On the Definition of Learning

of Learning

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Student notes as a mediating tool for learning in school subjects

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Student notes - a mediating tool and a tool for identity shifts[1]

How do fifteen year-old students approach learning when they begin upper secondary school? And how is this approach connected to their demonstration of maturity and willingness to assume responsibility for their own education? This kind of questions kept emerging during a four-year longitudinal and ethnographic study that followed two students in their transition from Danish lower to upper secondary school[2] and they constitute the focus of the sub study presented in this chapter. During this sub study, one observation continued to surface: students approach learning by writing notes. However, upon observing the notes, I discovered a disparity between the significance the students attach to them and their perception of them as their own making on the one hand and their reliance on teaching and textbook examples and wording on the other hand. This disparity fuelled my interest in what roles student notes play and represent an underlying source of curiosity throughout the analysis. Two learning functions of note-writing appeared relevant to focus, one relating to a shift in identity, and one on learning particular contents in the disciplines. The two are probably closely linked; learning a subject can be viewed as a process of gradually becoming part of a new disciplinary community which involves a gradual enculturation into the disciplinary discourse and thereby imply identity changes. In the chapter focus is on the interconnectedness of learning particular contents in the disciplines and identity changes. When focusing on learning contents identity changes is constantly implied and when focusing on identity changes the character of learning content is the underlying premise.

Analytical concepts

The notes I examined generally resembled information on the blackboard or transcripts of the teacher's words during the lessons. For this reason, it seemed reasonable to question whether the students were creating or simply copying their notes (cf Danielsson 2010). A recent study of university students (Castelló et al. 2005) identifies two approaches to note-writing – the copying and the strategic approach – and claims that, on average, students are situated halfway between the two. This suggests that there is more to note-writing than mere copying. We can also ask the following question: what level of literacy is required to write independent notes that can be recognised as relevant and adequate within a subject community? When learning a new subject, a student will most likely make more primitive notes than when writing about a subject he/she knows well. If independence is defined as critique, it could prove unattainable for some students. Macken-Horarik establishes a continuum that ranges from 'personal growth literacy' to 'skill literacy', 'specialized literacy' and ultimately to 'critical literacy' (Macken-Horarik 1998, p. 78). She argues that, within school, critical literacy must be approached through the three previous mainstream literacies. According to this theory, the 'independence' of student notes must be measured in light of the student's placement on the continuum. We could therefore speak of critical note-writing literacy as the goal of note-writing literacy, and not as a precondition. To some extent, this accords with the social-cognitive approach, which views note-writing as self-regulated learning (SRL) (Moss 2009). From a SRL perspective, independent note–writing comprises a series of skills—planning and goal setting; metacognitive awareness and monitoring of cognition; selection of cognitive strategies; cognitive judgments and reflections— that students are either able or unable to master.

According to Gunther Kress, we should reject the idea of copying altogether: "when we make our signs we make them as (relatively) new combinations of form and meaning. This goes right against the common sense of most theorists as much as of the man and woman in the street, who assume that we *use* language, not that we *make it*. By complete contrast I wish to insist that we always make new signs – often imperceptibly different, even to the maker, and rare conscious, even to the maker" (Kress 1997, p. 7) [Italics in original]. When students write notes, they make language. They do not simply

take the teacher's language; even if they use the teacher's sentences, they select appropriate sentences and re-contextualise them into their own notes. From Kress' socio-semiotic perspective, note-writing—like all writing—is always independent in the sense that it is a product of the writer's own selection and making. But it is also dependent insofar as the selection and making are miming already existing linguistic conventions. As Kress puts it: "... we make our always new signs in the environment of our constant interactions; but we make them out of the old, available stuff." (p. 7-8). In this sense note-writing is an interaction or a mediating tool between the writers' language and the linguistic conventions already in place.

The mediating tool is a socio-cultural concept that dates back to Vygotsky and Luria's concept of symbolic tools. Vygotsky and Luria believe that learning is mediated either by human mediators (for example, adults and teachers) or by symbolic tools. Symbolic tools are culturally transmitted tools which, according to Vygotsky and Luria, change the entire system of the learner's cognitive processes (Kozulin 2003, p. 24). Examples of higher-order symbolic tools are numbers, letters and graphs, but also more complex tools such as formal education and other organised learning activities (p. 17). The learner's interaction with the environment does not occur by itself but is necessarily mediated, and the use of symbolic tools serves as media for this process. Note-writing can be understood as such a tool that mediates between the school subjects and learners.

