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When documentation becomes feedback: tensions in feedback activity in Learning Management Systems

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ABSTRACT

Teachers' feedback via Learning Management Systems (LMSs) is studied within the subject of social studies at upper secondary school in Sweden. A qualitative study involved classroom observations within LMSs, gathering teachers' feedback on pupils' submitted assignments, and semi-structured interviews with six teachers. With the support of activity theory, the interest of the study was directed towards the tensions that arise in an activity system consisting of teachers' feedback actions in a digital assessment context. The results reveal tensions in the relationship between grading documentation in the LMS and the subject's traditions in the form of discussions, for example. Tensions were distinguished in the interaction between a school policy of using a feedback matrix and teachers' formative ideals. Tensions were also distinguished between teachers' need to legitimise grades and give feedback according to formative ideals. Finally, a tension was distinguished between the time available for providing feedback and teachers' formative ideals for giving feedback.

KEYWORDS

Feedback; formative feedback; social studies teaching; upper-secondary school; computer-aided teaching; Learning Management System (LMS)

Background and previous research

The study examines feedback given via Learning Management Systems (LMSs).¹ In recent years, the digitalisation of Swedish schools has resulted in LMS taking their place as a work tool in the classroom. The term “platformisation” has been used to describe an altered practice that affects the work of pupils and teachers as LMSs become part of everyday life in schools (Hillman, Bergviken Rensfeldt, & Ivarsson, 2020). The study reveals an aspect of teachers' assessment work in what could be described as a shift from an analogue classroom to a digital one. Interest is directed towards teachers' feedback actions and the conditions in the form of tools, norms, traditions, and roles that create a framework for these actions (Engeström, 1987). The first author's thesis (Grönlund, 2019) highlighted several feedback activities that were similar in both analogue and digital contexts. Considering the development towards an increasingly digital school that has gained momentum through the covid-19 pandemic, it is of particular interest to focus on differences between the contexts. This article includes a more in-depth analysis of a feedback activity that could only be discerned in the digital context – *the documenting activity*.

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Approximately 80% of pupils at Swedish upper secondary schools have access to their own computer for their schoolwork and they have been used extensively in social studies (Skolverket, 2016). Erstad (2008) believes that this technological trend can work as a catalyst for educational changes. The digitalisation of schools can bring about pressure to change in terms of both subject content and didactic processes within the subject, such as assessment, which is of interest in this study. When it comes to digitalising schools, a real need for classroom research is described (Islam & Grönlund, 2016; Olofsson, Lindberg, Fransson, & Hauge, 2015).

Previous research has also addressed the need for research into formative assessment in different subjects, for different age groups and with a focus on different assessment actions (Hirsh & Lindberg, 2015). In formative assessment both teachers and students use evidence to make decisions that can enhance learning. Central aspects are students' participation and understanding of goals and quality criteria as well as teachers' and students' feedback actions (Black & Wiliam, 2009; Pryor & Crossouard, 2008). Feedback has the potential to enhance students' learning if it is elaborated, forward-looking, and boosting the students' self-regulation. However, previous research shows that feedback in which the focus is on the pupil as a person or that attracts comparisons, such as grade level, does not support learning (Hattie & Timperley, 2007; Shute, 2008). In this study, feedback refers to information given by teachers to pupils about any aspect of their performance or understanding in relation to a specific assignment. Feedback is the part of the teaching process when pupils have moved on from instruction and receive information in interaction with the teacher about their performance or understanding, and/or how they can progress in their learning. This definition is based on Kluger and DeNisi (1996) and Hattie and Timperley (2007).

Research and evaluations also emphasise the potential for formative feedback that is assumed to exist in the digital school when communication about the pupil's assignments can take place in an LMS. The opportunities for continuous improvement offered by digital technology bring greater opportunities for assessment and feedback during the working process (Erstad, 2008; Islam & Grönlund, 2016). Interest is therefore directed below towards the interaction between feedback as part of the assessment process and the digitalised school, in which LMSs play a central role.

Feedback in learning management systems

An LMS can be described as a system in which both administrative and pedagogical aims are intended to be achieved. The documenting function is presented as a strength, and such a system is an effective way of disseminating information (Lindberg, Olofsson, & Fransson, 2017; Samuelsson, Brismark, & Löfgren, 2018; Wasson & Hansen, 2014). Critical aspects and challenges also emerge in relation to using LMSs. One common feature is that technical deficiencies are seen as a problem and that working with LMSs is time-consuming (Lindberg et al., 2017; Lochner, Conrad, & Graham, 2015). According to several studies, teachers feel that they lack influence over the implementation of LMS (Lochner et al., 2015; Stödberg & Håkansson Lindqvist).

