Distance Education Students Moving Towards Collaborative Learning - A Field Study of Australian Distance Education Students and Systems

Eva R Fåhræus
PhD Candidate
Dep. of Computer and Systems Sciences
Stockholm University/KTH
Forum 100, S-164 40 KISTA
Sweden
Tel: +46 8 16 16 03
evafaahr@dsv.su.se

Abstract

Distance education has been offered to young students in Australia for about 100 years. Recently, information and communication technology has been introduced as a means to improve communication, but not all remote students have access to this new technology. This has made it difficult to arrange collaborative learning for distance-education students. In this student-focused study, more than 40 students as well as teachers and other important persons have been interviewed and observed in schools and on remote farms. Using Activity Theory for the analysis, different contradictions were identified. Lack of technology and access were not the only obstacles. The education was built on a tradition of individual learning, and the technology at hand was not supporting collaboration. However, contradictions may result in 'expansive learning' among students and teachers, leading to more of a development towards collaborative learning.

Keywords

Distance education, Collaborative learning, Activity theory, Distance education student

Introduction

Learning is a social activity. This is a central thought within the sociocultural perspective on learning and teaching (Säljö, 2000; Wells & Claxton, 2002). All learning is influenced by the social and cultural situation, according to Vygotsky (1978), including not only teacher and peer students, but also family. In order to understand how distance education (DE) students learn, it is important to take into account their entire situation. (Phelan, Davidson, & Yu, 1997)

A fundamental principle in the sociocultural perspective is that successful learning "takes place through active participation in purposeful, collaborative activity." (Wells & Claxton, 2002, p. 7). It is essential for students to consider alternative ideas and experiences, which they meet by collaborating with other students. Young persons, in particular, need to meet each other and share experiences in order to develop their personality and relations, as well as a view of the world and cultures. But there is a *social dilemma* connected to collaborative learning*:* What is reasonable for one individual might be less rational for the whole group. The result could be "a tension between individual and collective rationality" (Kollock & Smith, 1996, p. 109). There has to be a certain overlap in students' goals, and they must be willing to try to understand the perspectives of others. (Wells & Claxton, 2002)

The present study was conducted in Australia during seven weeks in August and September 2002. The objective was to find out how DE students take advantage of technology for their communication with teachers and peer students, and in particular whether and how they learn by collaboration. To do this, it was found necessary to get a broad picture of the DE culture in Australia: the whole situation around the students, their reasons for studying at a distance, relations to their family, peer students and teachers, their at times isolated environment; and particularly how this impacted collaborative learning. The reason to
choose Australia was that this country, with only 19 million people in 7687 km^2, has an especially long history, about 100 years, of distance education for young people, in fact from kindergarten to Year 12 (K-12).

By using Activity Theory (Engeström, 1987) as a framework for the analysis, it is possible to describe relationships between students and teachers, as well as instruments, and rules for collaboration. I lean on a definition of collaborative learning, suggested by Dillenbourg (1999, p. 2): "a situation in which two or more people learn or attempt to learn something together".

Distance education in Australian high schools

Each of the seven states in Australia has its own education system and DE offerings. This study is based on material collected in three of the states: Western Australia, Queensland, and South Australia. The governments in these states are very active concerning education development at the moment. As an example, the government in Western Australia 1998 launched a curriculum framework for kindergarten to Year 12 (http://www.curriculum.wa.edu.au/default.htm). In The Overarching Statement we find the following text:

> Particular attention is given to the importance of maintaining a holistic view of curriculum, the responsibility of curriculum as a whole for such vital skills as literacy, numeracy and social cooperation, ...

There are also 13 listed Overarching Learning Outcomes, among which part of Number 12 follows here:

> Students are self-motivated and confident in their approach to learning and are able to work individually and collaboratively.

> They also recognise when collaboration will enhance their work. They work well with others and contribute in various ways, sometimes leading and sometimes following, accepting, sharing, integrating or adapting ideas from others and building on various positions flexibly and responsively.