Method

This chapter explores the role of note-writing by examining the practices and attitudes of two male students, Michael and Rasmus, whom I observed and interviewed in their educational contexts over a four-year period. This study focuses specifically on their transition from lower secondary school (folkeskole) to upper secondary school (gymnasium) in Denmark.[3] Michael attended the General Upper Secondary Programme and Rasmus attended the Higher Commercial Examination Programme. Michael is fairly communicative, and it was he who first alerted me to the note-writing disparity when describing the significance he attached to his notes. Rasmus was less forthcoming, and he gave me no reason to assume a disparity existed. For this reason,

I decided to develop a note-writing hypothesis based on Michael and to test it on Rasmus.

Focus for the overall study was writing of all kinds in all subjects. Data was generated by ethnographic methods, i.e. classroom observations, ongoing interview with students (meaning conversation-like interviews conducted sometimes monthly), collection of prompts, student texts and teacher responses. Also general observations at the schools and talks with teachers etc. were included. Observations in classroom were fixed to an observation scheme and general observations at the schools were maintained in field reports. All data were shared in a group of four researchers, who each generated data at various schools following other students. Data was continuously discussed among the researchers. Field reports were shared and often commented instantly by the researchers. Each researcher followed two (three) students from year nine till the end of upper secondary school (four years all together). Three lower secondary and eight upper secondary schools were included in the project.

In this sub study two students are analysed. Both followed in the four year period by the author of this article. Data used for this sub study are primarily from their first half year of upper secondary school. In the case of Michael the data set used consists of 14 classroom observations in various subjects, 5 interviews, 75 student notes from various subjects and 4 field reports. In the case of Rasmus the data set consists of 13 classroom observations in various subjects, 3 interviews, 38 student notes from various subjects and 9 field reports. In both cases some data from year nine is also included.

It is very demanding for the students and for the researcher to conduct such a study, and it is inevitable that students to some extent will have a role as co-researchers - or at least co-analysts. In the research group we referred to the students as participants – not as informants.

Danish institutional context

The transition from lower to upper secondary school is viewed as particularly important for the student's self-understanding. This is because it involves a significant (and arguably a cultural) change; for the first time students encounter subject teachers holding a master degree, they face the prospect of exams, and they make their first crucial

decisions regarding their future education. Upper secondary school demands more independent student behaviour due to a somewhat stronger academic focus in teaching. For this reason, the transition represents a serious and potentially daunting prospect for a fifteen year-old student.

In a similar longitudinal study that observed the transition of four American students from high school to college, Linda Harklau (2001, p. 45f) suggests that the most salient difference in literacy practices and cultural assumptions between the two educational levels are lecture and note-writing conventions. However, Harclau's discussion of note-writing practices in US high school reveals a marked difference from note-writing practices in Danish upper secondary school. In US high schools, note-writing practices are more teacher-controlled through the use of scaffolding note-writing methods. Danielsson (2010, p. 4) describes two enculturation methods to writing genres. One is implicit and the other is explicit *"[Students] participate in a rich textual and linguistic environment, thus being given various opportunities to learn genres inductively. Or it could involve more explicit teaching"*. The predominant method with respect to note-writing in Danish upper secondary school tends to be implicit. Students are thus encouraged to initiate and develop their own note-writing style. Although Danish student advisors provide note-writing courses, these are rarely directly linked to practices in specific subjects. Moreover, teachers seem reluctant to demand note-writing, since their expectation is that student development is connected to the student's ability to initiate note-writing independently. In educational research, it is therefore assumed that the importance of the transition from lower to upper secondary school is characterised by shift in school writing culture (Christensen et al. 2014, Harklau 2001, p. 51f) rather than shift in educational level per se.

For the students, a central question is how to respond adequately to this new and implicit expectation of note-writing. Their answer involves a change in study behaviour that implies a change in how they perceive themselves and how they wish to be perceived; in other words, it involves issues of identity (Sfard et al. 2005, Ivanič, R. 1998, Christensen 2015).

Research questions

The above mentioned disparity between the significance the students attach to their note-writing and their reliance on teaching and textbook examples and wording is based on empirical data which showed that, although student notes do not look independent and although institutional factors support—and implicitly insist on—note-writing, students still attach great importance to their notes and claim to write them on their own initiative. This suggests that, with the move to a more academic education, there is a pressure on students to meet increasingly challenging demands with regard to literacy competencies and note-writing; this is not immediately apparent upon a first examination of the notes themselves. In order to explain why students attach so much value to their notes, two central research questions are addressed:

- Can note-writing serve as a mediating tool between everyday language and subject discourse language?
- Can note-writing function as a tool for a shift in identity from school child to student?