The functions and tools offered by the system affect the teacher's options and didactic decisions. One clear difference when feedback is provided digitally is that it

becomes entirely text-based, whereas feedback in traditional study environments also includes discussions with the opportunity to ask questions and to use body language and facial expressions, which give the feedback a context (Wolsey, 2008). In an interview study about upper secondary school teachers' use of digital tools, it transpired that they found writing digital comments problematic because the feedback did not provide any dialogue with students (Wasson & Hansen, 2014). A study on upper secondary school teachers' writing practice described a school's work with feedback over the course of three years. Both head teachers and teachers expressed a desire to digitalise feedback. After three years, some teachers were satisfied with this practice while others had switched to giving oral feedback. The reasons given were that writing was time-consuming and it was unclear how the feedback was received by pupils. One of the study's conclusions was that digitalisation had created a dilemma between oral and written practice in which the relationship with pupils is perceived to be supported by an oral practice, while digital writing drives teachers' feedback in a more formal direction which can also contribute towards greater legitimacy when everyone does the same. The reviewability created by digital writing is described as a barrier to establishing good relationships (Annerberg, 2016).

Selwyn (2011) depicts LMS as contributing towards a standardisation of teaching through the perception of best practice which is conveyed in various ways within these systems. There is an emphasis on objective-driven monitoring and a focus on results, influenced to some extent by the data demanded by the authorities in the measurement culture that has evolved (Ball, Maguire, Braun, Perryman, & Hoskins, 2012; Selwyn, 2011). The standardisation that is both supported and facilitated by LMSs has been described in relation to feedback. Bailey and Garner (2010) described how teachers experienced a sense of frustration when standardised, more formal feedback was introduced within higher education. Another study shows how new templates that digitalisation brought had a steering effect on teachers' written assessments (Mårell-Olsson, 2012). Students write more text in a digital environment, which can mean more written feedback work for teachers. Similar feedback is often given to many students, and one strategy for dealing with the increased demands for feedback involves creating a "bank" of comments that can be copied and pasted into the feedback text (Wasson & Hansen, 2014).

Tensions in the relationship between the LMS and a formative assessment practice are described by Misfeldt et al. (2018). The learning objectives formulated within the system did not fit with the practice that was developed. The researchers concluded that the formative assessment processes include a dialogical element and the LMSs need to be developed in this respect. Another tension was related to the view of the pupil. The teachers in Misfeldt et al. (2018) believed that the focus on learning objectives and summative assessment in the LMS objectified pupils. LMSs have also been criticised for conveying the norm of learning as a product rather than a process (Dirckinck-Holmfeld & Ræbild, 2017), which can also be said to constitute a tension in relation to formative assessment. The aim of the study was formulated in view of the need for research into both aspects of formative assessment within various subjects and contexts and the change that using LMSs has involved.

Aim

The aim of the study is to highlight tensions in a feedback activity when feedback is provided in Learning Management Systems (LMSs). This is studied within the subject of social studies in upper secondary education. The research question is:

What tensions can be discerned when the motive for teacher feedback is to document grading data?

Context

Swedish upper secondary education takes the form of courses. Within the subject of social studies, all upper secondary pupils study at least one course. On certain upper secondary programmes, the subject includes several courses. The introduction of LMSs in Swedish schools has been an issue for the school organisers, either the municipalities or the school companies, and no state guidelines have been issued. However, these systems are very common in upper secondary schools and have often been introduced in connection with schools providing every pupil with a computer. LMSs include a course space for every course in which teachers and pupils participate. The teacher can publish information and instructions and can give feedback on the assignments submitted by pupils via the system.

The three LMSs used in the study have similar functionality for providing feedback. When pupils submitted texts in the system, there was the option of using grading via a drop-down menu to give a grade and enter text comments in a text box. If the teacher chose to download the pupil's text to their own computer, there was also the option of writing comments in the pupil's text and then re-uploading it. In addition, there was the option of using a matrix with the national assessment criteria, called Knowledge requirements.² These are written out for levels A, C and E. An F grade is a failure, and the grades B and D are assessed by the teacher in relation to the criteria for the next higher grades. The various levels are differentiated with progression phrases, such as "in basic terms", "in detail" and "in detail and in a balanced way". When the matrix in the LMS is used to give feedback on an individual assignment, the teacher selects the relevant criteria text for different aspects of the pupil's performance. These criteria are divided up in different ways in the different LMSs, and the aspects that the teacher must select vary between 5 and 12 "sub-criteria" for the same course.

Since the new curriculum was introduced in 2011, the strategy-focused model for formative assessment (Black & Wiliam, 2009) has had a major impact in Sweden and it has also formed the basis for implementing formative assessment in several Swedish municipalities. On the National Agency for Education's website there is a wealth of support material where formative ideals such as the importance of clear goals and quality criteria, forward-looking feedback and adapting teaching to the student's needs are prominent, for example instructions how to interpret the curriculum when it comes to assessment (Skolverket, 2018).

Theory, method, and implementation

The study is methodologically inspired by ethnographic methods and netnography (cf. Berg, 2015; Hammersley & Atkinson, 2007). The study's theoretical perspective is activity theory (Engeström, 1987; Leontiev, 1977/1986).

Theoretical perspective

The basis for activity theory is found in Vygotsky's early works. Central to the theory is to link the individual with the social structure (Leontiev, 1977/1986). Activities are described as collective systems in which people deal with tasks through goal-directed actions to satisfy societal needs. These actions are both motivated by and recreate the system. The objects of activities emerge in the interaction between the individual and the collective. Activities include contradictions that give rise to tensions in the form of disruption and conflict, which constitute a driving force for change (Engeström, 1987; Leontiev, 1977/1986). The emphasis on contradictions is one reason to use the theory in a study of feedback. Contradictions can arise when new tools are used, for example in the form of an LMS or when the conditions change in the form of new syllabi or grading systems.

