Classroom research and classroom interaction
– changes in theory and practice

From studies in the history of research on teaching we learn that classroom interaction is based on the persistence of recitation or on very specific patterns of discourse (Mehan, 1979). And from studies on reform and innovation we realize that schooling traditions are hard to change (Cuban, 1993; House, 1979). Classroom interaction is a process based on human action in two senses. It is situated in a historically and socially constructed context, based on traditions as well as on ambitions to break with predominating patterns.

In this presentation we have the ambition to present and discuss changes in research on classroom interaction. We will compare a selection of studies from the 1970s to studies carried out around 30 years later. In our comparisons we are dealing with research perspectives and approaches as well as conceptions of results and their implications.

A recurrent issue in classroom research is the idea of context of classroom interaction. Is there a need to consider other events or influences when dealing with what is going on in the classroom? And if there is a need for that – what makes a context relevant for our understanding or explanation of classroom events and processes? An example is the way Hugh Mehan (1991) where he analyses the way school is sorting students by means of proximal and distal events and how distal events, such as decisions about special education alternatives, plays a part in conversations between school personnel and parents in the placing of students.
In this text we present different ways of conceptualising and investigating classroom contexts in a small selection of Swedish doctoral dissertations from the early 1970s and onwards. What is considered as relevant context and how is this context investigated in the empirical studies? Also, we want to discuss possible changes in the phenomenon of classroom interaction.

We are doing this for three reasons: First of all we have the ambition to understand how research on classroom interaction is constructing the researched phenomenon by means of perspectives and approaches chosen. Second, we want to compare the tools used for this construction. And third, we want to discuss eventual changes in the phenomenon of classroom interaction. It is our hope that this work will contribute to an increased reflexivity in classroom research. Besides that, we – as different generations of researchers are interested to consider what can be lost and gained in a conversation “between traditions”.

**Contextualising context in research on classroom and teaching:**

In different periods of educational research context has been treated in different ways. We will here present a brief review.

In early research on teaching, a main idea from a psychological point of view was to decontextualise processes such as learning and teaching. Looking at the first handbook of research on teaching (Gage, 1963) a predominant idea was to control for contextual variations in order to capture what works in teaching experiments. In order to understand teaching, there was, one argued, a need for decontextualising teaching processes.

A first instance: in order to avoid considerations of context, classroom processes were recorded and then cut into pieces – in micro elements. These micro elements were analysed as such, disregarding larger sequences, since knowledge about these larger events would disturb the reliability and validity of the categorisation of teachers’ and students’ actions.

A second instance: the debate on classroom research which dealt with how to categorise events and actions. Should we use a schemata of categories constructed in advance in some other context – or should we construct categories as a result of our investigations? Arno Bellack (1978) in his presentation of different ideologies of classroom research discusses such issues in relation to different strategies for analysing classroom interaction. Part of these analyses were constructed in order to put away context in the explanation of classroom events.
Contexts were brought into classroom research in two different ways during – in broad terms – during the 1970s. The first way was the ethnographic or anthropological turn, where a main task was to identify the context of schooling in order to capture the meaning of it. “The hidden curriculum” by Philip Jackson is an example of that, where the ethnographer visualises what was invisible in decontextualised studies on teaching and interaction. In many respects, this approach was carried out and argued for by American researchers, interested primarily in the concepts of culture, in an anthropological sense (such as John Gumperz, Jenny Cook-Gumperz). The second way was by means of theories underlining societal aspects of schooling such as in cultural studies of schooling based on resistance theories (e.g. Paul Willis’ study in Learning to Labour) or reproduction theories, where classroom interaction is situated in social conditions. The work of Bowles and Gintis (1976, 1980) are examples of this type of contextualisation, where the societal structure is pushing and pulling the actors in order to be reproduced.

During the 1980s a second turn to understand classroom interaction was carried out under the heading of “teachers’ thinking”. In order to understand teaching we need to understand the teacher and her/his thoughts and actions (Wittrock, 1978; Clark & Peterson, 1986). In early decontextualised versions the task was to construct the cognitive processing of experienced teachers’ ways to handle their tasks. This modelling of the teaching expertise was then to be compared to the modelling of novice teachers. The differences presented by such comparisons were then to be dealt with in teacher education. This decontextualisation was criticised by e.g. Carlgren & Lindblad (1992) who presented ways to capture teaching in a societal and historical context. Another criticism of and in teacher thinking studies was presented by symbolic interactionists – focussing on differences in perspectives among students and teachers and their interaction strategies and negotiations as social events, see e.g. Peter Woods (1983; 1990). In similar ways life historians such as Ivor Goodson located teachers’ work in the context of their biographies.

During the last decades the linguistic turn has had a large impact on the studies of classroom interaction. The early inspiration for this work was in many respects oriented toward language use in a linguistic sense, as expressed eg. in the works of Courtney Cazden (1972) and Hugh Mehan (1979). A major work in studies of literacy and schooling was Shirley Brice Heath’s (1983) Ways with words, an anthropological study of literacy practices in- and outside of schools in two communities in the United States. In these studies, the notions of context are dealt with in quite different ways. Mehan’s work explicitly argues for a constitutive view of
context, presenting the need for bottom-up-work. The actual work, however, is concerned with formal turn-taking structure, where context in practice is sequential relationship in primarily teacher turns. Heath’s work practically is about context, in the empirical sense. In its theoretical elaborations, however, the work is not as concerned with the issue as eg. Mehan (or, for that matter, Willis, 1977).