Hypothesis

I would like to put forward the hypothesis that, in the transition from a less academic education to a more academic education, student notes represent the first attempts to capture the rhetorics and conventions of new disciplinary and genre challenges. This hypothesis suggests that two related aspects or learning strategies are at stake, which may jointly explain that student notes seems to be of great importance to the student (process of writing) but do not look like much (product of writing). One could be labelled an *acquisition strategy* and the other a *participation strategy* (Sfard 1998). The two strategies imply one another.

Research on note-writing

Current research on student notes attempts to understand note-writing from either a cognitive position or a socio-cultural position, and it can be divided into at least four partly overlapping traditions. The first

tradition focuses on *cognitive variables;* for example, encoding, storage and recall of lecture information (Moss 2009, Kobayashi 2005, Boch and Piolat 2005, Santa et al. 1979, Rickards et al. 1978); the second tradition focuses on the *quality of notes*; for example, the degree of accordance between what is taught and what is represented in the notes, either as investigations into experimental teacher-led efforts to improve note-writing skills (Çetingöza 2010, Eskritt et al. 2008, Boch and Piolat 2005, Castelló et al. 2005, Dezure et aI. 2001, Anderson et al. 1981) or investigations of authentic student notes written under non-teacher-led naturalistic conditions (Clerehan 1995); the third tradition focuses on *roles and strategies of note-writing*; in other words, whether note-writing is a way to organise the content taught, a direct tool for better understanding and retention of the content taught, or a more indirect way to approach content and subjects (Teng 2011, Castelló et al. 2005, Badger et al. 2001); and the fourth tradition—found in new literacy studies—focuses on *writing as text production in a social context* (Gee 2008, 2009, Blåsjö 2010, Danielsson 2010, Harklau 2001, Ivanič, R. 1998,) and *writing as multimodal communication* (Kress 1997, Jewitt ed. 2011), which allows us to consider other functions of note-writing than those related to a specific content to be learned, such as student positioning towards academic genres and subjects and the use of various modalities. This study takes its theoretical point of departure in the new literacy tradition, viewing note-writing as imbedded in school writing cultures, subject writing cultures and student writing cultures (Christensen et al. 2014); however, it is also interested in specific functions of note-writing, including knowledge-transforming (Castelló et al. 2005) and concept-forming (Vygotsky 1986).

Student attitudes towards notes – the case of Michael

As mentioned I followed Michael for four years, from year nine and all the way through upper secondary school. In an interview a few weeks after he started upper secondary, it became clear to me that note-writing played an important role in his transition. Michael was enthusiastic about his notes and, according to him, he wrote them on his own initiative. He spoke about them with pride. From the very outset of the interview, Michael was keen to tell me about his notes, even though I had not prompted this discussion (in fact, I had to ask him to

wait until I had switched on the recorder). This eagerness demonstrated the importance he attached to his notes. However, as Michael already knew me well from year nine it is likely that he viewed me as an acquaintance from lower secondary school now visiting him in upper secondary school, a fact that could account for some of his eagerness. Anyway, Michael had a great deal to say. The first sentences I recorded are transcribed below:

> I: You were telling about OneNote- can you repeat what you said?
> M: Yeah, okay. So - to summarise. This program, Microsoft OneNote, has been out since 2007. And it is simply brilliant to write notes in. It allows me to keep overall control over school, home and everything. (...) It has also allowed me to set up various subjects under different tabs and onto these tabs I can draw an infinite number of sites, where I can draw all over, and write, and just throw images in and out, and move everything around. So it is simply so easy and so convenient when you have to sit and write many notes as I have to here [in upper secondary school]. (Interview, Michael 26.08.10)

Michael is enthusiastic about OneNote, but his underlying message is that it is imperative for him *to write lots of notes.* When asked if he wrote notes because the teachers demanded it or because he found it necessary, he answered promptly: "It's necessary!" (Interview, Michael 26.08.10). And, when I later concluded that note-writing in upper secondary school is more demanding than in year nine, that his approach to notes seems to have changed from year nine, and that the attitude and climate in the classroom towards notes had significantly changed from year nine, he agreed and added his support:

> M: That's it. It's a totally different world.
> I: Yes
> M: And I like it.
> (Interview, Michael 26.08.10)

Michael's enthusiasm indicates that note-writing represents a way to deal with his new position as an upper secondary school student, a way to respond adequately to the challenge of showing maturity and willingness to assume responsibility, and therefore a way of handling

the identity work involved in the transition from lower to upper secondary school. When asked about this, he explained:

> M: No, in fact they [the teachers/TSC] don't demand [that we write notes/TSC], and there are also some students in the class who don't write many notes (...) [but] I can see that it is simply necessary. (...), only in the last three weeks we have received so much information (...) about how the school works and about the fact that we have started upper secondary school (...). There are so many things you constantly need to think through, and then it helps if you can write them down. (Interview, Michael 26.08.10)

In this quotation, Michael reveals that he is aware of the actions of his fellow students, and he uses their behaviour to support his own; in other words, he generalises his own behaviour as the common and the sensible. According to him, the majority of his classmates write notes. His attention to this indicates that note-writing is not simply a way to learn or retain knowledge in pursuit of other purposes directly related to teaching and learning, but also a way to signal (and try out) the transformation from school child (in lower secondary school) to student (in upper secondary school). This suggests there is a strong identification and positioning element at stake.

I also asked Michael an open question about his most significant writing experience since starting upper secondary school (less than three weeks prior to the interview). His answer was insightful. He began by stating that, since the class had not yet begun to write assignments, his most significant writing experience had been taking extensive notes.

> I: Is that new compared with year nine? (...)
> M: (...) that you have to write notes? You simply need to write notes (...). These three weeks I've written more notes than I did in two months in year nine. In fact, you rarely had to write notes then. (...). Let's take maths; you don't sit and write notes in maths in year nine (...), but you do in upper secondary school, because there are just a few more things to keep track of. Even [in] music you write notes from time to time, although not quite as much, because I am studying music at level C. But I can imagine that if you are studying at level A, then much of it will be theory ...
> (Interview, Michael 26.08.10)

When I later investigated Michael's claim, it appeared that the increase in note-writing was not as dramatic as he perceived it (Interview, 26.08.10). An examination of his notes revealed that Michael had written far fewer notes in his first three weeks of upper secondary school than he suggested. Contrary to his recollections, Michael wrote many notes in year nine. He wrote handwritten notes for German (46 pages), Danish (39 pages), history (31 pages), biology (4 pages) and English (4 pages). In addition to these, Michael wrote notes on pre-printed forms—such as gap-fill, multiple choice and short answer exercises—in biology, geography and social science (and most likely also in science, but these were not included in the data). He also wrote provisional computer notes in the form of a retrieval of information and preparation for presentations in various subjects, including an interdisciplinary project.

An interview with Michael in year nine shows that, even at this stage, he already had a relatively developed view on notes.

> M: It's something I do myself. We used to have a terrible history teacher. She had all notes [written] before we started, and wrote them on the blackboard, and then we had to sit and write it down.
> And it worked terribly, I think, because, even if I have all these sentences, it doesn't make me better. I still have to read the whole chapter again, because it wasn't what I thought when I heard or read it, and it is not what I would focus on.
> (Interview, Michael 25.02.10 - Folkeskole)

As early as year nine, Michael perceives note-writing as an act of his own and associates learning effects with independent note-writing. This suggests that even highly reflective students experience a cultural shift from lower to upper secondary school and an associated increased demand for independent note-writing.

Actual and perceived note-writing - the case of Rasmus

It is also possible to identify a disparity between actual and perceived note-writing in the case of Rasmus. Like Michael, Rasmus also claims to write notes on his own initiative:

> I: Do the teachers tell you to write notes, or is it something you do by yourself?
> R: It's something you definitely choose yourself.
> (Interview Rasmus 29.09.10)

Rasmus' perception can be contested by the local school writing culture. Students are permitted to bring their notes to the oral exam, which suggests an institutionalised and expected note-writing practice (as illustrated below). But, despite this, Rasmus still perceives note-writing as an act of his own.