According to [Figure 1](#) below (Engeström, 1987), an activity consists of a subject that acts using mediating tools, such as language or an LMS. The LMS mediates the teacher's feedback for example through the possibility to use a matrix, which will affect the way the feedback is perceived by teachers and pupils. Central to the activity theory perspective is an emphasis on the importance of mediating tools. They are used in people's actions to change their surroundings and they also change people's thinking and behaviour (Leontiev, 1977/1986). In this study, the functions in LMSs are tools. Actions are directed towards an object that can be described as the activity's motive. Within the study, the teacher carries out feedback actions to achieve a result. These actions are affected by conditions, which are characterised by the history of the activity. The conditions consist of the community that the activity includes, the rules, norms and

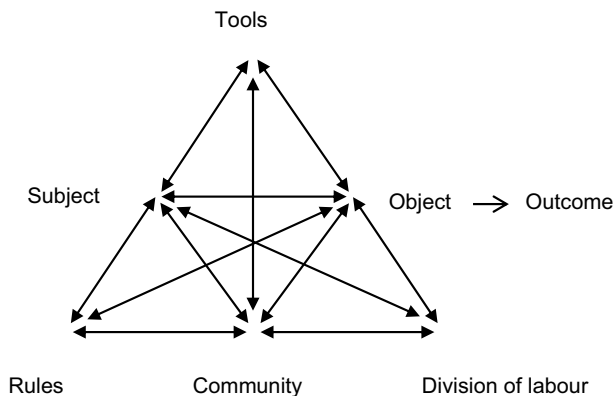


Figure 1. Activity system (cf Engeström, 1987, p. 78)

traditions that characterise the activity, and the prevailing division of labour within the activity. In our analysis, we have sought to distinguish the motive behind the actions (which constitutes the object of the activity). This provides an understanding of why teachers do what they do, and highlights tensions in the activity.

The way in which teacher's feedback actions are influenced by conditions such as norms, assessment traditions, institutional circumstances and roles and work distribution within the community can be distinguished in both this study and previous research (cf Crossouard, 2009; Havnes, Smith, Dysthe, & Ludvigsen, 2012; Lee, 2014).

Method

Selection of teachers

All social studies teachers in a municipality in central Sweden were asked by email whether they would be willing to participate in the study. Four teachers who used two different LMSs registered their interest. Two other teachers from a municipality that were using another platform were also willing to participate. See [Table 1](#) for a description of the participants. The data collection process began with informal discussions, in which the first author attempted to get a picture of the teachers' practice.

Observation and collection of written documents from the LMSs

The data material was collected during the spring semester of 2016 as part of the first author's thesis project. The first author was given access to five of the teachers' course space in the LMSs for 2–5 months.³ Within the LMSs, the first author was able to follow the publication and submission of assignments, feedback on assignments, and messages and instructions from the teacher.⁴ Observations could be carried out without the researcher's physical presence at the school. No communication has taken place in the LMSs between the researcher and the teachers or pupils. The observations have been documented to some extent in the form of screen dumps and field notes, serving as notes and examples during the interviews.

Working with netnography (Berg, 2015), as – to a certain extent – is the case with this project, offers different opportunities to more traditional ethnographic methods. One difference is the access to both contemporary and archived interactions. This means that a large body of material is made accessible, from which a selection must be made. The materials that were made available in the LMSs consisted of assignment instructions, submitted pupil assignments and feedback from teachers on 57 class sets⁵ of pupil assignments from 11 classes. The age of the pupils was 15–17 years. These documents were downloaded or received by email and subsequently anonymised. A delimitation in terms of assignment format was carried out to reduce the quantity

Table 1. Participant data.

Teacher	Gender	Year in profession	Schools	Participating classes
A	Female	8	Private	2
B	Female	10	Municipal 1	2
C	Male	17	Municipal 2	1
D	Female	25	Municipal 3	2
E	Male	3	Municipal 4	2
F	Male	2	Municipal 5	2

of data material. The LMSs contained feedback on several different assignment formats, such as group assignments and written tests. However, the most common assignment format – and one which was included in all participating classes – was written individual assignments, and this format was therefore chosen. These written assignments could consist of shorter or longer texts with varying degrees of complexity, from short assignments completed during a lesson to more extensive examples such as reports. In most cases, these assignments were carried out individually and submitted via the system. The selection from each teacher included one to three assignments per class, totalling 21 assignments from 11 classes. We sought variation based on each teacher's practice in the selection of assignments. Six assignments were selected from each class set for analysis. This selection was guided by a desire to represent the variation in teachers' practice for example concerning scope, subject area and/or the tools for feedback that have been used.

