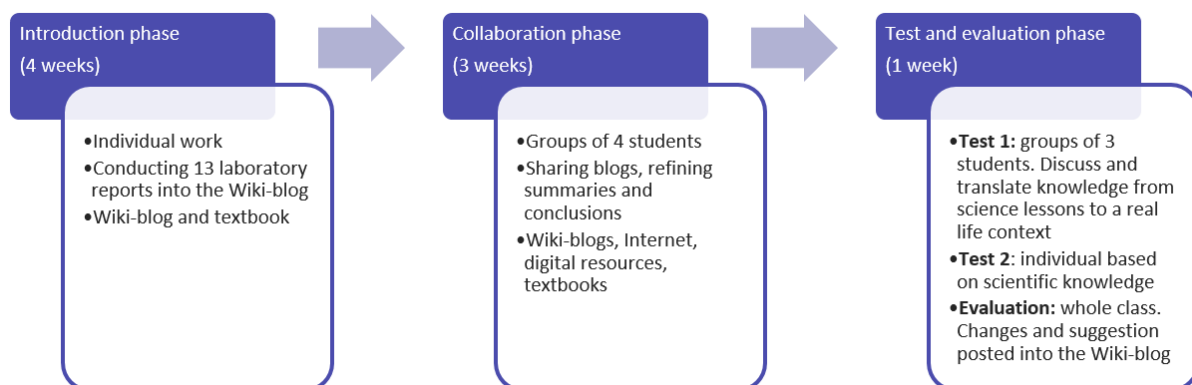


Figure 1: the phases and timeline of the Electricity Project

4.2. Data Collection and Method

Drawing on the case study approach, it is explored how the teacher framed accountable practices while using the wiki blog as a learning resource and how the students responded to and accommodated to the teachers instructions. To capture these naturally occurring interactions, it was decided to combine participant observations and video-recordings. Video data constituted the foreground of the analysis because it gave access to sequences of talk and action as it actually happened (Derry et al., 2010; Goodwin, 1994). The data consists of video-recorded whole class interactions throughout the eight weeks of the project (totalling 11 h of footage from 11 lessons). While video recording regular lessons, one researcher participated, observed the classroom interactions, and collected student artefacts. Figure 2 displays the empirical material:

Data material from the Electricity Project	
Pre teacher interview	1
Field notes	11 documents
Video recording of Electricity Project	11 lessons of 60 minutes each
Content logs	11 documents
Students written lab reports from the Wiki-blogs	338 texts (26 students*13 Laboratory reports)
Written evaluation of the project	1 document posted in the Wiki-blog

Figure 2. Data material

Focusing on video recordings enabled documenting the unfolding interactions of how the teacher framed interactions, and how the students responded to and accommodated to the teachers instructions. According to Neil Mercer, Littleton, and Wegerif (2004), “a sociocultural analysis differs from linguistic discourse analysis in being less concerned with the organisational structure of spoken language, and more with its content, function and the ways shared understanding is developed, in social context, over time” (p. 203). This type of analysis emphasised meaning making activities as interactional achievements and made visible how the teacher and students appropriated the wiki blogs as mediating tools. Moreover, a sociocultural analysis examines education as an interpersonal and intrapersonal process in which the computer would be seen as one kind of cultural tool which mediates that process (Kleine Staarman, 2003; Neil Mercer et al., 2004). To study how teachers and students negotiated meaning, how they used artefacts and how knowledge and experience from everyday life were brought into play in classroom interactions, a camera with a wide-angle lens was placed at the back of the classroom. The teacher had an omnidirectional wireless microphone, and a table microphone was placed in the middle of the classroom.

4.3. Analytical Procedure

The analysis proceed as follows. Firstly, the video data was watched and scrutinized numerous times to provide a more specific focus and identify all cases of potential or candidate phenomena of interest. The video-recordings were transcribed verbatim and non-verbal interactions significant to the analysis were added as comments. Secondly, the video and transcripts were analysed according to the thematic content and were divided into interactive episodes, which is “a thematically meaningful unit of interactional exchange. A new episode begins when the topic of discussion shifts” (Kumpulainen & Rajala, 2017, p. 25), constituting the unit of analysis (Linell, 1998). Based on the preliminary viewing of the video data and the transcripts, a more specific focus was provided to identify two key dimensions of variation, specifically focusing on episodes where a) the teacher initiated interactions in which the wiki blog was mentioned as a resource for meaning making and b) episodes where the teacher-student interactions generated classroom dialogues. This process involved a focus on the participants’ talk and related their actions towards the resources in each situation and how the interaction was constituted and emerged from the participants’ orientation (Furberg & Ludvigsen, 2008; Silseth & Arnseth, 2016). Next, content logs with annotations and explications of interactive episodes were placed into NVivo and indexed by the time stamp on the video tape (Jordan & Henderson, 1995).