In the part about learning and teaching we find the following text:

> Independence and collaboration
> Learning experiences should encourage students to learn both independently and for and with others.

> Working with peers enables students to be challenged by the views of others, clarify ideas and interpret and use appropriate language.

These principles and guidelines state both goals and methods for collaborative learning as part of every student's education. They apply equally to distance as to mainstream education.

The students who attend DE can be divided into three categories (each coded below) according to their objectives for studying at a distance:

➢ **School-based (S)** - Students living in or near a small town with a school without resources to offer education in all subjects and levels. These students often take some courses at the normal (mainstream) school and some at a distance.

➢ **Rural home-based (R)** - Students living far away from any school, often at a farm with only one family living there.

➢ **Other home-based (O)** - Students with medical or other reasons for not going to a mainstream school. Other reasons could be that the family belongs to a religious sect, that the student is imprisoned or is a young mother, or that the student has been expelled from mainstream schooling.

Among my 41 student informants, there were 23 school-based students, 12 rural and 6 other home-based students. Here, I do not include students that I just observed taking part in DE lessons. Most students were at the secondary level. To introduce the reader to the students and their situation three narratives are presented, one from each category. All three have been given another name than in reality: "Steve", "Rita", and "Ofelia".

School-based student "Steve"

Steve is a Year-12 student taking a course in accounting at a distance. All the other subjects he studies at a small mainstream school. The school did not have enough students taking that subject to form a class; there is only one more student, and Steve is collaborating with him. They help each other when they have problems, but most of the time he studies alone. There is a slot in the schedule for this subject, just as for all the others. Steve goes to a certain room for DE students where there is a supervisor, helping them with the material and various practicalities. Once a week, Steve has a phone lesson with the teacher and other DE students taking the same

subject on the same level. Apart from that, the main communication means are paper letters. Steve did not use ICT for communication other than finding information on the Internet.

> "I used to use the computer, type and send in. I used to email but they stopped that. It was nothing with DE, other students used it for other purposes. --- I use the Internet all the time for statistics and so. Looking for an article. Both here and at home."

Steve likes this way of studying, because he can pace it as it suits him. He also finds it easier to read and write than to listen to the teacher and learn by listening.

Rural home-based student "Rita"

Rita is studying in Year 12 and this is her first year of distance education. She went to primary school in a town not so far away, travelling each day with her mother who worked in that town. Her first year in secondary school, Rita chose a boarding school in a bigger city far away. But she did not like boarding school and then quit. *"I like to be at the farm. And my grades are going up now"*. This is how Rita describes her normal day:

> "I get up at 6.30 – 7, feed the ducks and the dog. I have breakfast and then go to my office. I don't follow a set schedule. I have a break when Dad comes in. I work until 3 o'clock and then go out and help Daddy, until 5. And then back to work if I need to."

Rita communicates with her teacher mainly via phone, but also via letters. The post comes every day--which is unusual on remote farms. She uses a computer mainly for typing. She does not use e-mail much. She has met her teachers at a camp. *"Now I can put a face and a voice to them",* she says.

At the beginning of the semester, Rita gets a box full of printed material to conduct her studies. She also gets video and audiotapes. The tapes give some extra inspiration and sometimes answers questions in the material. When she gets stuck in her work, she tries to find an answer in the reference literature or on the Internet. If that does not help, she phones the teacher.

Rita gets a lot of support from her family. They check that she is doing her work and encourages her. What is the best thing with DE? *"Being a country person, I can be here and do education,"* says Rita.

Other home-based student "Ofelia"

Ofelia lives in the farmlands but close to a town. She got sick a few years ago and the doctor told her to do distance education. Now she is in Year 10 and doesn't want to go back. "*You don't get distracted*", she says. She has phone or email communication with her teachers almost every day, asking questions about her work. And her mother helps her to understand the questions and to keep on working. "*It would be difficult without a home tutor. If she didn't tell me, I wouldn't work all day*", says Ofelia. She does not miss the contact with classmates. Ofelia chats with remote friends now and then and she also does sports together with other kids in the town. The school gathers students for camps or mini-schools every term.