A review of the material showed that the feedback in the LMSs had been given using three tools, which were sometimes combined. The analysis included feedback given to 66 pupils using the matrix tool, to 107 pupils using the text comments tool and to 18 pupils using the grading tool. The content of the feedback was categorised based on four categories: a focus on the assignment, a focus on the learning process, a focus on autonomy and a focus on grades. These categories were inspired by Hattie and Timperley (2007) and Orrell (2006).

Interviews

To distinguish the goals of the teachers' feedback actions, interviews were conducted with the six teachers. During these interviews, authentic examples of the teachers' feedback were used as a starting point for open questions in a semi-structured interview. The interviews lasted for 75–90 minutes each. They were transcribed with the aim of capturing the content of the informants' statements.

The total material thus consists of collected written assignments with feedback, individual qualitative interviews, field notes from informal discussions, and field notes and screen dumps from the observations in the LMSs.

Analysis of actions and conditions

To begin with, the material was read through, and empirical notes were made based on the question "What is this about?". This was applied to the material both as a whole and broken down into the various tools used (grading, matrix, and text comments). The aim was to become familiar with the material. An analysis was then carried out in which the

Table 2. Operationalisations of the activity theory concepts.

Actions	What does the teacher do? What does the teacher aim to achieve by doing this?
Tools	Which tools are used in/form the action?
Rules	Which explicit or implicit regulations, norms, traditions or conventions appear?
Community	Who are the participants? What characterises the interaction between the participants?
Division of labour	Who does what? Which roles can be distinguished?
Object	What are the motives of the activity? What gives the activity its form and direction?
Results	What does the teacher want to achieve?

activity theory concepts served as a starting point for a concept coding process (Kvale & Brinkmann, 2014). Table 2 shows the questions used to operationalise the concepts.

The divided-up material was analysed by asking the above questions and by using thematic analysis within the concepts. The concepts were also applied against the entire material in the form of codes in the margins of field notes and interview transcriptions. The work was carried out in interaction between the theoretical framework and the empirical material to distinguish patterns in the form of activities. Distinguishing the object(s) using questions such as “What are the motives of the activity?” and “What gives the activity its form and direction?” was a central aspect of the process. The goal-directed actions carried out point towards the motives of the activity. The research was guided by the ethical guidelines from the Swedish Research Council (Vetenskapsrådet, 2017). Both teachers and students have been informed of the purpose of the study and they have given written consent to participate. No names of municipalities, schools, teachers, or students appear in the text. The data material is stored locked at Linköping University, and it has only been used for research purposes.

Results: the documenting activity

In the documenting activity, the object that teachers believe they should achieve is to document grading data for every pupil. The objective of the teachers’ actions is to ensure that this data is documented for the school’s and the teachers’ needs, or to comply with the school’s policy. In this activity, the same information that constitutes the teacher’s grading documentation also becomes the feedback that is given to pupils.

Figure 2 uses the activity theory triangle (Engeström, 1987) to provide an overview of the documenting activity.

The teacher is the subject that directs its actions towards documenting grading data to meet the school’s or the teacher’s own need for documentation. This documentation takes place through the teacher filling in the LMS matrix with or without text comments. The school, pupil and parents read this documentation. The community also includes colleagues at the school. Of particular interest are the conditions in the form of rules, norms and traditions that appear in the activity, as well as the tools and functions provided by the LMSs.

The most prominent conditions for the analysis that will be presented are functions in the LMSs, the subject of social studies’ traditions, the matrix policy, formative ideals, norms about the importance of transparency, the time available for feedback and the one-way communication that prevails in the LMSs.

Clear tensions have been distinguished in the relationship between documentation using the LMSs functions and the subject’s traditions. Tensions were also distinguished in the interaction between the school’s matrix policy and teachers’ formative ideals. There are additional tensions between the need to legitimise grades and the need to give feedback in accordance with formative ideals, as well as between the time available and the formative ideals expressed by teachers. These tensions will be described below.