Thirdly, the selected interactive episodes were analysed in detail using interaction analysis (Jordan & Henderson, 1995). To understand the teacher’s talk, the analysis focused on what kind of accountability the teacher found accurate and significant while encountering the Wiki-blogs in the moment and over time. Applying Michaels, O’Connor, et al. (2008) three broad dimensions of accountable talk enabled analysing how the participants oriented themselves regarding what counted as accurate and relevant. Namely: 1) accountability to the community, in which participants listen to and build their contributions in response to others, 2) accountability to accepted standards of reasoning is talk that emphasizes logical connections and the drawing of reasonable conclusions, and 3) accountability to knowledge is talk that is based explicitly on facts, written texts, or other public information (Michaels, O’Connor, Hall, & Resnick, 2002; Michaels, O’Connor, et al., 2008). In this study, the accountable talk dimensions work together as a conceptual lens to derive meaning from the interaction data, thus, they should not be understood as comprehensive or mutually exclusive categories for analysis. The operationalization of the analysis of teacher – student interactions

was developed through a dialogue between a grounded reading of data and the analytic framework (Kumpulainen & Rajala, 2017).

Finally, the findings were synthesized by constructing specific episodes representing significant evidence of what kinds of accountability the teacher addressed and how the students oriented towards her instructions. The accountability to the learning community in which the activity takes place, that is, the social dimension of the accountable talk, meant that the students' actions and thinking were responses to what the teacher and the others in the group said. In addition, the ways in which the wiki blog was utilised as a learning resource, that is, its epistemological dimensions, were strongly related to the accountability to accepted standards of reasoning in science lessons. This means that when the teacher framed interactions using the wiki blog as a learning resource, she had to take into consideration the accepted standards of reasoning, evidence and arguments that students would be held accountable for in the final assessment. Finally, the teachers' framing of interactions with the wiki blog also had to take into account the norms and rules of what is accurate and relevant knowledge within the scientific school discipline, while encouraging the students use of new media engagement, that is, the disciplinary dimensions of accountable talk.

The accountable talk affected which contexts students oriented to as being relevant sites for using what they have learned and act in accountable ways with the tools available *in situ* (Brown, Collins, & Duguid, 1989; Engle, Nguyen, & Mendelson, 2011; Greeno & Van de Sande, 2007). From the analytical perspective, the ways in which the teacher framed interactions with the wiki blog, were done both in the contexts of *in situ* interactions with the students and the tool, and within the socio-cultural practices of classroom interactions established over long traditions (Linell, 1998). Therefore, the three dimensions that characterized accountable talk in this study were three mediational means that seem to have a strong guiding significance for how the teacher-student interactions were framed, played out and enacted.

In the following sections, the assignment posted in the wiki blog and five excerpts from each of the three phases of the electricity project that outlined key teacher-student interactions are presented.

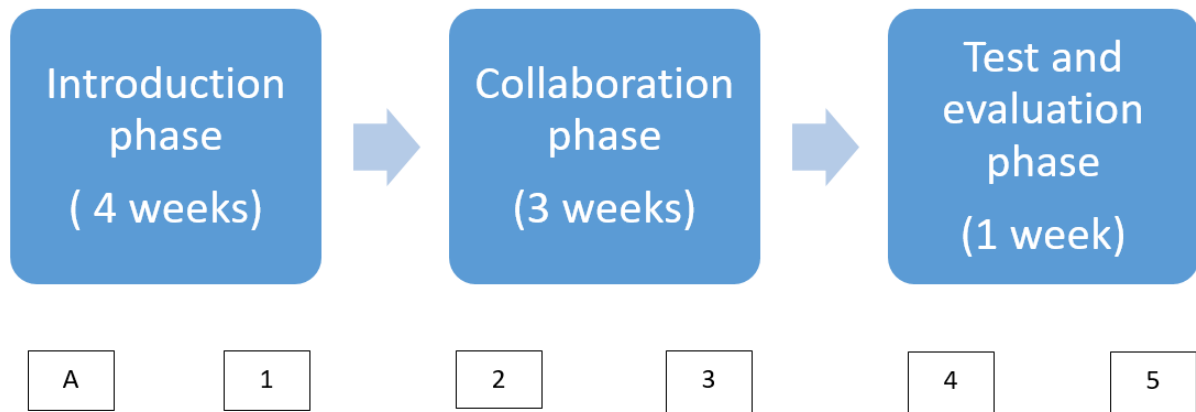


Figure 4: The assignment and five excerpts represented in time during the Electricity project