In the development of the nineties and early 2000’s, the interest in verbal interaction in the field of classroom research was fueled by a rapidly growing general interest in educational research and practice for constructionist and socio-cultural theories - where interaction plays a significant role. The breakthrough of constructionist theory co-occurred with a broad availability of video cameras – which in turn inspired a large number of classroom researchers to go out filming in classrooms. In the still increasing number of classroom research work in this tradition, issues of context are not generally a primary concern. Where context is discussed, it is often done in relation to situating talk in an interactional context. A research group where this kind of work has been carried out successfully for long time is the Santa Barbara Classroom Discourse Group (eg 1992). Under the supervision of Judith Green and Carol Dixon, this group has spent a considerable amount of work on expanding the notion of context from “within-turns” in the more linguistically oriented studies, into a notion of context where activity sequences and artefacts are taken into account (see Nuthall, 1997, for a review).

**Swedish studies on classroom interaction:**

Above, we have presented a brief review of the meaning of context in different periods of classroom research painted in broad strokes. Now, we will look more in detail at some Swedish studies on classroom interaction from the 1970s and onwards. We will use a few well known examples from the early period of Swedish classroom research. The selection is as follows:

1. Ulf P Lundgren (1972): Frame factors and the teaching process

It is a small number of studies. It is our idea to add a few doctoral studies from different periods in a revised version of this paper. However, to us this shows a variety of approaches with Swedish classroom research.

Frame factor and the teaching process

Urban Dahllöf (1967) presented in his seminal work on educational planning and the teaching process the argument that we need to capture (a) the teaching process in order to understand the results of schooling, and that the teaching process is influenced by time frames as well as selection of students. Based on this argument he showed problems in studies of the comprehensive school results compared to results from the “realskola” since the different teaching processes differed in curricular content.

Based on Dahllöf’s study Ulf P. Lundgren developed his doctoral thesis Frame factors and the teaching process which he presented in 1972. His basic argument is that teaching as a process is a process within limits which constraints what is possible to do for the teacher. He also verifies Dahllöf’s idea that the teacher constructs a steering group among the students that determines the pace in the teaching process.

The context of the teaching process is of vital concern in the thesis. This context is defined in a specific way – it is decisions about the frames for teaching that so to say intervene in the classroom. Such decisions is constraining, as concerning the selection of students and about the time available for teaching a certain subject or a specific moment, or governing, such as curriculum construction and so forth. In a word; the context is an educational reform context, where the state is changing the directives and the premises for teaching.¹ This reform context identifies what are relevant frames as well as relevant results for teaching.

Putting such a frame factor context into classroom interaction – and the implications of such frames for rules and roles in this interaction – is a way to say something more about teaching that it is a process that can be carried out in different ways. It says that the context is at work in the classroom – a multitude of decisions on school laws, curricula, and so forth are having a

¹ Later on – e.g. in the book “Att organisera omvärlden” from 1979 Lundgren elaborates the frame factor model when considering the socio-historical context for the making of curricula and educational reforms.
multitude of implications for what can be done in the classroom. Thus, the state is present in the classroom and is constructing relations to the teachers and to the students as well as the content of their interaction.

Given this way to conceptualise the context of classroom interaction the frame factor approach demands ways to identify results on one side in relation to educational goals, and to identify relevant frames – to know implications of state decisions on education. This context is there irrespective of the actors and will have implications for the premises, processes and outcomes of the educational system.

The school class as a social system:

The doctoral thesis of Staf Callewaert and Bengt-Arne Nilsson started in 1972 as a development work where the researchers (based on Talcott Parsons ideas on the school class as a social system) should analyse the school class and develop alternative ways to construct this as a system. However, much inspired by theoretical notions on ideological state apparatuses (Louis Althusser, 1971) and symbolic violence and cultural and social reproduction (Pierre Bourdieu and Jean-Claude Passeron, 1971) they put classroom interaction in the light of structuralistic theories. Thus, the predominant context is a societal structural context that makes the actions of teachers and students, in the ethnographic accounts presented, as comprehensible and rational actions, though they seem to be absurd as such.

The relevant context for understanding classroom interaction is in the Callewaert & Nilsson case the societal structure and the objective need to reproduce this structure. This context works behind the back of the actors that do not penetrate the rationalities of their actions, but are trying to survive in a strange institution that has vital functions to carry out in society. In their study they in one way put in this context in the analyses. But they also consider the composition of the school class in “social class analytic” terms by informing themselves about the students social background and what that means for their schooling experiences and strategies. They also analyse implications of educational reforms for individualisation as the making of isolation of individuals in the school class.

\[2\] The concept of penetration is a way to say hello to Paul Willis and his Learning to Labour study (1977) where the lads are semipenetrating the school culture in their resistance to schooling.
For Callewaert & Nilsson context is of vital importance for understanding classroom interaction. This context is the societal structure and the reproduction of this structure as understood by certain theories. However, and this is distinct for their theorizing based on Bourdieu & Passeron, this context must be unrecognised or mis-recognised by the actors in the classroom in order for their interaction work in a socially functional way. Thus, the context relevant for the analysts must be irrelevant for the actors.

Bergqvist (1990) Doing schoolwork: task premises and joint activity in the comprehensive classroom

Bergqvist (1990) study is one of few substantial investigations of classroom interaction in the lower secondary classrooms of the Swedish Lgr 80-school. She studies a number of lessons in grade seven in a Swedish comprehensive school, using audio-taping and participant observation as her primary methods. Theoretically, Bergqvist has a view of education as a constitutive institutionalized communicative process. Thus, she is one of the first (if not the first?) conducting a Swedish classroom study within a constructionist framework. This being so, it is clear that her explicit discussion of context, compared with Lundgren and Callewaert & Nilsson, is more or less non-existent. Interestingly, however, she frames her study very markedly against the background of the expectations on classroom work as expressed in national curricula.