> I: What is the exam going to be like?
> R: We have to talk about what we learned in this period and then present our business .... economic project.
> I: Is it an individual exam?
> R: Yes. It is individual, but we prepared it [the project] in groups, and then we are examined .... individually.
> I: And you have prepared some notes, I understand. What if you didn't have any notes but had only read the textbook?
> R: Then I don't quite know what I would say at the presentation.
> (Interview Rasmus 14.10.10)

The subject writing culture also supported note-writing through the organisation of classroom instruction and the explicit recommendation that students bring their computers to class. During a conversation about tests in one of our interviews, Rasmus corrected my misapprehension that students were forbidden to bring their notes to the relatively frequent tests carried out in different subjects (Interview Rasmus 14.12.10). In the course plan for one of Rasmus' major subjects, business economics, students are advised to bring a computer. As such, the expectation that students write notes is so deeply embedded in upper secondary school culture that it does not receive explicit explanation. It is perhaps for this reason that I did not at first focus on note-writing during my observations. It appeared so obvious to me that I only occasionally noticed it. At one observation in marketing, Rasmus' second major subject, I wrote:

> Whenever a student is asked [by the teacher], he/she consults his/her notes on the computer.
> (Observation Rasmus 11.11.10)

It is clear that, even though the school writing culture and the subject writing cultures heavily support note-writing, Michael and Rasmus confidently state that note-writing is their own responsibility. They both present themselves as keen note-writers, which indicate that note-writing serves as an identification marker for their new status as upper secondary school students.

Writing – Identification and positioning

To write is to express oneself about something in a context, and note-writing is no exception. Writing is an utterance, an answer to something, and a positioning of the writer socially (Smidt 2002). In business-economics, Rasmus cannot avoid positioning himself as a student, but he also strives to position himself as an economist, or at least a potential economist.

Roz Ivanič (1998) distinguishes between the writer's autobiographical self, discoursal self and authorial self (the self as author) as "aspects of the identity of an actual writer writing a particular text" (p. 23). By this, Ivanič means that nobody can write anything without these aspects being present. The autobiographical aspect refers to what the author contributes in terms of experience, values, perceptions and self-understanding (among other things) to the writing event. The discoursal self refers to how the writer wishes to appear (sound) in a text, and the authorial self refers to whether the writer assumes authority in the text or if he/she attributes authority to others. Ivanič also writes about possibilities for self-hood, which are "identities available in the socio-cultural context of writing" (p. 23). In school writing, these are normally offered in writing prompts. However, student notes have no prompts as such, so, instead, it is the students' responsibility to define the possibilities, to pose the questions their notes should answer, and to decide which genre their notes should live up to.

In Rasmus' third year in upper secondary school, we discussed what he liked about business economics. He mentioned that his history teacher once described history as a reductionist subject compared to

Danish, and he also considered this description very appropriate for business economics and marketing. He said:

> R: That's what I like, because somehow there cannot be much doubt whether my arguments hold true. You can say, in Danish, you hold a broader view and there may be some disagreements about how to judge something.
> I: And this reductionism suits you well?
> R: Certainly, yes.
> (Rasmus Interview 08.03.13)

What Rasmus expresses in this quotation corresponds to the picture I formed of him throughout the years of observation. This is something he contributes as part of his autobiographical self. But it is also how he strives to present himself, at least in economic subjects. When Rasmus writes, he tries to approach the economic discourse. An economic text should be brief, factual and precise – verbally reductionist, we could say. Viewed in this way, his minimalistic student notes from business economics (see below) correspond to his autobiographical self, but they are also an expression of his discoursal self (how he wishes to present himself) and, ultimately, they are how he positions himself with authority as 'an economist writer'.

Student notes as discursive learning

As part of this study, I investigated Rasmus' business economics notes from the first half-year of upper secondary school. Business economics is a discipline Rasmus appreciates highly. From his first half-year, I collected 26 examples of handwritten notes from business economics (more than half the notes I collected); each example represented one lesson, so I had close to a complete set of notes in business economics. 20 out of the 26 examples contained the word 'opgave' (meaning 'task' or ´problem´) in the title, indicating that students should solve a task given by the teacher or the textbook. In an interview conducted a few weeks after starting upper secondary school, Rasmus and I discussed the differences between lower and upper secondary school; just as I was beginning to conclude, Rasmus reminded me that, apparently, I had forgotten to discuss the new subjects in upper secondary school.