The excerpts represent rich data, capable of illustrating frequently occurring interaction patterns (Annika Lantz-Andersson, Linderoth, & Saljo, 2009). Author 1 translated the excerpts from Norwegian into English, and standard punctuation was added for readability.

Our analysis followed a two-step process, first-order and second-order (Linell, 2009). First, how the participants responded to each utterance turn-by-turn was described in detail, and then the analytical categories of accountability to community, knowledge and standards of reasoning outlined in the theory section were applied. In this way, a detailed analysis was conducted of participants' talk and how they related their actions to the resources invoked in the situation and how the interaction was constituted and emerged through the participants' orientations (Dolonen & Ludvigsen, 2012). The analysis led to a discussion of how the teacher framed students experiences as relevant resources for academic learning activities while using a wiki blog as a learning resource, and how students responded to and accommodated the teacher's framing and co-construct meaning.

5. Results and interpretations

The teacher created a project in a closed, restricted wiki blog. The opening page consists of the task and guidelines for how to conduct a traditional, individual scientific laboratory report digitally. The guidelines explain the criteria for layout and content needed in the report (i.e. the procedures of writing a report digitally), and recommendations regarding summaries: 'At this point, there are unlimited opportunities to demonstrate your professional expertise! Be clear and specific and explain in your own words. You can start by telling how the theme of

the exercise relate to everyday life.’

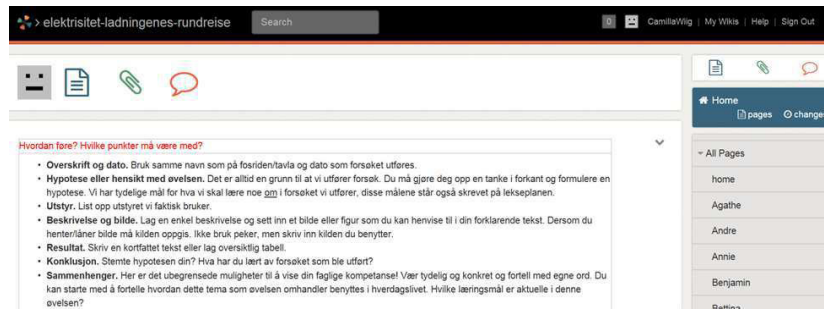


Fig. nn. The procedures and criteria for conducting digital laboratory reports.

Applying Michaels et al.'s (2008) three dimensions of accountable talk, to community, knowledge and reasoning, the posting of the task was used to exemplify how the teacher made public the criteria for content and layout while conducting digital laboratory reports in the wiki blog. The students will be held accountable for constructing disciplinary knowledge, i.e. reproducing scientific knowledge in a wiki blog and follow the standards of reasoning in traditional laboratory reports. Still, when it comes to the summaries, the teacher frames new accountable practices and invites students' experiences as relevant resources for academic learning. In this sense, the teacher's framing of the learning activities with the wiki blog opens for layers of accountability. First to the disciplinary knowledge within the institutional framing of schooling and then to the students' out-of-school experience as relevant resources for scientific learning activities. In the following, the study will document how the teachers framing of new forms of accountability expand students' practices and creates tensions within the institutional framing of schooling.

5.1. Framing norms and expectations of accountable contributions.

Three weeks into the project, the teacher displayed one student's wiki blog to demonstrate how to conduct an accurate digital scientific laboratory report. The 26 students were sitting in pairs with textbooks and notebooks open in their regular classroom. The teacher was standing in front of the displayed laboratory report, pointing at different sections of Kari's wiki blog:

Excerpt 1:

- 1 Teacher: I have asked Kari and she allowed me to display her [Wiki-blog].
2 (Points at the displayed Wiki-blog). The experiments get numbering, headings and she writes the date.
3 In that way, it becomes more transparent.
4 She also writes the aim of the lesson.
5 (Turns toward the class) You can find them in our schedule for this week.
6 Aims for the lessons, purposes of the experiments, what you will learn. You can find them in our schedule for this week.
7 (Turns toward the displayed Wiki-blog) She lists the equipment and describes procedures.
8 In addition to a table, Kari has attached a picture, which is uploaded in the wiki.
9 (Turns toward the class) I have scanned the figures so you can use them too.
10 Students: (Nods, and make notes in their notebooks)
11 Teacher: (The teacher sits down behind her computer in the left corner facing the class and scrolls to the top of Kari's first lab experiment).
12 Teacher: (Looks at the class). Okay, all [laboratory] reports must have a heading with the date, objective, purpose, results, equipment.
13 (...) and for those of you that want to reach the highest levels of achievement include a summary report.

This excerpt reveals how the teacher framed norms and expectations of accountable ways of engaging with the wiki blog in the whole class community. Using Kari's wiki blog as a model text, she introduced accountability to accuracy, to mobilize relevant disciplinary content and to follow the given procedures of multimodal layout. The accountability the teacher addressed relates to norms and rules for responding to activities typically found in conventional school science practices. Simultaneously, the teacher comments the assessment criteria stressing the importance of a summary report in which she invited students' experiences as relevant resources for scientific learning activities. As a result, the teacher frames students' experiences as necessary means for accountable scientific learning activities if students want to acquire the best academic results. The layers of accountable practices in which the teacher frame in this classroom context, function as intermediaries within the teacher and students negotiation and co-construction of accountable ways of engaging with a wiki blog as a learning resource.

5. 2. Renegotiating norms and expectations of accountable contributions

In the second phase of the project, the teacher created new collaborative activities with the wiki blog as a central learning resource. She framed opportunities to look into each other's blogs, to share, copy and borrow multimodal text in the wiki blogs as resources for

collaboration and to develop scientific knowledge. In this excerpt, the students sit in pairs in front of stationary computers at the computer lab logged into their individual wiki blogs.

Excerpt 2:

- 20 Teacher: I will give you an advice. I highly recommend that you look at each other's blogs.
21 You are allowed to borrow and copy!
22 If I log into Gunnar's [wiki] blog
23 (Turns toward Gunnar) and I notice uhm that was a nice figure!
24 I'd really like to use it.
25 (Turn toward the class) Well I can ask Gunnar
26 or I can check where it is uploaded
27 Or else I can log into Gunnar's blog and see what kind of sources he uses.
28 Then I can copy that image into my [wiki] blog.
29 Erik: What? (Turns around and look towards a group of boys)
30 Teacher: Is it all right?(Erik turn back and nod)
31 Voices: Yes! Yes!
32 Teacher: Okay, go ahead!

In dealing with the new accountable practice of looking into, copy and borrow from other students wiki blogs, which is framed as “borrow and copy” by the teacher, the excerpt displays the obvious confusion among the students. The interpretation that the teacher’s procedure is taken by surprise is supported by Erik’s reaction. As Erik responds with a ‘What?’ (line 29) he simultaneously accepts that the procedures to plagiarise other’s material is a controversial activity in the educational setting. Thus, as a participant in a youth culture engaged in social media and new forms of communication, he is also obliged to respond to the youth culture’s informal practices of detecting, reading and playing with their language use while commenting on other classmates postings (A. Lantz-Andersson, Linderoth, & Säljö, 2009). The existing accountable practice at school is that to engage in copying or stealing other people’s work is not an accepted scientific or ethical practice. Simultaneously, the instruction appears to display that the teacher is aware of problematic copyright issues and that she is willing to take the risk by explicating how they are allowed to acknowledging other student’s work. The notion of acknowledging other students’ work by examining their ways of explicating scientific content presented as multimodal texts in the laboratory reports or “look into each other’s blogs” to read explanations and enhance their own scientific understanding, are practices students regularly engage in during this phase of the project. Thus, this construction responds to the dilemma of co-constructing meaning within the layers of accountable practices for the participants. The excerpt captures the responsiveness of the

interactions between the teacher and students and among the students with regard to the tensions of negotiating accountable ways to engage with the individual task requirement within the collaborative nature of the wiki. In that way, the excerpt displays how the students struggle to assign meaning to the teacher's framing of accountable practices. In particular, the excerpt displays how both teachers and students renegotiate norms and expectations of accountable actions and contributions.