It should come as no surprise that she finds that what goes on in the classrooms, studied in her case in the ways tasks are constructed in the classroom, is something quite different than what the curricula say. Her results she argues that the student work, of which there was a substantial amount, was instrumental and procedural and carried out under unclear premises (Bergqvist, 1990, p. 119). The students in her study transformed the seemingly investigative tasks into figuring out what the teacher was after. She concludes (p. 121) that “there is little congruence between the pervading features of the rhetoric in the comprehensive school and what is actually carried out in the classroom setting.” Bergqvist’s study is new and groundbreaking in its theoretical perspectives, but traditionally Swedish in the way it deals with context as a matter of curricular expectations formulated by the state. Here, her work seems to be inspired, whether explicitly or implicitly, by the previously discussed work of Ulf Lundgren.
Sahlström (1999): Up the hill backwards.

The aim of Sahlström (1999) was to study the relationship between participation in classroom interaction and constraints and affordances for creating equity in classrooms. How is participation in classroom interaction organized, and how can one develop ways of recording and analyzing it in order to show its organization? Based on a social constructionist perspective, an analytic approach of interaction analyses of constitutive interaction, with a focus on participation, was established. For data collection, Sahlström uses a video camera at front of class. In addition, he uses student microphones at four different student desks, recorded onto four different sound tracks. Sahlström’s analysis is done at two different levels; overall descriptions of 163 lessons; and close analysis of excerpts of nine lessons, amounting to approximately 25 minutes. Sahlström’s analysis of the interaction shows that classroom interaction can be regarded as an interrelationally constituted participation economy. In relation to the main aim of the dissertation, the analysis demonstrates in several ways that the analyzed classroom interaction is organized in ways that do not ensure equal opportunities for participation. Rather, the turn-allocation organization in the analyzed classroom interaction seems to be geared toward the constitution of differences.

In terms of context, Sahlström’s work is both similar and different to the work of Bergqvist. It is similar in its theoretical orientation (there are differences, yes, but in general both these theses are constructionist in their orientation), and it shares an interest in student’s experiences of classroom interaction. Sahlström’s work also discusses curricular expectations. The discussion of interaction and curricular expectations carries a smaller load of the overall analytic work, but in principle, one can see the tradition from Lundgren and Bergqvist also in Sahlström’s work.

The differences concern the interest in social reproduction, where Sahlström is explicit – both in his ambition to say something about these issues (as Mehan, 1979), and in his realization that this – to say something – will be very difficult to within the ethnomethodological frame he has chosen for his work. In realizing this, Sahlström explicitly discusses and problematizes the way Callewaert & Nilsson approached these issues. He then more or less leaves issues of reproduction in the actual analysis, where the most discussed and analyzed context is “within-turns” (see above). Thus, one could argue that Sahlström’s work expresses a certain longing for wanting to be able to discuss context in a broader way, but mostly abstains from doing so (which is wise within his framework), whereas the ten years earlier work of Bergqvist has a more visible inspiration of previous work in Swedish classroom research.
Two more recent examples: Michael Tholander (2002); Johan Liljestrand (2002)

Finally, we would like to just briefly address the way context is dealt in two even more recent Swedish dissertations: Michael Tholander’s (2002) “Doing Morality in School” and Johan Liljestrand’s (2002) Klassrummet som diskussionsarena. In these two dissertations, interaction in school is studied as a forum for “doing morality”, and for “doing discussion”. In Tholander’s case, the framework is explicitly ethnomethodological, and the school setting for his study is not the driving force behind his work. Liljestrand, in turn, also writes himself into a ethnomethodological framework, but in his case, the interest for educational matters is made more explicit.

In these two dissertations, the context focused for the studied interaction is foremost the interaction itself, with a focus on sequential context. Tholander frames his analyses using morality, whereas Liljestrand discusses philosophical notions of interaction and citizenship. Both dissertations, however, begin with brief, in Tholander’s case very brief, presentations of curricular expectations on the processes studied in the texts. Neither Tholander nor Liljestrand make much of the curricular context in their analyses – compared to Sahlström and Bergqvist, for instance – and decide to focus their analytic skills on the interaction. The interest for social structural context and social reproduction found in Callewaert & Nilsson’s and Sahlström’s work is also completely absent in these two recent classroom research dissertations.

What about context?

The Swedish doctoral theses presented here have quite different ways of conceptualising context. Lundgren and Callewaert and Nilsson are working with an externalistic concept. They construct this extern context in two different ways: Callewaert and Nilsson look at structural theory and Lundgren turns to the state and education reform decisions as contexts. Bergqvist and Sahlström turn to an internalistic concept of context – without relinquishing their interest in external contexts. In Tholander and Liljestrand, the focus is even more clearly focused on context-within, in particular in the analyses themselves.

Thus; what we have seen in our presentation of these five dissertations – which is more an appetizer of what there is to come than a final analysis – is a marked shift from an interest in external contexts for classroom interaction, with a general concern for the need of discussing
relationships between societal structures and classroom interaction, to an interest in internal contexts, in context-within-interaction, with a much less general concern for the need of discussing issues of context and interaction. Today, one could argue that the micro-oriented classroom researchers argue that the relevant context will show in the interaction, if this context is of any relevance to the participants – and for the analysis. In the seventies, it was the task of the interaction was more a matter of analyzing the interaction carefully enough, so as to find the manifestation of the context presumed to be of relevance.

This trend obviously has a number of consequences, and how one views these depends very much on one’s theoretical position. In one way, the recent approach where interaction is taken at face value and with a meticulous attention to detail provides analyses of classroom interaction which does justice to the everyday world lived and experienced by the studied students and teachers – issues that have not been present in the way one could expect in previous classroom research. On the other hand students, teachers, classrooms and schools could be argued to live in a world where matters of relevance concern a larger domain than what happened in the previous turn-constructional unit – they could be argued to live in a world of continuously reproduced injustice, which should be a major concern for researchers. With respect to this discussion, the two generations of researchers represented by the authors here – Lindblad and Sahlström – do not necessarily share the same position.