> I: New subjects, of course, what about the new subjects?
> R: They are incredibly exciting
> I: Can you mention some?
> R: Business economics, marketing and ICT
> I: These are the ones you like the best?
> R: Yes, and we also learn a different kind of mathematics
> I: Different, how?
> R: It is not so much with fractions, but more algebra.
> (Interview Rasmus 26.08.10)

On the basis of his interest in economics—an interest he already expressed in lower secondary school—and his particular enthusiasm for business economics, there is reason to believe that his business economics notes will display clear signs of note-making (independent construction of notes). In the quotation below, Rasmus refers to his notes as self-made. In his first interview after starting upper secondary school, he mentioned that he used to find it difficult to use his own words and that he was improving in this respect. He repeats this statement in this second interview, where he specifically addresses business economics. However, he states that he takes more notes from the textbook in business economics than in marketing, because the textbook in business economics is easier to understand and, therefore, he can select the 'best bets', which he finds tempting but realises is not his ultimate goal.

> I: Do you pick from the text and write it ...?
> R: Some things – and then I use my own words. It's more of a mixture when I write
> I: A mixture of the words from the textbook and your own words?
> R: Yes
> I: Why do you mix?
> R: Because it can be difficult, at times, to reformulate a good sentence.
> I: I understand, but why don't you use the good sentence, then? Why don't you just take it?
> R: Well... maybe I want to clarify something – something the teacher has said. Besides, if we (...) have something specific, then I clarify it a bit. Then I write it with my own words.
> (Interview Rasmus 29.09.10)

In an interview from year nine, Rasmus claimed that he sometimes copied from the blackboard "because (...) what is written on the blackboard is pretty good" (Interview Rasmus 07.04.10 - Folkeskole). Apart from demonstrating that Rasmus (just like Michael) was a relatively reflective student in year nine, this also shows that, even when copying from the blackboard, he copied for a reason; we could therefore argue that this was not mere 'copying' at all. Rasmus only copies from the blackboard when he finds the blackboard worth copying.

In general, Rasmus struggles to write independent notes, but this is something he is striving to master. Rasmus finds it difficult to express his selfhood and take authority in his notes. We could also claim that he is trying to capture and participate in the economic discourse. This is a way of expressing his self, a process which can be called discursive learning.

The discursive learning strategy reveals itself as a shift that oscillates between the language he already has and the language of the subject discourse in which he develops his pre-scientific concepts (Vygotsky 1986) and transforms knowledge (Castelló et al. 2005). Note-writing functions as a mediating tool for this process (Kozulin 2003).

Student notes as identification

The student notes I analysed can be described as oddly disjointed and minimalistic; they were lacking in words (some of them were almost wordless), half written, without narratives, broken in composition and contained other characteristics that rendered them utterly uninteresting and often meaningless to an outside reader. And it is clear that they were not written in order to communicate with anybody but the note-writer. They are in-text (Liberg 2008) and not designed for the teacher or anybody else to read.

Below are two sets of notes from the same lesson. The first example is of a task from the textbook with Rasmus' handwritten notes in the margins and below the text. The second consists of two handwritten graphs.

Fig. 1. Student note 1 by Rasmus, business economics, autumn 2010

The circle around "2.5" at the top of the page illustrates that Rasmus has marked the task as one to prepare for the coming lesson. In the margin, he has written 'Share' in connection with four of the bullet points and 'stake/share' in connection with one bullet point. It is unclear whether Rasmus wrote these notes while preparing for class or during class. Perhaps the handwritten 'share' and 'stake/share' suggest Rasmus' first step towards note-making and building an argument. We can only speculate. However, in any case, Rasmus found the information worth noting.

The two points *a* and *d* (most likely d is a mistake for b) are answers to the two questions that complete the task. In translation, they read:

a) The philosophy of Grossman Ltd is relatively shareholder-inspired, since it wants to allocate a bonus of 10% of its profits to employees. This is strongly inspired by the USA as the share-holder-value stronghold
d) Employees may be unhappy that they now receive some form of performance pay. Shareholders may be annoyed that in a period they receive a lower yield, but they get more in the end.

In this translation, I attempt to remain as faithful as possible to the Danish wording whilst disclosing the linguistic impression given by the Danish sentences. The wording of the two points is relatively close to the subject discourse in business economics. However, the word '*wants'* in the first point and the word '*annoyed*' in the second point are unlikely to appear in an economics textbook or on the classroom blackboard. Instead, the words '*wishes to* ' or 'dissatisfied with' would most likely appear in their place. Perhaps we can view Rasmus' wording here as a relatively successful attempt to participate in the subject discourse with a few remnants of an everyday linguistic discourse. The bullet list and his points "a" and "d" can be seen as his use of a writing practice in economics; in other words, making lists rather than formulating coherent texts.