5.3. Expanding Students Practices with New Forms of Accountability

The following excerpt displays how the teacher frames students' experiences with mobile phones as relevant resources for academic learning. Still, the students struggle to negotiate accountable ways of encountering tasks introduced as part of schooling, but contextualised in their ways of communicating with mobile phones in their everyday lives. As we enter the following excerpt, the teacher wants a group of three girls to capture static electricity observable as lightening of a glim-lamp by video recording the situation with their mobile phones and upload the video to the wiki blog.

Excerpt 3:

- 401 Ina Look Sara, it was a flash of light! ((Points towards the glim-lamp))
 402 Sara Oh, then I must try [to] ((Tries to capture the flash with the mobile phone))
 403 Teacher: [You don't have time! But can you try to record it?
 404 Sara Yes? ((Looks at the teacher))
 405 Teacher: Yes. ((Looks at the girls trying to capture the flash))
 406 Ina: You need to keep it there, Sara. You must keep it there
 ((They rearrange the equipment in order to take pictures))
 407 Sara: You need to keep it far away!
 ((Sara holds the mobile phone in front of her to capture the glim-lamp))
 408 Ina: You have to come closer! ((Sara moves closer and laughs))
 409 Teacher: Okay, if you video record the glim-lamp, do you think you can upload the video?
 410 Sara: Uhm it is Mia's phone
 411 Teacher: Mia? ((Turns toward Mia))
 412 Mia: Yes?
 413 Teacher: Can you upload the video to the Wiki?
 414 Mia: I uhm do not know? [I ((Non audible))
 415 Ina: [Mia, you can at least try!
 416 Teacher: Do you think you can try? Mm?
 417 Mia: Mm ((reluctantly))

In dealing with this dilemma about using mobile phones to video-record and upload film into the wiki blog, the students' struggle with an unfamiliar task and negotiate what they understand as expected in the school science activity. The accountable practice at the school is that using mobile phones in the classroom is a forbidden activity. However, their response displays that bringing the phone into the classroom practice is not the problematic issue. In other words, there is an agreement to use the mobile phone as a tool for documenting

scientific experiments in the wiki blog while at the same time accepting that they are breaking the schools directions. The accountability to the norms and rules of what is accurate and relevant knowledge within the scientific school discipline seems to be more important than following the directions of the school community.

Consequently, the girls unwillingness concerning video-recording the glim-lamp seems to visualize that even though the teacher has framed opportunities to use mobile phones as an accountable practice, they do not necessary respond to and accommodate to the teachers instructions. One obvious reason might be that the girls struggle to know how to record or upload videos into the wiki because the teacher do not explicate the procedures. However, this study interprets that at least Mia knows how to make videos and share them according to Ina's response "You can at least try". This indicates that there are reasons to believe that the girls have experience with recording and sharing videos from their informal activities with mobile phones. Another reason might be that the teacher frames a task in different terms or in a context not commonly used in schooling, i.e. how to record and upload videos from students' mobile phones into a wiki blog constituted in an academic setting. For that reason, this excerpt might illuminate the challenges and tensions teachers and students engage in while students negotiate what they understand as expected in the activity (Greiffenhagen, 2008; A. Lantz-Andersson et al., 2016). Finally, a third assumption may reveal that the girls do not accept the wiki-blog as a socially acceptable setting in which they want to use their existing knowledge and experiences gained from their leisure time practices. Engle (2006) argues that students choose to use their knowledge and experience in new contexts when they are related with each other, thus creating what she calls intercontextuality among them. Besides, Engle claims that for the participants to engage in the activity, the contexts must be appropriate and socially acceptable. This excerpt displays how the teacher frame opportunities to use students' knowledge and experience to record and upload videos with their mobile phones. Still, the excerpt illustrate that students seem to need more support to translate and connect their new media-engagement towards more scientific accountable practices (Ito et al., 2013).

4. Framing the Wiki-blog as a Supplemental Resource for Assessment

During the last phase of the project, the inconsistency between utilizing the wiki blog as a resource for collaborative activities and the traditional individual assessment of scientific disciplinary knowledge becomes evident. Preparations for the group test and the individual test made visible the layers of accountability the teacher addressed as accurate and relevant

while utilising the wiki blog as a learning resource. In the whole-class introduction to the lesson before the tests, the teacher lifted a stack of printed wiki blogs from her desk and said:

Excerpt 4:

- 41 Teacher: If you want to make changes to your wiki, do it now.
42 Then you have to make a copy yourself. (Waves with a stack of papers)
43 Students: Nods
44 Teacher: I will examine the wiki's you use tomorrow.
45 I will collect them together with the test.
46 I'm not going to give grades on your wiki's.
47 I'll concentrate on assessing the test, but I'll have a look.
48 Therefore, I've taken a copy of all your wiki's.