Research methods and theory

A qualitative approach

By visiting their homes, meeting families and taking part in lessons, I tried to get close to the students, building an understanding of their situation. I applied ethnographic methods for the data collection through interviews and observations of 41 students, plus 11 DE lessons. I also interviewed several teachers, administrators and technicians that developed course material. Home tutors are also important persons for DE students, and I interviewed many of them too. The student interviews and observations were conducted at the students' homes (6 cases), at schools (31 cases), and via telephone (4 cases). Home tutors were interviewed in homes, teachers and administrators at schools, and technicians at schools and development institutes. Interviews were tape-recorded and then transcribed. DE lessons were conducted through telephone and radio, and I observed them

both from homes together with students (2 cases), and from schools and development institutes together with teachers (9 cases).

During the interviews, I used open questions like: "Please explain to me how you are studying" or "Describe your contacts with other students." The students showed me their material and allowed me to observe their participation in lessons. I was also shown around on the farm or school. Although I had a focus on collaboration and the use of technology, I tried to get a picture, as complete as possible, of the student's perception of what it means to be a DE student.

The students were presented to me by the DE schools, which means that I have not been able to choose whom to interview. The practical circumstances for the visits, like distance, road condition and parents' willingness to co-operate, influenced the choice. I cannot exclude the risk that the sample is imbalanced.

In reporting the results, I let the students be "heard" through citations from interviews. I have given each one of the 41 students a code to indicate the category: S for School-based, R for Rural home-based, and O for Other home-based student. Teachers are marked *Tr,* Technicians *Tn*. Utterances from lessons are marked *Ln*. To this code, I have added a consecutive number.

Activity Theory as a framework for analysis

The results are analysed according to the Activity Theory (AT) framework (Engeström, 1987). AT can be used as a framework to study the complexity of human activity. Here, it is used to analyse relationships between the learner and the ICT tools, the peer learners and the whole environment. AT takes into account the context, the social interaction between humans, and the continuous development. It focuses on the role of tools and it regards the user as a person with his or her own will, acting deliberately with clear objects in mind (Nardi, 1996).
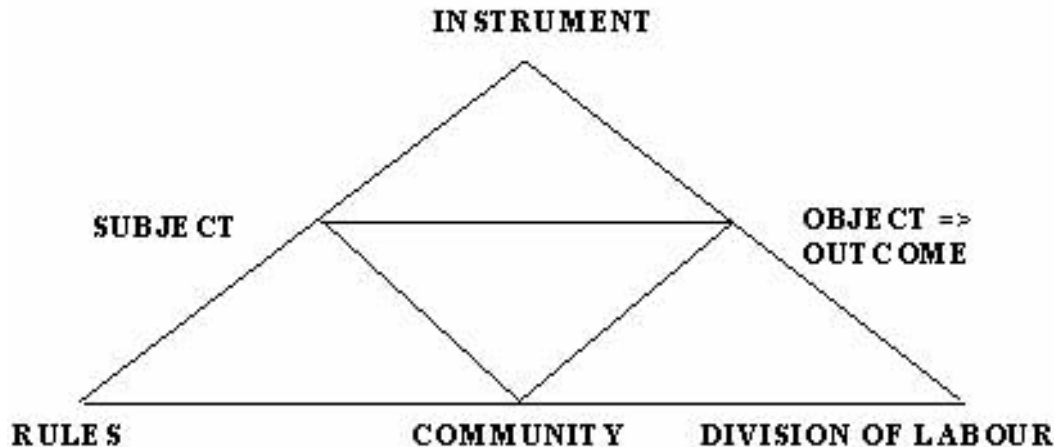

Figure 1: The structure of human activity (Engeström, 1987, p. 78)

Engeström (1987) uses Figure 1 to illustrate dynamic relations and mutual dependencies between components involved in human activity. (In such AT figures, *lines* denote relations, and corners or *nodes* denote components.) The **subject** is involved in an activity directed towards an **object** with a certain desired **outcome**. The object is not just a goal, it is something that the subject needs; a construct with a motivating force, imbedded in the culture. "The object determines the horizon of possible goals and actions" (Engeström et al., 2002, p. 215). The activity is influenced by the **instruments** used, the **community** that the subject belongs to, and the kind of collaboration going on in the community, guided through **rules** and **division of labour** (Engeström, 1987).