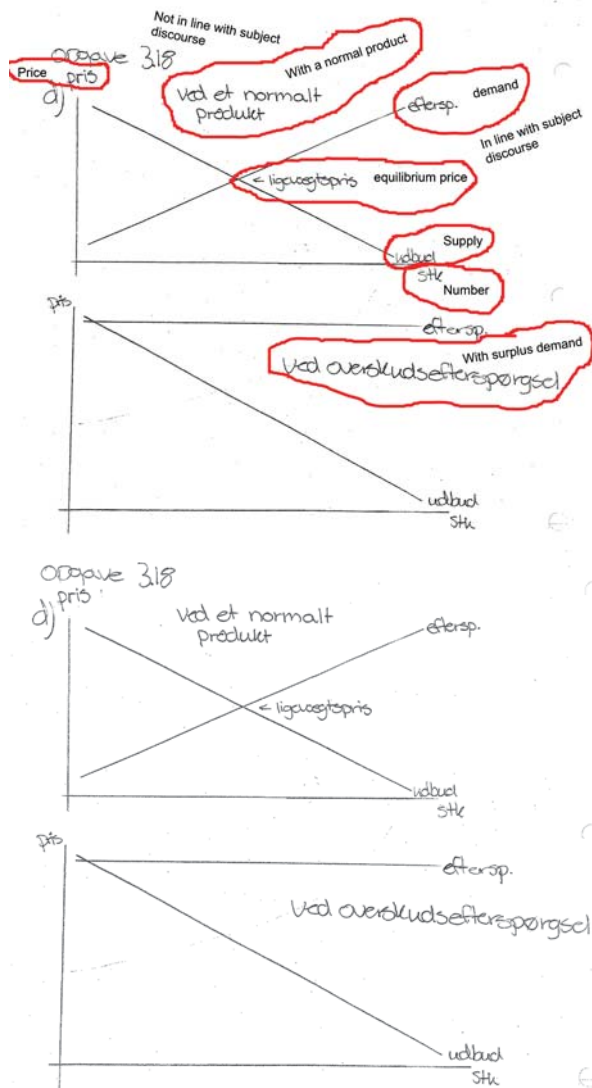On the back of the paper, Rasmus has hand-drawn two graphs that refer to another task (task 3.18)

Fig. 2. Student note 2 by Rasmus, business-economics, autumn 2010

The graphs illustrate relations between supply and demand: price, quantity and equilibrium 'with a normal product', and 'with surplus demand'. Graphs of this sort are what we would expect the teacher to draw on the blackboard; they are not something a student would devise

by himself. However, in the subject discourse, we would not speak of a '*normal product*'. Instead, we would speak of '*perfect competition*', which is by no means 'normal' in the sense of frequently found or occurring, but refers to a theoretical ideal situation. For this reason, we may assume that these words represent Rasmus' more mundane reformulation (either intended or unintended). The expression '*with surplus demand*' written next to the second graph is in line with the subject discourse. Rasmus believes that his business economics notes can be categorised into *results and final answers*; unlike his Danish notes which, according to him, have a more reflective character.

> R: In socioeconomic subjects you could say there is a kind of result or final answer, and that's what I need to [jot down] and then come up with an interpretation of some of the things.
> (Interview Rasmus 14.12.10)

Considering these two note samples from business economics (note 1 and 2), we could initially conclude that Rasmus' notes resemble copying. However, a closer analysis reveals that they do not. Although Rasmus' notes resemble information from the textbook and at the teacher's blackboard, I would like to argue that they are still of his own making.

According to Rasmus' interview and my observations[4], the teacher talked a great deal during lessons and provided ample opportunity to make notes about arguments put forward or meta-notes about the student's own understanding. However, in his notes, Rasmus does not refer to any discussions or disagreements in class and he does not provide an insight into his own understanding. His notes are answers to questions (the two points a and d in note 1) and what he views as facts (the two graphs in note 2). He sticks to results and final answers.

It is also worth considering that Rasmus selected the mode 'graph' for his notes (Kress 1997, 2011). The primary modes employed by the teacher during the lesson were 'speech' and 'verbal writing'; however, of course, in business economics, 'graph' is also a prominent mode. From all these options, Rasmus selected the mode 'graph' for his notes, which is a distinctive mode of business economics. It is impossible to not interpret this selection as an act of note-making. By seeking the discourse of business economics in his note-writing (facts, final answers and graphs), Rasmus attempts to identify with (Ivanič 1998) and

participate in (Sfard 1998) the academic and disciplinary community of his class and school.