Context, and method

The differences in how context is viewed are also visible in the methods and approaches of classroom researchers. Here, we will exemplify this by comparing some aspects of the work of Callewaert & Nilsson with the work of Sahlström. What we want to highlight here is that the different views on what is needed to know about the situation in order to understand it in the two pieces of research has implications not just for analysis, but also for how data is collected and represented.

Beginning with data collection, Callewaert & Nilsson rely primarily on audio recordings with two fixed microphones, in stereo. The audio materials are complemented with knowledge of participating students, and extensive field notes. As Mehan (1979), they have technical problems with respect to recording student interaction. In all, they record 16 lessons, approximately eleven hours. Out of these sixteen, eleven lessons are analyzed more in detail, approximately seven hours.
Sahlström uses a video camera for data collection, at front of the class. In addition, he uses student microphones at four different student desks, recorded onto four different sound tracks. Sahlström’s analysis is done at two different levels; overall descriptions of 163 lessons; and close analysis of excerpts of nine lessons, amounting to approximately 25 minutes.

Here, we can see a difference in approaches, where Callewaert & Nilsson are interested primarily in the teacher as an agent in reproduction, whereas Sahlström is interested in the constitution of the everyday world of the students. Thus, the theoretical orientation to context is mirrored in the empirical design, which in turn creates constraints for actually expanding and/or changing the theoretical orientation. For Callewaert & Nilsson, and more or less all other classroom research projects in the seventies and eighties, to have an interest in “context-from-within” in relation to students in classrooms would have been impossible. In Sahlström’s case, it could, we think, be argued that the sheer amount of student interaction made audible and visible with his data collection would make it very difficult for him to decide to focus on the teacher primarily.

It also seems as if the theoretical orientation to context has implications for how the recorded data is represented and listened to. In Callewaert & Nilsson, where interaction is regarded as an expression of context rather than as constitutive of context, and where the context is the primary interest, it is understandable if the transcript does not always say what can be heard on the tape. An example of this can be found in comparing the following two transcripts of the same audio tape, made thirty years apart. The first transcript is scanned from Callewaert & Nilsson, the second has been done by Fritjof Sahlström. Differences are highlighted in the second transcript:
Läraren går fram till tavlan:

»Vi skall ta upp 376 b.../ det är alltså svårigheter som ni måste se upp med. Trehundrasettonsex b, är det någon som inte har kommit riktigt så långt så kan ni ta och avräta med just den uppgiften.«

Bortsett från elevernas från 8Q faller klassen iakt i två grupper. Filosoferna 178 som två och två eller ensamma fortsätter att rikna, och pojkarne som halvt eller hela har slagit av. Det besynder att knappast någon hör på läraren.

»Det är först två parenteser som skall multipliceras ihop, minskat med ytterligare två parenteser som skall multipliceras.« (Läraren skriver på tavlan 

\[(x + 2)(x + 3) - (x + 2)\]

(x + 2) = ) »Dom två första parenteserna är helt olika, det. (MC leker med TS.) Finns ingen gemvåg, inga regler vi kan tillämpa, utan vi multipliserar dem ihop i tur och ordning...« (Högst och varnande) »TS.

Det blir tydigt i klassen.

»Multipllicerar ihop de två första parenteserna.«

»Där har vi dom.../ Det är klart, det blir fyra termer alltid när vi multiplicerar ihop två parenteser. När vi nu skall multiplicera ihop dom övriga två parenteserna, vad kan man säga om dessa två parenteser vi då har, AB (direkt)?

»Vad kan man då använda för regel...?«

TS (dikterar för läraren): »x upphöjt till två, tre x, plus 2x plus 6.«

(Nu följer en del pojkar läraren.)

(Fortfarande tyst.)

AB: »Att de är lika, en smula.«

AB: »Ja, men — (nervös: skratt i klassen) — skall man inte ändra tecken när det står...«
As made visible, there are a considerable amount of differences. Not all of these are of interest and relevance here. What we would like to focus on are the turns where the student says what should be written on the board. In the original transcript, this part is described as if the student merely reads out loud, with no interaction between teacher and student. In a more careful representation, it is obvious that there is a dynamic interplay going on between the teacher’s and the student’s actions, where both of the accommodate and give responses to each other. The interaction, in the second representation, is more dynamic than in the first representation.

We think that it is reasonable to argue that Callewaert & Nilsson’s interest in the school as a reproductive arena, embedded in an unjust society, made them more interested in seeing aspects of education that were oppressive and non-interactive – and that this interest also is reflected in how data is collected and represented. Thus, an interesting hypothesis for future
work could be to go through theirs and others work from the seventies, to see if the passive,
docile oppressed student can be found also when viewed using other glasses than the external
structuralist that dominated in the seventies.

In comparison to the seventies transcript, we have here a transcript from Sahlström (1999),
where we can see that there are substantial differences in terms of representation. A first such
difference might be that as a reader, one finds it possible to read the first one, but not the
second. The technical tool used for this second transcript is a transcription software called
syncWriter. The transcript resembles a musical score, with the participants lined up below
each other and time flowing from left to right.

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3 The software syncWRITER was developed in the 1990's by the University of Hamburg for transcribing talk. It is available
for Mac and PC and is distributed by: med-i-bit, Hohenfelder Straße 20; 22087 Hamburg; Germany. Phone: ++49 / 40 / 55 49
57 11. Fax: ++49 / 40 / 55 49 57 13 E-Mail: info@med-i-bit.de For further information, see http://www.sign-lang.uni-
hamburg.de/Software/syncWRITER/info.english.html
In the first left column of the transcript the different participants whose speech and interaction are to be transcribed are listed. The first line is a transcript of the verbal actions of the teacher. The second line from the top is for an approximate translation of the talk, in a word-for-word mode. This line has been added late in the work of the transcripts and has not been the basis...
for the analysis. It is as literal as possible, and thus sounds strange or funny at times. The next line, in this case Pia’s, represents the hand-raising action of the pupil Pia. At the beginning of this transcript, her hand is in “rest position” on the desk. During the 0.8-second silence in the teacher’s talk, she begins raising her hand, and at the beginning of the teacher’s “som,” her hand is raised.