In my research here, I focus on the students and try to mirror their perception of what it means to be a DE student. I have, therefore, chosen to regard the student as the **subject** in my analysis. The **object** of the student's

activity is studies, and the desired **outcome** is to manage the studies in order to pass an exam. The **instrument** can be lessons, course material, a pedagogic method, and/or technology. The student belongs to a **community** of students, but here are also the teacher, the family and other important people.

Engeström and his co-researchers have described an intervention in a school, where AT was used as a framework for understanding the process as ICT was introduced (Engeström et al., 2002). In their analysis, they used a *teacher's* perspective. The teachers' object was in focus: "The general object of teachers' work is students--or more accurately, the relationship between students and the knowledge they are supposed to acquire" (Engeström et al., 2002, p. 215). They described how contradictions within the object were identified, and discussed potential effects, which they called 'expansive learning'.

There is often a contradiction within nodes or between nodes in an activity system. According to Engeström (1987; 2001), these contradictions can be problematic--but if they are handled in a constructive way, they can also invoke development, through *expansive learning*: "learning what is not yet there by means of actions of questioning, modelling, and experimentation (Engeström, 1987). Its core is the collaborative creation of new artefacts and patterns of practice." (Engeström et al., 2002, p. 216). In the analysis of my results, presented next, I try to identify the occurrences of contradictions and resulting expansive learning, especially collaborative learning.

Results

Distance education in Australia is mainly built on three components: individual work with printed material, teacher-directed "online" lessons, and physical meetings (camps, mini-schools). What they call "online" lessons are lessons mediated through radio or telephone. The rest of the time, the student is supposed to study individually, with a home tutor or supervisor as local support. The communication between students and their teacher is mainly mail-based, with "online" lessons about once a week per subject. Physical meetings are offered once a semester. These components will be described in more detail in the following text, based on interviews and observations, and illustrated by citations from the interviews.

Individual work

At the beginning of a semester, each student got a package of booklets and other material, plus a schedule. Every third week they were to send in tasks, which were corrected and commented on by the teacher, and returned to the student. This individual work took at least 80% of the students' study time.

Together with the printed material, they also got video and audiotapes, as complements. In one case, a student described this as a kind of compensation for collaboration:

> O13: Yes, in English there are always audiotapes. ... For instance, when you read a book, you don't get different opinions on it. So they make a tape with some kids talking about what they thought about what they read.

In a mainstream school, there could be a group of, say, five school-based students taking the same course at a distance. They normally worked individually in a room at school; but they did not have to go there, and some of them chose to work at home. At school they had access to computers, but they were not always connected to the Internet. If there was a group, they might collaborate, but normally they worked individually most of the time and only asked each other for help now and then, and if the material gave them a group task.

> S23: There are four of us doing the same subject. We are just helping each other with the reading task. Just going through it together. If we have any problem, we ask each other; and if no one can help, we ring our teacher.

When home-based students got to a point in the material where it said that they should co-operate with others, they were allowed to skip it.

> R6: Once in Human Biology I should test my own pulse and breathing rate and I needed someone to do it. But I could do it myself. It is not that great [a] thing.

O33: Yes, in Year 10 we were supposed to do a big assignment, like a project, together and one of us lived far away. And the other, I don't know where – a couple of hours away. We ended up sending things back and forth, so our teacher said not to worry, because we were too far away. ... Yes, we phoned a couple of times to try and sort it out but it was just ridiculous, especially as you had to do it within two weeks. Sending it there takes three days.