Conclusions

Rasmus struggles to make notes using his own words and therefore oscillates between his everyday language and the subject discourse language. It is difficult to remain within the subject discourse language, and arguably more difficult in subjects like business economics, which employ a minimalistic approach to the use of verbal text, as opposed to subjects like Danish, which create more space for notes of a reflective character. This demonstrates how Rasmus uses note-writing as a mediation tool in his effort to acquire subject content.

According to Rasmus and confirmed by observations, the students listen a lot to the teacher. Regardless of the origin of Rasmus' notes (textbook, teacher, class discussion, Rasmus) or whether the teaching encourages a certain type of (narrow) note-writing, Rasmus' notes are the result of what he has chosen to record from a large amount of textbook text, teacher presentation, blackboard information and class discussion. And it is clear that he has chosen to record 'results and final answers' using a graphical mode. His choice is important, because it is an expression of what *he* finds important to record, and he believes that 'results and final answers' and the graphical mode is important in business economics. In his notes, Rasmus writes as closely as possible to the subject discourse; he minimises his verbal language and embraces the graphical mode. This can be understood as an act of identification and participation.

For Rasmus, note-writing in business economics fulfills a learning function. Note-writing appears to be Rasmus' way to align everyday language with the language of the subject and a way to identify with and participate in the academic and disciplinary community of his class and school. In this way, Rasmus makes use of note-writing as a discoursal learning strategy, and he employs note-writing as a mediating tool in this endeavour.

It is also clear that Rasmus has not yet appropriated note-writing to a level that can be characterised as critical note-writing literacy. Note-writing is difficult for him because he needs to develop note-writing-literacy during the note-writing process.

One focus in the article is note writing functioning as a mediating tool between the students' everyday language and the language of the subject discourse. By looking for specific elements you always run a risk to over-emphasize them when you find them. And by observing writing in classrooms you encounter much writing, on which you can think: is it worth checking for independence and reflexivity let alone mediating functions. But our focus should not be blurred by the fact that students occasionally write notes that are less reflective, because they don't know what else to do – note-writing as something they more or less are expected to do and not as something they do in an effort to learn something new. If that's the case nothing or very little is mediated, you can argue. But a student might start with unreflective note-writing (writing because that's what you do – writing without any intention to learn) that at a given point turns into a more reflective process (writing because something catches your attention – writing with an intention to learn). The unreflective and the reflective parts must thus be seen as elements of one continuous process with varying mediating intensity at different time points. It makes no sense to split the two into separate processes, one infertile and one fertile. What thus may appear as ritualized and unreflective note writing may prove to contain non-ritualized and reflective moments which actually mediate between everyday language and subject discourse.

Compared to the two Sfard-inspired learning strategies acquisition and participation we are now able to characterize students' note-writing as the use of both. Note writing can be understood as an attempt to identify with and act as a member of the academic and disciplinary social community of the class and school, and note-writing can also – at least occasionally be seen as an attempt to align everyday language with the language of the subject discourse and thereby to capture and acquire the subject discourse.

We will now turn the attention back to Michael and his enthusiasm for writing notes himself and his awareness of the prevalence of his classmates note-writing. Although primarily used as an impetus for the analysis of the Rasmus-case, and therefore not analysed as thoroughly, the analysis still documents that an identity shift is at stake in the case of Michael, but also for Rasmus. In this sense the analysis shows that students' note-writing in general is (or can be) a way of constituting an

identity shift: by writing notes and by showing others that I do write notes, I tell a narrative of myself as a competent or responsible student.

Notes

1   The anthology as a whole has three foci; 1)Theory building within the field of learning theory, 2) the interplay between theories of learning and practices of teaching and 3) the relation between learning theory and empirical research. This chapter deals with issue 2. It does so by investigating the impact on learning of a little explored and often neglected student activity; note-writing, and it circles around the question of the role of note-writing in the learning process.
2   This study is part of a larger, four-year longitudinal and ethnographic study of student writer development: 'Writing to Learn and Learning to Write' (WLLW). This study was carried out by a number of researchers at the University of Southern Denmark and supported by the Danish Council for Independent Research (Christensen et al. 2014).
3   In this chapter, I refer to the Danish *folkeskole* as lower secondary school and the Danish *gymnasium* as upper secondary school.
4   Unfortunately I didn't observe this particular lesson.

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