The following line is similar, as is the last line for Elin. In between the hand-raising lines for Sara and Elin in the second “box” of the transcript is a line that represents the talk of Elin followed by a line of translation of this talk. In this segment, Elin talks right at the end of the teacher’s nomination “Elin.” At the same time, all students also begin lowering their hands, indicated by the drawings. I decided to use drawings for the analysis of hand-raising, because I felt they would make the transcript easier to read. Mid-turn in Elin’s turn, all hands are in rest position. Students only “get lines” in boxes when they initiate, change, or terminate analyzed actions, and thus certain boxes have more lines than others.

The talk of the participants is represented using a simplified version of the conversation analysis notation (cf. Atkinson & Heritage, 1984) which Goodwin (1981) uses. Period (.) is used for falling intonation, question mark (?) for rising intonation, and comma (,) for no change in intonation. Talk with considerably lowered volume is denoted by two circles (“subdued talk”). Marked stress is underlined (underlined) and loud voice is represented by capital letters (LOUD). These transcript conventions are deployed to facilitate the reading of the transcript and to give the reader a crude idea of the verbal qualities which the participants orient toward.

To further illustrate the difference in focus in representation, we can take a look at a transcript where there is interaction going on co-occurring to the teacher talk. Here, the two students Inger and Birgitta talk about a redwood brooch, while at the same time there is teaching on roughly the same topic going on in public:

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4 As Lindström (1999) points out, even a literal translation involves analysis, as when one has to distinguish between att, “that,” and och, “and,” which both are pronounced “oh” in Swedish. In making these distinctions, I have relied on my competence as a native speaker of Swedish. In most cases, readers who do not know Swedish will be able to understand the content of what is said by means of the word-for-word translation. In cases where I was afraid that the literal translation would be virtually impossible to understand, I have provided a freer translation, displayed in the absence of word-by-word synchronization.
Transcript from Sahlström (1999, p. 128)

The differences in the transcripts can, we believe, be used to argue further the points of difference argued above: there have been considerable changes in notions of how one understands what is needed to know in order to understand the analyzed situation. For Callewaert & Nilsson, one has to understand society and how it works – and for that purpose one might be satisfied with their level of representation. If one, however, is interested in the finer details of interaction – and in how interaction is a context for interaction, as Sahlström (and Liljestrand, Tholander and Bergqvist), it is necessary to represent the studied interaction in different ways.
Changes in the object of analysis: Comparing classroom discourses

Although there are differences between the work in the seventies and the work done more recently, it is possible to make some comparisons over time also with respect to the object in question, i.e. the classroom interaction. The material of Callewaert and Nilsson does not however permit student-focused analyses, so the comparison has to be made at a more general level.

The lessons from 1973

In total, Callewaert and Nilsson analyze eleven lessons, in science, religion, social studies, French and mathematics. The science lessons are plenary in total, containing no student work at all (compare this to the above figures of the 1993-1995 material). The lessons in religion contain some student work, in the shape of a test and a couple of minutes work. Otherwise, these too are dominated by plenary segments. Of the lessons in French, one is plenary all the way through, and one contains ten minutes of desk work. The social science lessons are plenary, with the exception of a couple of minutes work in one. The lessons in Mathematics, finally, are all three mixed, containing substantial amounts of desk work. Summarized on the basis of the transcripts, the lessons can be categorized as shown in figure 6 below.
Figure 6. The distribution of analyzed lessons, across subjects, in numbers, in the Callewaert and Nilsson 1973 material.

When taking closer look at the way the lessons are organized, one can see that in the mixed lessons, the plenary segments are in average (yes, this is a poor measure, but as way of saying something) longer than work sequences.
Figure 7. Average time (approximation from transcripts) spent on plenary sequences and desk work sequences, in minutes, in the analyzed lessons.

The 1993-1995 lessons

When analyzed at the level of collective activities, the 163 lessons in the 1993-1995 material turned out to be organized according to three patterns: lessons which were given from the teacher’s desk from start to finish, lessons which contained both teacher lectures and work in small groups, and lessons which spent almost all their time working in small groups. To provide an overview of the material, we call these lessons “plenary lessons,” “mixed lessons,” and “desk work lessons,” respectively.

We have defined a lesson as mixed if it contained plenary segments longer than two minutes and individual or small group work of any kind and any amount. A lesson has been treated as a plenary lesson if it did not contain any small group or individual work at all. A work lesson, finally, is a lesson where plenary segments other than pure instruction were less than ninety seconds. This categorization does not make any claims on being a complete representation of the material. Rather, we see it is one way of providing an overview of an extensive amount of recorded lessons to a reader who is not familiar with the material. The distribution of the lessons categorized in this way in the material, across subjects, is shown in Figures 5 and 6.
Figure 8. The distribution of analyzed lessons in the 1993-1995 material, across subjects, in numbers, from the same or similar subjects as in Callewaert & Nilsson’s study (numbers of lessons and lesson time do not correspond directly, as there are longer lessons for certain subjects than others).
Figure 9. Average time spent on plenary sequences and desk work sequences, in minutes, in the analyzed lessons.

As the figures show, the material recorded in the 1995-1995 fieldwork is dominated by lessons including both plenary and desk work sequences. Measured in minutes, the most frequent activity in the classrooms observed is work at the desks, usually in small groups of two or three, but occasionally also alone.