This excerpt captures the teacher's challenges of assessing the collective and digital wiki blogs in the individual paper-based assessment practices of traditional school science. The teacher struggles with an unfamiliar task and proclaims her decision in what she understand as expected in the activity, - to continue the traditional individual assessment practice and transform the social, digital wiki-format to a printed document, similar to conventional textbooks. Thus, the teachers framing of accountable practice when assessing the science project is interrelated to a given scientific curriculum. Consequently, the teacher's transforming of the wiki blogs to paper based documents to let them "fit in to" the scientific school practices, might be a logic way to cope with an unfamiliar task in a closed down curriculum. In particular, the excerpt seems to visualize that even though the teacher has framed opportunities to use wiki blogs during individual and collective science activities, the accountability to disciplinary assessment norms and rules, create limitations. These limitations close the opportunities for new tasks and new ways of participation drawing on students' informal learning activities as accountable ways of engaging with the wiki blog in the assessment practices.

As the analysis of the last excerpt from the evaluation of the project shows, the students struggled to orient themselves to the teacher's framing of accountable ways of engaging with the wiki blog and to co-construct meaning.

5.5. Evaluating How to Co-construct Accountable Ways of Engaging with the Wiki

After the test, the teacher framed an evaluation of the project with a specific focus on how to engage in accountable ways with the wiki blog. While sitting in groups of four in their regular classroom, the students were asked to discuss what worked well and why, what they would change if they were to create a wiki again and why and how those changes would be made. The following excerpt was taken from the middle of the evaluation:

Excerpt 5:

- 50 Andre: Well. We discussed that we found it a bit difficult to use the wiki for assistance on the test and that we should have got grades for the work with the wiki's.
- 51 Teacher: Mm. ((nods towards Henrik))
- 52 Henrik: What we also discussed was that rather than all writing their own wiki, all in the class could write one together in which all could bring to the test.
- 53 Then everybody get the same amount of facts.
- 54 Teacher: Yes. I think a bit about the practicalities.
- 55 When we conduct an experiment, everybody will have to contribute to write something into that wiki lab report.
- 56 Do you think everybody will participate doing that, or do you think someone will just sit and wait?
- 57 Uhm, do you think we will get free riders if we do it your way?
- 58 I just wonder. Jenny! ((nods towards Jenny))
- 59 Jenny: We discussed that it was too much to write all laboratory experiments individually so we thought that maybe one or two could collaborate [writing] the experiments
- 60 Teacher: When writing individually, everybody have to write on his or her own.
- 61 I believe that everybody have the opportunity to use their own language in which they understand.
- 62 If you use words in which you do not understand, the learning outcome is not appropriate.
- 63 My intentions with the wiki was that each wrote their own and that the writing in its self would contribute to the learning process.
- 64 Still, maybe you can have the same learning in a group activity.

This excerpt displays how the teacher and the students negotiate and co-construct accountable ways of engaging with a wiki blog as a learning resource. On the one hand, the students' response display their challenges in understanding the function of the collaborate activities with the wiki blog as the teacher emphasize and grade only the individual work outside of the wiki as accountable ways to engage with the wiki within the classroom community, knowledge and standards for reasoning. In addition, the students' suggestion to make a collective wiki comprising all the facts as a mutual contribution can be interpreted as an attempt to negotiate and co-construct their new media engagements with Wikipedia to this science wiki-project. As the teacher responds that in individual work, everybody must use their own words to document what they understand (line 60), she simultaneously accepts the claim that in collaborative work suggested by Jenny and Henrik, the co-construction of understanding might serve as a good idea. Continuing an argument with a claim of little learning outcome, she concludes by proclaiming her intentions with the individual wiki, "that writing in its self" would contribute to the learning process (line 63). In this way, she address accountability to practices in conventional school science problematizing issues like passivity

and free riders in collaborative activities with wiki's versus explicating that individual writing in its self will contribute to scientific understanding. In this sense, the teacher's framing of responses can be interpreted as conflicting and creating limitations for supporting and connecting students' new media engagement in democratic, open and dynamic design towards more academic learning activities when it comes to assessment practices.