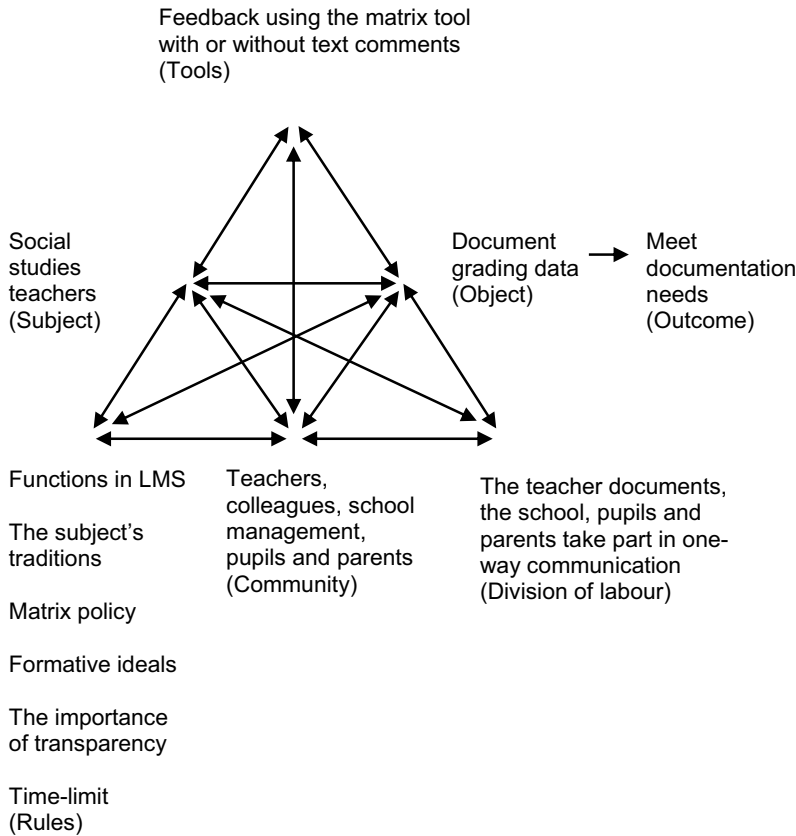


Figure 2. The documenting activity. The concept from Figure 1 in bracket (cf Engeström, 1987)

Grading documentation and subject traditions

When the LMSs functions are used for documentation, it is important that everything that contributes towards the grading is documented in the system. One goal of this documentation is to ensure that the school has access to the grading data. Teachers describe the documentation as a kind of security function, and teacher A says:

Transparency, that someone else should also be able to interpret and follow how I've set this grade. After all, I could drop down dead before doing the grading, and if so, someone else could, like, do it for me. (Teacher A)

Another goal of the teachers' actions in the documenting activity involves being able to use transparent documentation to reinforce the legitimacy of their grading. The expression "having a way out" was used to describe how having all the data reported openly in the LMS feels like a source of security against being called into question. Hence, the teacher has a need that can be met using the documentation in the LMS.

To ensure fair and comparable documentation of the grading data, the teacher needs individual information about all pupils. This can be seen in the teachers' statements about feedback in the LMS being best suited to assignments that everyone carries out at the same time. LMSs contribute towards a norm that all information about the pupil's

performance must be collated within the system. This is because the systems feature several functions that can only be used if all the information that is regarded as the basis for grading is held in the system. For example, this involves functions stating the level of goal attainment for a pupil.

A tension can be distinguished in the relationship between the LMSs documentation functions and the subject's traditions. The democratic fostering tradition of the subject of social studies includes learning activities such as discussions and classroom debates. These learning activities are described as not being suitable for documentation in the LMS, since the teacher does not obtain information about all pupils in the group. The more informal observations that can be made based on activities in the classroom appear to be a type of data that is hard to document in the LMS.

Social studies also have a tradition of addressing current events within society (Olsson, 2016). As a result, the subject is described as unpredictable and difficult to plan. The transparency created by the documentation in the LMSs seems to require more long-term assessment planning, in which the teacher has already decided at the beginning of the course on which occasions the various knowledge requirements will be tested. This can present a dilemma in relation to the opportunity to set aside teaching time to address current events when they happen. We interpret the teachers' reasoning in connection with this as an indication that planning work and assignment design can be affected by the practice that develops when LMSs functions are used for documentation. The transparent documentation that the school gets access to, and that can also reinforce the legitimacy of grading, thus involves a tension in relation to the subject's tradition of learning activities in the form of classroom discussions and monitoring current affairs.

Contested matrices and formative ideals

Several of the schools had policies that involved using the matrix tool for feedback and following the school's policy appears to be a goal of the teachers' feedback actions. In the matrices included in the LMSs, parts of the national grading criteria were colour-coded as feedback on assignments (see [Appendix A](#)). Different perceptions of matrices among colleagues were reported both at schools with a matrix policy and at schools where their use was optional. One teacher describes his uncertainty about whether teachers should go along with the implementation of a policy for using matrices at the school where he works. He says: "We'll have to see what teachers have to say about it, then, whether we go along with it or not". (Teacher F). At another school a teacher explains that although it has been decided that matrices will be used, "nothing's been said about what happens if we don't use them". (Teacher C).

The matrices are described as being hard to use – "awkward" and "inaccurate" (Teacher C). They are also described as being open to interpretation for both teachers and pupils, with several teachers using them reluctantly. One teacher has the following to say about matrix feedback: "No, but I'm working with it because we have to". (Teacher B).

Matrices were also described as problematic in relation to pupils, who draw their own conclusions about their position ahead of grading based on matrix markings. Teacher B says:

It's a bit like, just click, and not do the feedback, because I mean, what does a matrix offer? But those teachers are now coming into conflict with the pupils when they start to count the matrix clicks: 'I've got three Cs and an E, so why are you giving me...?' (Teacher B)

The matrices are described as having weak information value for pupils, since they do not provide motivations for the assessments and therefore need to be supplemented with other feedback. Teacher B describes the matrix feedback as summative, and says:

'I think the pupils are like, they only focus on the grade and then it's not formative.'
(Teacher B)

The interviews uncovered formative ideals that feedback should be based on the individual pupil's needs to be able to strengthen their learning. There were also ideas about the importance of using feedback to strengthen the relationship with the pupil, and to influence the pupil's attitude towards schoolwork.