Each DE student needed a tutor and with home-based students it was normally the mother. In a few homes I visited, it was the father. It could also be a governess. School-based students had a local tutor or supervisor/coordinator. The main role for the tutor was to solve practical problems and help the student to keep on with the studies. Most students said that the tutor was very important for them.

O15: It would be difficult without a home tutor. If she didn't tell me, I wouldn't work all day.

S35 and S36: There is a teacher at the school. He is our coordinator. He can help us sometimes and look things up. Or we call the teacher. We first try to help each other, and then ask the coordinator, then the teacher.

Talking to home tutors, I noticed that they often felt that the authorities did not value their work. They were not paid for it, although they spent a lot of time with their students, especially with young students. The tutors described the situation as a triangle between three equally important parts: the student, the teacher, and the tutor.

"Online" lessons

All schools offered "online" lessons through phone or high-frequency (HF) radio. During a lesson, the teacher normally started by greeting each student, asking about his or her situation. If anyone had problems with the tasks of the week, the teacher explained and tried to get everybody along. After that, the teacher went through next week's tasks.

Not all students took advantage of these lessons, for different reasons. Some thought they were not helped by them, some found it difficult to hear other students, depending on the vast uptake area.

R11: Radio lessons are available but I don't use it so much. I have other activities, and my older sister can help me, and my parents. ... I don't really like asking for help. I prefer to figure it out myself.

R14: The problem is that in primary school there are enough students to group them in regional areas ... But in high school you have the whole area. We can't hear the whole class.

Normally, the teacher addressed one student at a time with a question. If a student had a question or comment, he or she could call out his or her name, and the teacher gave the word to this student. Only at rare occasions did I notice a shorter discussion among the students. My impression was that the lessons were very much controlled by the teacher and that collaboration was rare.

O31: They pretty much tell us what we need to know and say: Do this and we do it, otherwise we get in trouble next week.

Tr38: The telephone lessons are very teacher-centred.

However, teachers told me that they try to let the students discuss when suitable issues appear. Some of the teachers were experimenting with forum discussions, e.g., within Australian Studies. One example mentioned by a teacher (Tr38) was a group discussion about immigration. The students were given web sites to search for specific information. The groups were to summarise what they found and then read and comment on each other's work. The first time when this teacher practised this mode, she had problems to activate the discussion. She then read about Salmon's (2000) 5-step model, where the first step was to make sure the technology works for each individual student, and that everybody is motivated to participate. So she referred the students with technology problems to a local technician. She also started to e-mail individually to some students. This time, she managed to create a lively discussion and the students were happy. They found it easier to read what other students had written than to read from the initial source.

Students also witnessed that they appreciated listening and talking to peers.

> O13: But sometimes, when you are on the radio and you ask the teacher something, they ask: Can anyone else answer that? ... the kids would explain it better because the teacher has other thinking. ...

> S30: It is good because you can talk to them [other students] and say: 'You did this' and 'Was it hard?' 'Did you pass?'

> O31: Yes, my biology class is really good. We joke about and bounce [ideas] off each other and stuff. It is good to have a conference because I have had a few one–to-one lessons and you just got the pressure on you. I prefer conference style. ... Well, it was just a bunch of blokes, from some school up there. We can chat on the same level. Pretty smart blokes.

The opportunity to talk about the work and to report what has been done and what has not been done works as a kind of group pressure.

> O13: It's just like helping along. And I think that with that help every week it really helps you to go along. Because otherwise you could be a little bit behind. You try to catch up so the other kids don't know that you are behind. ... Yea, a good kind of peer pressure.

On a few occasions, an online "whiteboard" was used. Computers were used as communication tools, mediating not only the voices but also what was drawn or written on a "whiteboard" on the screen. In this way, the students could see what the teacher was talking about: a formula, a diagram or an equation. They could follow how it developed on the screen and interrupt the teacher if they did not understand. Also, the students could use the whiteboard to draw or write something. This implied a broader interaction between teacher and students than when only the voice was used. I could observe a strong engagement among four young students taking part in such an activity. They observed the screen attentively and took turns in answering the questions. During a group interview, two students gave the following description.