When comparing the two materials, it is evident that there between these two materials there have occurred a number of changes. The first of these is the introduction in the 1993-1995 material of what we have called work lessons. Of these, there are none in the 1973 material. A second change is that the proportion of mixed lessons has increased a lot. In sum, both these changes account for a very substantial increase in the amount of time students spend working at their desks. Finally, we can see that in the 1993-1995 material, the mixed lessons are more so dominated by desk work than the ones in the 1973 material. However, one can also see similarities. The most important of these similarities is that the plenary IRE-pattern that is so persistent in the 1973 material is still around in the 1993-1995 – although it is by now mixed with sequences of desk work.
To be more specific: An example of differences between classroom interaction in the two studies concerns lessons about blood circulation. The two lessons from 1973 are totally based on whole class instruction. The first lesson begins with an interrogation, followed by a repetition about the heart, based on the teacher writing on the blackboard. The rest of the lesson is carried out by whole class teaching containing different aspects of blood circulation. The second lesson from 1973 starts with the teacher delivering results from a test. After that the teacher asks questions about blood circulation. The students contribute by a collective placing of things on a felt board. The lesson is ended by the teacher talking about hormone-producing glands. The lesson from 1995 starts with the teacher giving notebooks to students who do not have these. After that, the teacher introduces the subject of today - the blood circulation - and goes through that subject and the experiment that the students will perform. After less than half an hour, the students start working and take blood tests of each other, with blood actually flowing in the classroom. Half an hour later the student work with the experiment is finished, and the lesson ends with a teacher-directed compilation of results.

Another difference concerns the way the nineties material is far more informal, with fewer explicit markers for differences between teachers and students, than what the seventies material is. In the material from 1973, the students are often spoken to using both the first and family name, in a way which does not exist in the nineties material. The students are expected to stand up when the teacher arrives in 1973 – something that never occurs in all of the 163 lessons from the nineties. There is, we argue, a more explicit distance and differentiation between students and teachers in the seventies material that is not present in the same explicit way in the nineties material. Here, the teacher often walks around the class, chatting to students, at times also on of-task topics – once for instance a teacher participates in a very informal way in a discussion of some that fainted in a class once.
A more detailed comparison (in progress)


Möjliga skillnader och likheter i lektioner om blodomlopet 1968-1994

<table>
<thead>
<tr>
<th>Organisering av lektion</th>
<th>1968</th>
<th>1973</th>
<th>1994</th>
</tr>
</thead>
<tbody>
<tr>
<td>Elevplacering</td>
<td>Bänkar placerade en och en i rader.</td>
<td>Bänkar sitter ihop i rader</td>
<td>Bänkar sitter ihop i rader</td>
</tr>
<tr>
<td>Aktivitet</td>
<td>Helklass med lärargenomgång</td>
<td>Helklass med lärargenomgång</td>
<td>Helklass med lärargenomgångar samt elevexperiment</td>
</tr>
</tbody>
</table>

Kommentar [FB1]: Intressant. Nyfiken på exempel
<table>
<thead>
<tr>
<th>Materialanvändning</th>
<th>Bok, tavla</th>
<th>Bok, plansch, stenciler och tavla</th>
<th>Tavla, anteckningsböcker, mikroskop, redskap för blodprovstagnning</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tilltal</td>
<td>E’s förnamn</td>
<td>E’s förnamn</td>
<td>E’s förnamn</td>
</tr>
</tbody>
</table>

Blodet som transportmedel 1968 DPA 137.mov

L: Va finns de mer än blodkroppar i <äum> blodet Kjell=
K: =Blodvätska,
L: Just de..hh (2.5)
L: °Öhm° (6.0) Va har de röda blodkropparna för uppgift (1.0) Jan Olof;
J-O: ( ) syre från blodet till kroppens celler
L: De gör inte dom röda blodkropparna, ( ) dom gör bara en av dom här sakerna (3.0) de gäller att välja de rätta.
(2.0)
J-O: Syre,
L: Ja:hh de gör dom. (. ) Visst. Kommer ni ihåg de att jag sade en gång att de röda blodkropparna innehåller ett (1.5) äggviteämne som heter <hä m o g lo bi n >. (1.0) Kommer ni ihåg de?
E: °ja:ho
L: Å de hade förmåga att i lungorna ta upp;
(1.0)
E: Syre
L: Syre (.) förena sej mä syra alltså. Binda sej me syre (0.7) <och sedan ute i
cellerna hade de också förmågan att lämna av lämna av

J-O: Just de. Frigöra sej från syret att emot nåt annat (0.7) Kjell?

K: Koldioxid,

L: Just de. Å sen oh när blodet kom tillbaka till lungorna så hade de där förmågan att då Kjell?

K: Lämna koldioxid ( )

L: Och förå?

K: ( tillbaka nytt syre )

L: Nytt syre ja (0.7) just de. (1.5) Nu är de så att det finns ett nytt äggviteämne ( ) i blodet ohum också som heter ( ) <fi bri no gen>. Åh. (1.0) Ni har väl ( )

alleman sam ha ett sår nån gång. Ni har skrapat er eller skurit er, Å va händer då? (1.0) Birgitta

B: ( kom blod )

L: De kom blod ja. Hah. Va de ett litet sår så va hände rätt snart me den blödningen?

B?: ( stannade )

L: De slutade ja. Va va blev de istället? (1.5) Kjell?

K: ( en sår skorpa )

L: En sårskorpa ja. (1.0) Varför blev de en sårskorpa tror du?

K: ( äggviteämnet stelnar)

L: De ä så riktigt så. (1.0)

Några minuter senare…..

Ca.14.00-15.10 (enligt Quicktime)

L: …äggviteämnen dom stelnar på grund av olika anledningar. Å::h (2.0) när ni hör ordet äggvita då tänker ni kanske i första hand på på nåt alldeles särskilt

E?: ( inne i själva ägget )

L: I ägget ja? Hur kan man få äggvitan i ägget till att stelna Marinett?