In the different LMSs, the criteria in the matrix are divided up into smaller sub-criteria. A practice appears to have arisen within certain subjects whereby teachers instruct pupils to work clearly towards individual sub-criteria. This is described as a problem in relation to social studies' traditions, where it is seen to be hard to work towards individual subsidiary knowledge requirements and it is often a matter of a holistic assessment. Teacher E says:

Then the pupils ask me 'Which box should I work with?', and then I say that social studies don't work that way. It's, like, very hard to just take out and try this little bit – instead, things often go together, like when you're talking about causes and consequences, you still must link it to economics or politics or something. (Teacher E)

Teachers' relationships with the matrix tool are a tension in the activity. The teachers use the matrices to follow the policy, even though they find the matrices difficult and time-consuming to use, and that they are not seen to support the assessment work or pupils' learning. They describe themselves as needing to develop, or that they need to adapt the teaching and feedback in line with the logic of the LMS and may seem to take the LMSs for granted at the same time as criticising them. The LMSs are described as being controlled from above, as an example, the division of sub criteria in the matrix can be changed without teachers being consulted or through a decision at administrative level. One teacher says: "Politicians say that matrices are good". (Teacher B). It seems like a "tug of war" among colleagues, between the teachers who resist and those who support and appreciate the use of matrices. One argument for using matrices is that they contribute towards transparency in terms of teachers' grading data.

Summative feedback and formative ideals

In combination with filling in the matrix, text comments can also serve the purpose of preventing the assessment being called into question.

Here, I knew in advance, because this pupil would ask me, 'Why is this not an A?', and then it can be good to actually point out what the shortcomings were rather than what the strengths were. (Teacher E)

The teacher chooses to emphasise the shortcomings of the work in the text comment, to avoid a discussion about the assessment in the lesson. Here is an example of a sequence from a text comment where the work's shortcomings are highlighted:

However, you only give an overview and are a little unclear when explaining the consequences from economic, social, and political perspectives.

There were comments about how the tone of the text feedback can be used to encourage the pupil to make more of an effort. The material also included examples of the matrix being filled in strategically so that the pupil will perceive the final assignment in the course as being of decisive importance, despite this not actually being the case. When the matrix was used in this way, it did not contribute towards the transparency that appeared to be important in terms of legitimacy. Instead, it was used to influence pupils' schoolwork. Here, a tension can be discerned between creating legitimacy through transparency and using the feedback to influence pupils' learning or performance.

When the LMS is used for documentation, it is important that everything that forms the basis for grading is included in the system. The feedback is given in the form of one-way communication to pupils, and they expect a response to all submitted assignments. This can represent a tension in relation to the time that the teacher can devote to giving feedback. Teachers say that it is hard to manage to give individualised text feedback, and here markings in the matrix with or without a standardised text comment that is prepared for every grading level can be a solution. They are made up of identical text comments that are varied for the different grading levels using the progression words from the criteria. One of the teachers says: "It all involves a bit of copying and pasting, too". (Teacher E).

The following example is an extract from a standardised comment for a comparative assignment in international politics. The italicised words are the progression words for the different grading levels in the national knowledge requirements.

In your assignment on international politics, you have described in a *detailed and nuanced* way how different political systems work and the causes underlying their function. You have also described in a *detailed and nuanced way* the consequences the nation's actions have on the world. In connection with these questions, you have given *well-founded and nuanced* arguments for your own opinions.

One difference in the text comments compared with feedback in an analogue context (Grönlund, 2019) is that text comments in the margin of the pupil's text were very uncommon. Instead, text comments were placed in a text box next to the pupil's submitted text. This is probably because it is more complicated in the LMS to write text comments in the pupil's text than to write them in a text box. Indications suggest that the way of writing text comments affects the content of the comments, since writing in a text box is characterised of a concluding, summative comment, in contrast to comments in the main text, which are of a more corrective, task-related character.

Both a grade-legitimising focus on shortcomings and standardised comments of a summative nature constitute a tension in relation to the formative ideals about

feedback that teachers express, in that the feedback should meet the individual pupil's needs and be able to reinforce learning.

Discussion

In the shift from an analogue to a digital classroom, we have focused on teachers' feedback actions using the LMS. A documenting activity appears as a summatively oriented activity in which the object has been formed by the teacher's or the school's need for documentation of the grading data for every pupil. According to our interpretation, the LMS has helped to form this activity. The functions that the system offers, in combination with a school policy on using matrices, mean that the feedback which is given becomes part of the school's documentation, and at the same time can constitute the individual teacher's documentation of the grading data. The intermingling that occurs between feedback and documentation contributes towards the feedback taking on a more summative character. The formative feedback does not appear significant in relation to documenting the grading data. Documentation did not emerge as an object in the subsidiary study in an analogue context. There, feedback was described as an individual teacher activity. Even if there was a need for documentation, it was not regarded as feedback since the documentation was carried out alongside the work involving feedback to the pupil.