6. Discussion and Concluding Remarks

This case study aimed at exploring how a teacher and students negotiate and co-construct accountable ways of engaging with a wiki blog as a learning resource in a science project. Using accountable talk and framing as analytical tools, the study has examined the teacher's framing and student's negotiation and co-construction of meaning, drawing on expected everyday and informal experiences of students as relevant resources for academic learning activities. We have done so by referring to five target episodes extracted from a broader corpus of video-recorded lessons following a 9th-grade class during a school year. This study addressed two interlinked research questions exploring how a teacher frames students experiences as relevant resources for academic learning activities and how students orient themselves to the teacher's framing and co-construct meaning. The classroom episodes analysed in this study are not necessarily typical of episodes in other classrooms. These findings are not generalisations; rather, they provide insight into the complexity of the teacher's role in framing accountable ways of engaging with a wiki blog as a learning resource.

The main findings illustrate that how the teacher and students negotiate and co-construct accountable ways of engaging with a wiki blog as a learning resource, depends on how the teacher frames the learning activities, what kinds of accountability the teacher address as relevant and how students respond to and co-construct meaning into the teachers framing. The findings show how the teacher, when struggling to engage and support accountable ways of engaging with the wiki blog as a learning resource, frame the tasks as conventional individual school assignment related to the scientific curriculum. For the teacher to utilize an unfamiliar tool as a relevant learning resource, that is, a wiki blog originally situated in a context not commonly used in schooling, the teacher use the opportunities in the scientific curriculum as a given space to move within (A. Lantz-Andersson et al., 2016). Consequently, how the teacher frame accountable ways of engaging with the wiki blog as a learning resource, create tensions within the institutional framing of schooling. Thus, the students co-construct and negotiate what they understand as expected ways to engage with the wiki blog in the activity. While the teacher frame activities in relation to what counts as conventional school science practices, exemplified in excerpt 1, 4 and 5, students responds and co-construct the teacher's framing as situated in school science practices. This study documents how students orient themselves to the teacher's framing of existing norms and rules in the classroom community, conventional scientific standards of reasoning and

disciplinary accuracy as accountable ways to engage with the wiki blog in the learning activities. However, when the teacher shifts framing towards collaborative activities as she frames students experiences and knowledge from outside-of-school as resources for academic learning activities, exemplified in excerpt 2 and 3, the teacher and students struggle to renegotiate norms and expectations of accountable actions, objects and contributions in classroom activities. Consequently, what is demonstrated in this study is that when the teacher draws on expected everyday and informal experience of students as relevant resources for academic learning activities, tensions between open-ended tasks within a closed down curriculum becomes evident.

The teachers framing of students' experiences as relevant resources for academic learning activities expand the students' practices and create tensions within the institutional framing of schooling. The introduction of new practices, exemplified in excerpt 2, displayed that when the teacher framed new tasks that invited students to acknowledge other's work, framed as to share, borrow and copy from each other's wiki blogs, the new practices created obvious confusion displayed among the students. The layers of accountability among the collaborative nature of the wiki blog and the individual task requirement introduced by the teacher (?) can be argued as challenging the existing practices of learning and how students interpret and responds to the changes taking place (Säljö, 2010). Additionally, the teacher's invitation of using mobile phones to take pictures, video-record scientific experiments and upload films into the wiki blog creates dilemma within the institutional framing of schooling. The forms of knowledge that young people use and develop through their self-organised and interest-driven digital practices are "clearly at odds with the definitions of knowledge on which most school curricula is based" (Drotner, 2008, p. 170). This means that when the teacher frame new forms of accountable ways of engaging with the wiki blog, utilizing students experience with mobile phones to video-record laboratory experiments, students' practices expand. At the same time, the teacher's dilemma of inviting new practices creates tensions within the institutional framing of schooling. This study displays how students struggle to renegotiate and orient themselves to what is expected in the activity as the teacher do not explicate how students' informal mobile-practices are relevant resources in the educational practice. Engle (2006) argues that when teachers' frame and explicate how contexts relate to one another, students are more likely to choose to use their experiences in a new context, thus creating intercontextuality between them because the context is appropriate, desirable or socially acceptable (Engle, 2006; Floriani, 1993). This study documents how using mobile phones to video-record laboratory experiments in a science project is an activity