> S35 and 36: Last year we had whiteboard lessons, so the teacher could draw and we could see. That's good. They could draw diagrams and we could understand what they were talking about. ... Just while they are talking, say like a formula or something, like an equation. They are actually writing it out and you can see how it's working, it's in front of you. They tell you an equation and you can try it, how it is. And they can say immediately if it's right. ... Yes, and we can add a picture or write ourselves.

During another group interview in connection with a phone-based "online" lesson, I asked: "What would happen if you had a call without the teacher?" The answer was:

> Ln37: That would be cool! But we would never get any work done.

Most schools were experimenting with some kind of computer-based communication tool, mostly using synchronous mode. One technician described that the purpose is: "...for the students can get immediate feedback. The teacher can hold up a book and point ... There will be a camera at the teachers' end, not the students' end. That would cost too much." (Tn16) Obviously, this is not primarily meant for student collaboration but for enhancing the student-teacher communication.

Physical meetings

Physical meetings are different forms of face-to-face meetings, normally occurring once a semester for each student. 'Practicals' are compulsory in physics, chemistry and the like. The rest is optional, but most students try to attend. For some students, the journey is too long to do this each semester.

> R14: When we come down to camps like this, when teachers have really important issues like that ... then we spend some time on them and we do have discussions about them but probably not as much as in mainstream schools. I haven't been to high school so I don't know how much ... We certainly don't tend to do that kind of things [discussions] with our peers.

Most students seemed to be very happy about the opportunities to meet peers and teachers at the face-to-face meetings. There were, however, some practical problems concerning long journeys and teachers having other classes.

Analysis

Applying Activity Theory

The structure of human activity (Engeström, 1987) can help us to understand what is going on here (cf. Figure 1). Considering the motives that students (**subject**) give to their studies, I deduce that the **object** of this activity is the completion of an education in order to get a job in the future (**outcome**). This is not very surprising, and could be valid also for most mainstream students. But among the DE students that I talked to, there is an additional component: to carry out the studies individually. These students are very proud of managing their studies by themselves, taking responsibility for how they use their time. This is especially valid for home-based students. The freedom is an integrated part in the way of life on the big farms.

> O13: Some people say you don't see the real world [as a DE student]. You don't view the pressure that will be on you when you go to a workplace. But I think that kids on home schooling would work better on a workplace than - this is just my opinion – kids that go to mainstream schools with other kids because those kids, sorry, most of the kids can only work with other kids around them.

> R11: I suppose the challenge. And I really like the sense of achievement. On the property {the farm], we have a really hard life. I enjoy every day. Getting a good mark. How can I get a better mark? Just the focus. I'm a very competitive sort of person.

> R12: I think we get a far more thorough education because we do it ourselves. Which means we can go much deeper and our minds are stretched more out. We spend a lot more time on it. We don't have the attitude about school, more positive than in mainstream schools.

> S19: The best is that you don't have someone hanging over you all the time. It's all up to you. Everything you do is your fault.

The most important **rule** is that the students have to keep the deadlines. As long as they do so, they get their marks and the teacher does not complain. The family has the highest priority in their **community**, including the tutor/supervisor, with the teacher as the second. For most students whom I met, peer students seem to be less important when it comes to studying. They can be friends to meet with at camps, but not a person to learn from or together with.

The **division of labour** is rather clear: The student works with the printed material and sends in the completed tasks. The teacher sends the material and returns tasks with marks and feedback. In most "online" lessons, the teacher checks that the students work on, in accordance with their schedule. The main role for the tutor is to explain difficult parts, and to push the student to do the work. The **instrument** for this activity consists of printed and electronic material as well as pedagogic methods and communication tools.