M: Man kokar de

L: "Ja: h just de". Man upphettar de å då så stelnar de. De vet ni väl? (1.5) Då stelnar de. ( 1.0 ) Ö:h de där att äggvitan stelnar de har vi ett främmande ord för som ni kan ni lägga på minnet. Man säger att ((går till tavlan och börjar skriva)) äggvitan (5.0 ) ((skriver på tavlan)) Ove?

O: Koagulerar

L: De säger vi allesamman?

Alla: K o: a: gu:le: rar

L: Å de betyder förstås (0.7) Jan-Olof?

J-O: (de) stelnar

L: Stelnar. Å:hum äggvitan ja i ett ägg de stelnar när man kokar de när man hettar upp de till en viss temperatur. (2,5) När ni var i barnbespisningen idag ( ) så fick ni mjölk å mjölk innehåller alla näringsämnen…….

Transkript

Blodomloppet repetition 1973
Höger kammare. Här har vi den ((pekar på nåt))). Där går blodet å var tar de vägen nänstans, Jan,
J: 
L: Jah, Å sen återvänder de vidare till dom här fyra kärlen hit (2.0) vad kallades dom här kärlen då (1.5) Mariann,
M: Lungvener,
L: Ja, Sgn när alla kärlen har avlämnat sitt syre via dom här (0.7) röda blodkropparna där de transporteras öh a (. ) va heter dom kärlen då-där själva avlämnningen sker 
(1.0) 
L: Ja artärerna blir finare å finare till sist löser dom upp sig i mycke mycke tunna, tunna kärl ( . ) å här lämnar syre och näring (1.0) kärlen å går ut i vävnaderna. Anders,
A: Kapillärer.
L: De är själva kapillärerna. (0.7) Å sen så går de öh. De som lämnar kapillärerna här de å inte bara att syremolekylerna går ut genom väggen å å näringen de vill sänja druvsocker å äggvita aminosyror flätärnas går ut genom väggen utan de följer me en vätska hit å va kallas den här vätskan, 
(2.0) 
E: (Ä de inte blodet)
L: De pressas ut vätska genom kapillärdelarna. ( ) Å i den här vätskan finns näring å där finns syre. Va kallas den här vätskan (namn) 
E: Lymfa,
L: De va lymfan ja. Sen återvänder den här lymfan till kärl-kärlsystemet igen å dom kärl som nu vätskan går in i va kallades dom här kärlen som återvänder me syrefattigt blod till hjärtat (Ulf)?
U: Öh lymfkärl.
L: Först via lymfkärlen å sen via lymfkärlen ((nån hostar kraftigt)) ( ) 

Transkript lektion 1994

7.56-8.28


L: …så enkelt ä de. Och sen ska vi få in en uppgift till nämligen hur mycket blod finns de i kroppen på ett ungefär. ((handuppräckning startar?)) Har ni nån uppfattning,
E: ((handuppräckning här och där i rummet)) (1.5)
L: Karin
K: Sex liter.
L: Ja;i <de å kanske li:te mycket>
E: [Fyra å en halv liter ((nominerar sig själva att svara))

- 28 -
E: [Fyra ( )]
L: Fyra å en halv, Man brukar säja 8 procent av kroppsvikten (2.0) så en så att de ( . ) men i erat fall kan man tänka sej att fyra å en halv liter är rimligt,

16.08-16.21
Fyllerifråga från L. Collaborative completion.
L: …eh nästa då ja. Har ni nåt förslag på flera
E: ( (handuppräckning här och där) )
L: Om de finns röda så finns de Sofia?
S: Vita.
L: Vita. Vita blodkroppar ( ( skriver samtidigt på tavlan ) )

17.02-17.37
E initierad fråga.
L: …å sedan den tre:de typen ( . ) de är dom som man kallar för ( . ) ja: (1.0) Ingen? ( ( ingen räcker upp handen eller svarar och L börjar skriva på tavlan ) )
Blodkorn ( ( fortsätter att skriva ) ). Ibland hör man också namnet blodplättar ( ( skriver ) ) Ah
E: ( ( E längst fram räcker upp handen ) )
L: Ja:¿
E: Ä de dom röda blodkropparna som forslar transporterar syre?
L: Ja dom transporterar syre.
E: Mn, ( ( skriver i anteckningsboken ) )

19.40-20.10
L: en annan sak som är speciellt me dom röda blodkropparna som gör dom unika bland alla kroppens celler de är att dom saknar någonting. ( . ) Är de nån som kommer ihåg de, Jag tror att ja har nämnt de nångång
E: ( ( en flicka räcker upp handen längst fram ) )
L: Carolina,
C: ( de å ) cellkärna.
L: Ja¿, Dom saknar cellkärna ( ( skriver på tavlan ) )

A notion on classroom interaction in transition and curriculum theory:
We have here presented short overviews of representations of classroom interaction from 1968, 1973 and 1994. We will just make a short comment in terms of curriculum theory and more precisely in relation to Bernstein’s (e.g. 1975) concept of framing and classification in relation to curriculum codes. Bernstein deals with issues of power and knowledge in a way
that makes it possible to identify political aspects of classroom interaction. His theory on framing and classification and curriculum codes is a well known example of a way to conceptualize changes and alternatives in pedagogical discourses. Classification refers to relations between categories. The concept attempts to measure the degree of insulation between different discourses, specialisation, academic disciplines etc. Framing refers to control of communication in pedagogical discourses, that is selection of what to do, in what pace to do it and sequences as well as criteria for performances. In Sweden, as in the UK and in many other parts of ‘Little Europe’, strong education policy ambitions have been put forwards to weaken classification as well as framing – to go from what is called a collection code to an integrated code.