students hesitate to engage in. One reason might be that the teacher framed the task based on an assumption that students are “wiki-literate” and did not explicate how to use, record and upload videos from mobile phones into the wiki blog. Another reason can be that the teacher framed the learning activity in a conventional school science task students do not think of as desirable, appropriate or socially acceptable. This finding correspond with Drotner’s (2008) research that documents how young people who engage in digital media practices in their leisure time, “rarely define their activities in terms of learning, in fact quite opposite: when they are out of school, they want to do something different from the routines found when they are at school, and media are an obvious and popular choice” (p. 168). Therefore, there are reasons to believe that the students in this study know how to video-record with the mobile phone as part of their informal media literacy practices, but struggle to renegotiate and co-construct accountable ways of engaging with mobile phones in the wiki project.

Consequently, when constituting learning practices that builds on students’ initiative, interest or choice within a closed traditional school task, there are reasons to believe that students do not want to engage in renegotiating accountable ways of engaging with their playful activities into the academic learning activities. The analysis displays that layer of accountable practices in institutional practices function as intermediaries. It is thus exemplified in this study that when playful activities are brought into “institutional settings that are removed from everyday life” (Rogoff et al., 2016, p. 371), the renegotiation of norms and expectations of accountable actions, objects and contributions in classroom activities function as intermediaries within the layers of accountable practice in the institutional contexts.

In sum, in this study attempts are made to investigate how the teacher and students address accountable practices with a wiki blog as a learning resource that could open for mobilising everyday and informal experiences of students. By analysing both the teachers framing of activities, the students’ negotiation and how they socially co-construct meaning in the classroom interactions, the approach enabled us to study the layers of accountable practices in institutional contexts and their function as mediators in classroom interactions. The study exemplifies that when a teacher frame a task introduced as part of science teaching but contextualized in everyday and informal contexts, the teacher and students struggle to negotiate what is expected as accountable ways of engaging in the new practices. While A. Lantz-Andersson et al. (2016), documents how local audience i.e. classmates, play a crucial role in how students frame activities and shift frames, this study documents how the teacher’s role in framing accountable practices plays a crucial role in how students negotiate and co-

construct what they understand as expected action, objects and contributions in the activity. Consequently, what is demonstrated in this study is the vital role the teacher plays in framing accountable ways of engaging with new tools as relevant learning resources in the context of schooling. Thus, the findings support and further develops Lund and Rasmussen (2008) findings. The development of new practices depends both on the teacher's framing of accountable ways to engage with new tools and the expansion of existing repertoires, that is, new tasks and new ways of participating in accountable action, objects and contributions within classroom practices.

Finally, this study contributes to the educational field by presenting a complementary perspective on conceptualizing accountable talk as oppositional to educational design (Michaels et al and Resnick et al), that is, as a challenge to the teachers' control over classroom interactions. The perspective of this study opens up avenues for future research and pedagogical experimentations in order to better understand the tensions and opportunities teachers striving to frame accountable practices are likely to face as teachers and students negotiate and co-construct accountable ways of engaging with new practices in the institutional framing of schooling. This study adds to the understanding of what is at stake when accountable talk is promoted in classroom interactions.

A common educational perspective to accountable talk, is to focus on how it can be fostered and constituted through educational design (e.g. Michaels). This study present a complementary perspective on conceptualizing the framing of accountability as layered, that is, as accountable practices that is negotiated across settings, activities, resources and contributions. In particular, how the layers of accountable practices function as intermediaries in institutional contexts. The analysis display how the teacher's framing of accountable ways of engaging with a wiki blog as a learning resource expands students' practices and potentials of inviting everyday and informal experiences of students into classroom activities. However, when the teacher frame students experiences as relevant resources for academic learning activities, the new practices create tensions within the institutional framing of schooling. The layers of accountable practices, - to the social ways of engaging in the classroom community, existing norms and rules for disciplinary accuracy, functions as intermediaries in teacher – student interactions. These intermediaries are central dimensions when teacher and students renegotiate norms and expectations of accountable actions, objects and contributions in the ongoing classroom activities. Thus, the teacher's framing of opportunities to create intercontextuality i.e. relations among the layers of accountable ways of engaging with new digital resources, implies to renegotiate accountable norms and expectations of actions,

objects and contributions in and between the everyday and formal classroom practices. In this study, the ways students orient themselves to the teacher's framing to co-construct meaning displays the double dialogically in the teacher – student interactions as they engage in creating intercontextuality presented as renegotiating meaning within and among the layers of accountable practices.

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