In conclusion, in most cases that I have observed, the situation seems to be very similar to the correspondence education given while paper mail was the only way of communication. The "online" lessons, although most students and teachers regard them as important, have not changed the pattern of the activity system. They have just made the communication faster between teacher and student. Is this a static situation or are there any signs of contradictions that could lead to development?

Contradictions introducing expansive learning

I have observed several contradictions and also examples of development that I conclude are results from these contradictions. In the following text, I describe these contradictions and any resulting development in six steps.

Some students express an interest in listening to and talking to other students. The opportunity to talk about the work and to report what has been done and what has not been done works as a kind of group pressure. Some of the students express a wish to collaborate with other students.

O33: I think it makes a big difference [to collaborate]. Because with collaborative tasks you get two different people's view. I think it's better to have more people working in a group. ... different views on the issue, rather than just one view.

R14: We don't have that much interaction as in schoolwork. This is a drawback for DE that you don't tend to discuss and work with other students.

We see here that the standpoint, that a DE student only studies as an individual, is challenged. There is something to learn from other students. This is a contradiction within the object, which can expand the students' view on learning and on how to study. I list this (**Step1**) and the following steps in Table 1.

There are some practical constraints concerning the telephone and HF radio communication.

R26: We can't have the Internet or email. We have phone on a radio line. We will get a satellite soon.

R12: Well, it very much depends on for how long we run the generator. That usually means 4 hours in the morning and 4 hours in the night. But unfortunately, on our property the connection is really, really slow. But we have signed on for a satellite two-way connection via Telstra. The government pays ...

This points out a contradiction (**Step 2**) between object and instrument: If the students are to learn together, the communication between students, not only between student and teacher, has to work well. At many remote farms, the equipment is too weak to make computer communication possible. Investments in satellite connection are on their way, but it seems impossible that all remote areas and farms will have effective computer communication in a near future.

Another contradiction lies in the fact that teachers do not offer learning situations where collaboration is promoted, a contradiction between object and instrument (**Step 3**). The instruction-based teaching mode seems to dominate, but I have seen signs of a re-orientation. Some of the teachers were introducing forum discussions and electronic whiteboards.

We can notice that this expansive-learning activity met some technical problems. Not only has the hardware and software to be there; students also need to know how to use it. That demands some local support. This introduces a new role in the community: ICT support. A contradiction within the object (learning does not have to be individual) introduces a contradiction between object and instrument (technology relevant for collaboration is not available) (**Step 2**), and, in turn, between instrument and division of labour (technology can not be used without local support) (**Step 4**). The rules are also challenged by the new object (**Step 5**). Students might now talk to each other during the "online" lessons, without any interference from the teacher. They might even get each other's e-mail addresses or phone numbers, which have not been distributed before. The division of labour between teacher and student might also change as students take advantage of the possibility to learn from each other (**Step 6**).

Table 1 gives an overview over the development that could be introduced by the different contradictions. These steps are not necessarily consecutive. I have not had the opportunity to follow the development over time, but I have observed instances of different positions in the development.

Table 1. Six steps of contradictions

Step	Contradiction	Position in Figure 1	Potential expansive-learning activity
1	Individual learning, not collaboration	Within object	Expansion of students' object
2	Irrelevant communication technology	Between object and instrument	Demands for better infrastructure
3	Teachers do not create collaborative learning opportunities	Between object and instrument	Introduction of new pedagogy
4	No ICT support available	Between instrument and division of labour	Local ICT support is introduced
5	Students are not to talk to each other	Between object and rules	Students may discuss

| 6 | Students are taught by teachers | Between object and division of labour | Students can learn from each other |

Development is initiated by contradictions within nodes and between nodes in the activity system. Looking outside, we also find contradictions. When students compare their situation with what is going on in mainstream schooling, they find differences that might present new demands, e.g., the use of modern ICT. Teachers and technicians show interest in developing and testing new technology and pedagogy for collaboration. In many DE schools, there is an intense development going on toward more use of ICT. This development is going in different directions with the emphasis on better, mainly synchronous communication tools, and mainly the communication between teacher and student. There are, however, examples of teachers and tool development focusing on the collaboration between students.