Based on the findings above it can be argued that framing is weaker in 1995 compared to 1973 and 1968, since classroom interaction is less dominated by the teachers. The students work to a much larger extent individually or in groups. The 1995 students control to a higher degree the pacing and sequencing of their work compared to lessons in 1973. But they do not control the selection of communication and the criteria for evaluation. Thus, framing is only weakened in some aspects.

Considering the fact that students in this new mode of framing do neither control what should be done, nor the criteria for evaluation we would like to regard the weakened framing in 1995 as a weakening of procedural frames. The students control sequence and pace but not selection of communication and criteria of evaluation. In the recordings from 1995 we for instance find that the textbook – or rather the teaching-learning material – to a very high extent determine not only what to do but also how to do it, the exact words for a formulation of a response to issues raised in the textbook. What students are expected to do – in their own pace and in the sequence they prefer – are to reproduce the words in the textbook, or fill in the proper words in their work books (cf. Lindblad & Sahlström, 1998; Sahlström, 1999). That is, if they have understood what is to be done in the same way as the teacher and the instructions have. In this respect, there is a large potential for different understandings, and, from the teacher’s point of view, misunderstandings of the instructions. What we also find when comparing the materials is that there are substantially longer sequences of instruction of how to perform tasks in the nineties material, often at a high level of detail. The introduction of desk work thus seems not only to have introduced a new way of working, but it also affects the organization of the seemingly similar plenary teaching.
Relating practices and research on practices

So far, we believe that we in sum have made two points: that there are changes in classroom practices in the Swedish material studied from the 1960’s, 1970’s and 1990’s, and that there are changes in the way classroom research has been conducted in the same periods of time. Let us here focus on the 1970s and the 1990s. We have relied on the interplay between perspectives, methods and results, for the latter point.

So: what if Nuthall, Sahlström, Maybin and LPS would have come to the classrooms of Bellack, Mehan, Callewart & Nilsson, Lundgren and Willis? What would have been the results? And what if the 1970’s researchers would have stepped into the classroom s of the 1990’s researchers? We would like to begin the concluding part of our presentation by briefly discussing these issues. As in the beginning, we will use the work of Callewaert and Nilsson, and ourselves, to exemplify.

Let us begin by allowing the veterans, with their perspectives and methods, to have a look at the newer classrooms. We believe that if the 1970’s researchers, in particular Bellack, Mehan and Callewaert Nilsson, would have had access to the new classrooms, the IRE or IRF-sequencing of teaching would have played a significantly smaller role in the analysis and results of the classic studies. The kind of interaction they would have met in our Swedish 1993-1995 material would not have allowed them to focus so much on the teacher’s teaching as they have done – simply because the most common practice in these classrooms is not plenary teaching but desk interaction. There would not have been any “rule-of-two-thirds”, and we would have to rewrite pretty much all of the textbooks and reviews of the field where the teacher domination is one of the most common and established facts. As a consequence of this difference, the kind of criticism based on plenary teaching argued by Callewaert & Nilsson would not have been possible to make – at least not in the same way. What we could expect is perhaps a “sister” analysis to the IRE-sequencing, looking into students’ ways of interaction.

However, if the youngsters of the 1990’s would have been let into the 1970’s classrooms with their perspectives and technology, they would have come out with results that are more similar to the ones they already have – maybe with the exception of the classrooms of Bellack et al. Using Callewaert and Nilsson’s data as the basis, Nuthall, Maybin, Sahlström and LPS would have been able to record as much student interaction co-occurring to teaching in the 1970’s lessons as they have in their own materials. The tapes of Callewaert and Nilsson are
filled with the murmur of student voices, and with methods and perspectives to focus these, they would have seen things Callewaert and Nilsson did not see. Thus, the “juniors” would not have given us the rule of two thirds and IRE/IRF-sequences if they would have gone to the very classrooms that generated these important concepts. On the other hand, the classroom research community would probably have known substantially more about the work students do than what we have known now. Obviously, there would not have been as much desk work in the 1990’s analyses as there is now – because this activity is not present in the same way in the earlier materials. However, this activity is not given the impact it deserves in the studies from the 1990’s as it is.

Partly, we believe this is due to the weight of the classics, where plenary teaching is the main issue. Thus, we are back to where we began, with the relationship between research and its objects.

Living in history

So far we have presented at least two distinct features in classroom research from the 1970s and the 1990s – with the cases chosen. Let us now return to the analytical model presented above. Considering the internal determinants we state

a. there is a change in the theorizing of classroom interaction and in the importance of theory in doing classroom research

b. there is a change in the instruments, technology and in the ways that observations of classroom interaction is carried out.

These changes can be regarded as changes in an autonomous research society where inner determinants are explaining lines of development and progress. But from our model we are getting the imperative to look for external determinants, in material-practical terms as well as in ideological terms.

First of all we must consider the fact that the electronic revolutions have made a heavy contribution to the changes in instruments and observations. We now live in an era of other possibilities to record, compared to the 1970s. Second, we ask why do we use these opportunities, why is there a shift in theorizing teaching, including a shift in focus from the teacher to the student? A first notion is the interest in “progressive teaching” focusing on the students’ activities and the scaffolding of these activities in relation to some culturally valued competencies. A second notion is the increased stress on individualisation and on individual
agency (Lundahl, 2002) and governmentality (Lindblad & Popkewitz, 2002) in the stories of education progress.

So what – how so?

In this paper we have tried to capture some changes in paradigms and perspectives of classroom research. Firstly, we have shown that there are differences in the ways classroom interaction is constructed by research. Secondly, we have presented pictures of new and old tools in the construction of data. We have interested us more in the details than in the whole picture, perhaps for the simple reason that it is in the details we can find a way to capture what is happening in society as well as in teaching and research and in classroom interaction. Thirdly, it is our hope that our comparisons and findings will serve as a basis for a continued discussion of changes in classroom interaction.

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