In this study, the standardised text comments emerge as an opportunity for summatively oriented feedback with a focus on grading, and with documentation of the grading data as an important goal. They are described as timesaving, and this is supported by previous research (Annerberg, 2016; Wasson & Hansen, 2014). A tension can be distinguished between teachers' formative ideals about forward-looking text comments based on the individual pupil's needs and the standardised comments using language taken from the knowledge requirements (cf. Annerberg, 2016; Bailey & Garner, 2010). Annerberg (2016) describes a dilemma between formal and relational aspects of feedback practice – a dilemma which also appears in this study. Grade-legitimising feedback focusing on shortcomings in the pupil's work appear to contradict the formative ideals about feedback expressed by teachers.

On the one hand, the documentation within the system's matrices reinforces the legitimacy of the assessment by openly reporting all results. This can be linked to Mårell-Olsson's (2012) study, in which she shows how working processes with individual development plans are steered by the technology and the templates provided for digital documentation. Annerberg (2016) also highlights more formal writing using shared templates to create legitimacy when all teachers do the same, and this could explain why schools have introduced policies on the use of matrices. Greater legitimacy is a goal of feedback documentation in the documenting activity and emerges as a strength of using matrices.

On the other hand, our study shows a resistance among teachers to give feedback using the LMSs matrices. Here, the one-way communication that the LMS contributes towards stands out as a reason for this resistance. Another reason is that the matrices is oriented towards a summative judgment. The teachers talk about the importance of oral dialogue and formative feedback, and this has also been seen as desirable in previous research (Brookhart, 2017; Havnes et al., 2012; Wasson & Hansen, 2014; Wolsey, 2008). Other reasons for this resistance include the LMS being perceived as being controlled

from above, which is in line with previous research (Stödberg & Håkansson Lindqvist, 2017), and the matrix being seen as hard to use and interpretable in different ways by both teachers and pupils.

Another tension arises between the subject of social studies' traditions and the LMSs logic, where one example is that the structure of the matrix is not seen as appropriate for all learning activities within the subject. One interpretation is that platformisation also affects which teaching activities are carried out. Another interpretation is that the transparency of the grading data offered by the LMSs involve higher demands for long-term planning and thus less scope for dealing with topical societal issues.

The research on digitalising schools promotes the opportunities for formative assessment offered by digitalisation, for example through greater opportunities for giving feedback during the process (Erstad, 2008). This study is unable to confirm this when it comes to feedback in LMSs. One prominent feature of the feedback in the LMSs is that it contains a summative judgment. There are several different functions linked to the pupil's goal attainment, and matrices with knowledge requirements fulfil a central function. Teachers' didactic decisions are affected by the design of the system and tensions can be discerned in previous research between formative practice and the structure of LMSs (Dirckinck-Holmfeld & Ræbild, 2017; Misfeldt et al., 2018). The LMSs appears to reinforce the tradition within the subject and within upper secondary education of grading individual assignments.

In conclusion, we would like to point out a dilemma between clarity and a focus on grading in relation to the strategy-focused model of formative assessment and the structure of the LMS. One of the strategies for formative assessment emphasises the importance of clear objectives and success criteria (Black & Wiliam, 2009). A criticism of the strategy-focused model is the emphasis on transparency in relation to learning objectives and quality criteria as highlighted by Torrance (2012), who argues that this supports an instrumental approach to feedback. The success criteria that are built into the LMSs we studied consist of the national knowledge requirements for grading. At the same time, it is clear from previous research that a grading focus in feedback should be avoided since this leads to undesired effects, in relation to pupils' self-perception (Hattie & Timperley, 2007; Shute, 2008). The summatively oriented practice with the matrix as a tool reminds the pupil of knowledge requirements and grading levels with every assignment. In teachers' criticism of the LMSs, this appears as a problem in relation to formative ideals about avoiding a focus on grading in feedback.

The tensions that have been distinguished between summative and formative and between formal and personal can be seen as an indication that the various goals of feedback and the different roles they involve need to be clarified for both teachers and pupils. Previous research has emphasised the importance of the principles of feedback being made clear to pupils and that pupils and teachers need both knowledge of and a common language for feedback (Brookhart, 2017; Havnes et al., 2012).

Within all activities, tensions arise which can lead to the activity changing and developing (Engeström, 1987). In the documenting activity, we have pointed out tensions between the teacher and the tool, and between the teacher and the rules in the form of norms and traditions that characterise the activity. In the activity theory tradition, tensions are assumed to represent opportunities for change.

In the analogue context previously studied by the first author (Grönlund, 2019) feedback appears as an individual activity, while the present study features both discussions between colleagues and policies for feedback. The use of LMSs may have contributed towards feedback having become more of a common concern than was the case in the analogue setting.

The increased focus on feedback demonstrated by this study and the tensions revealed by policies on matrix use, for example, between a summatively oriented practice and an interest in formative assessment may possibly constitute conditions for changes to both policy and feedback actions in the long term. In the short term, we see it as important that teachers gain influence over functions in LMSs so that policies for use are more in line with teachers' perceptions of good practice.

Our approach is qualitative, and no statistical generalisations is possible in relation to the population in general. We try rather to make an "analytical" generalisation where the empirical result shall be linked to theories and previous research (Larsson, 2009). One limitation of the study is that it focuses only on feedback from the teacher to the student and thus does not provide any information about feedback outside the platform. An interesting focus for further research would be to conduct participatory action research together with teachers and classes to study feedback actions both on and off the platform. It would be interesting to distinguish contradictions when students' and teachers' actions meet by studying feedback from both perspectives in line with third-generation activity theory (cf. Crossouard, 2009).

Notes

1. Learning Management Systems (LMSs) are web-based systems that allow instructors and/or students to share materials, submit and return assignments, and communicate online (Lonn & Teasley, 2009, p. 686).
2. An example of a matrix can be found in [Appendix A](#).
3. In the case of the sixth teacher, direct access was not possible for administrative reasons. The teacher copied all relevant content and sent this to the first author, who also had the opportunity to observe the LMS on site at the school.
4. For a couple of the teachers, some of the observations were carried out retroactively since access to the LMS could not be obtained until some way into the school term. However, all material remains available throughout the entire duration of the course.
5. A total of approximately 1,500 pupil assignments.

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Appendix A. Example of matrix from LMS

Course: Social studies 1b

Red marking – Risks not achieving the knowledge requirement
 Yellow marking – Meets the knowledge requirement predominantly
 Green marking – Meets the knowledge requirement completely

Nivå E	Nivå C	Nivå A
Students can in basic terms give an account of and analyse the organisation and social conditions of different societies, and their underlying ideas.	Students can in detail give an account of and analyse the organisation and social conditions of different societies and their underlying ideas.	Students can in detail and in a balanced way give an account of and analyse the organisation and social conditions of different societies and their underlying ideas.
Students can also in basic terms give an account of human rights.	Students can also in detail give an account of human rights.	Students can also in detail and in a balanced way give an account of human rights.
In their analysis, students explain simple relationships and draw simple conclusions about similarities and differences between the organisation of different societies.	In their analysis students explain relationships and draw well grounded conclusions about similarities and differences between the organisation of different societies.	In their analysis, students explain complex relationships and draw well grounded conclusions about similarities and differences between the organisation of different societies.
In addition, students can in basic terms give an account of the importance of historical conditions and draw simple conclusions about contemporary social conditions, such as the development of working life, influence and are influenced by individuals, groups and social structures.	In addition, students can in detail give an account of the importance of historical conditions and draw well grounded conclusions on how contemporary social conditions, such as the development of working life, affect and are affected by individuals, groups and social structures.	In addition, students can in detail and in a balanced way give an account of the importance of historical preconditions and draw well grounded and balanced conclusions on how contemporary social conditions, such as the development of working life, influence and are influenced by individuals, groups and social structures.
Students can analyse social issues and identify some causes and consequences.	Students can analyse social issues and identify some causes and consequences.	Students can analyse social issues and identify several causes and consequences.
In their analyses, students with some certainty use the concepts, theories, models and methods of the social sciences.	In their analyses, students with some certainty use the concepts, theories, models and methods of the social sciences and evaluate them in simple assessments.	In their analyses, students with certainty use the concepts, theories, models and methods of the social sciences and evaluate them in balanced assessments.
Students discuss in basic terms causes and consequences, and also possible solutions to social issues.	Students discuss in detail causes and consequences, and also possible solutions to social issues.	Students discuss in detail and in a balanced way causes and consequences, and also possible solutions to social issues.
Students can give simple arguments for their viewpoints and in simple assessments evaluate the viewpoints of others.	Students can give well grounded arguments for their viewpoints and in simple assessments evaluate the viewpoints of others.	Students can give balanced arguments for their standpoints and evaluate with balanced assessments the views of others.

(Continued)

(Continued).

Course: Social studies 1b

Red marking – Risks not achieving the knowledge requirement
 Yellow marking – Meets the knowledge requirement predominantly
 Green marking – Meets the knowledge requirement completely

Nivå E	Nivå C	Nivå A
Students can in basic terms give an account of the rights and obligations of individuals in their roles as consumers, the relationship between household income and spending, assets and liabilities, and also the relationship between personal finances and the economy.	Students can in detail give an account of the rights and obligations of individuals in their roles as consumers, the relationship between household income and expenditure, assets and liabilities, and the relationship between personal finances and the economy.	Students can in detail and in a balanced way give an account of the rights and obligations of individuals in their roles as consumers, the relationship between household income and expenditure, assets and liabilities, and the relationship between personal finances and the economy.
In their work on social issues, students can with some certainty search for, examine and interpret information from different sources, report their sources, and make simple reflections on the relevance and credibility of the sources.	In their work on social issues, students can with some certainty search for, examine and interpret information from different sources, report their sources, and make well grounded reflections on the relevance and credibility of sources based on their purpose.	In their work on social issues, students can with certainty search for, examine and interpret information from different sources, report their sources, and make well grounded and balanced reflections on the relevance and credibility of sources based on their purpose
Students can with some certainty and in a structured way, express their knowledge of social studies using different types of presentations.	Students can with some certainty and in a structured way, express their knowledge of social studies using different types of presentations and express themselves independently in relation to the sources.	Students can with certainty and in a structured way, express their knowledge of social studies using different types of presentations and express themselves independently in relation to the sources.