As shown in the beginning of this paper, there is a pressure from governmental principles and guidelines to introduce collaboration in education, both to foster flexibility and openness, and to enhance learning outcomes. These guidelines apply also to distance education.

Discussion

The traditional way of studying at a distance was by correspondence. The students got printed material to study individually with tasks to complete and submit to the teacher, who corrected and sent the result back. There was no synchronous communication between teacher, and student and no communication at all between students, except, maybe, around examinations. Nowadays, synchronous communication has been added, through "online" lessons by radio and telephone, but the tradition of individual studies seems to continue.

Many students value the training in individual learning and hold that this is a perfect preparation for university studies and work. They seem to be proud of being self-sufficient and self-motivated. Some students, however, find this problematic and need to be pushed by parents and supervisors. Some students miss the possibility to study together with other students; when they get the opportunity, they find it very engaging and rewarding.

The purpose of "online" lessons seems to be to offer a faster feedback to students, and this is something that they value. Reasons to connect several students at the same time may be economy, administration, and to ease the burden on the teacher by offering the possibility to give instructions to many students at the same time. Some students argue that they learn even better from explanations given to them by other students than by teachers. This reveals a series of contradiction s. A contradiction like this can be solved, according to Engeström (1987), by expansive learning.

My interpretation is that the contradiction s have occurred because the traditional view on DE students as individual learners has been provoked by the possibilities given by technology and the wish from the students to collaborate during "online" lessons. The expansive-learning activity would then be to redefine DE students as learning also by collaboration. However, for change to occur, also teachers have to adapt their pedagogy to the new view on learning, the communication technology has to be upgraded, support introduced, and rules and roles adapted to the new situation.

Why is this development so slow in Australia? In many other countries, there is an extensive use of collaborative learning through ICT tools in DE. This probably has two explanations. First, the infrastructure is not there and because of the vast country it will be extremely expensive to provide all farms with good computer communication. Second, the strong culture from old correspondence education, which has worked well for many decades, stays in mind of both students and teachers.

Conclusions

A broad picture of the DE culture in Australia shows: Vast distances, students on remote farms, importance of independence and individual work, a century of paper-mail correspondence tradition; and quite recently, the introduction of ICT. Here, collaborative learning by means of ICT has been slow to start, although there are some forces towards collaborative learning in different forms within DE in Australia. Starting from the top: Governmental principles and guidelines state that collaborative learning should be an integrated part in education. Teachers and technicians are inspired by new technology to develop their pedagogic instruments and

tools. Students appreciate to collaborate with peers if and when they get a chance. However, the obstacles are enormous, especially for remote home-based students without electronic communication. The expensive infrastructure and the correspondence traditions are delaying change. Even though the obstacles are big and collaborative learning is rare within Australian DE today, expansive learning initiated by new technology, government, engaged teachers, and a strong interest from many students have started a dynamic development towards more collaborative learning.

The experiences in Australia, shown in this paper, can be of great value for countries with comparable conditions. The Swedish government is considering DE for young students in small towns without resources to offer all courses (Fåhraeus & Jonsson, 2002). Many other countries are in similar situations. Different cultures might, however, cause trouble if you try to copy solutions from one country to the other. It would, therefore, be interesting to make analogous studies in some other countries with different education cultures.

Acknowledgements

References

Dillenbourg, P. (Ed.) (1999). *Collaborative learning: Cognitive and computational approaches*, Oxford, UK: Pergamon/Elsevier Science.

Dillenbourg, P. (1999). Introduction: What do you mean by "Collaborative learning"? In P. Dillenbourg (Ed.), *Collaborative learning. Cognitive and computational approaches* (pp 1-19), Oxford, UK: Pergamon/Elsevier Science.

Engeström, Y. (1987). *Learning by expanding*, Helsinki, Finland: Dept. of Education, University of Helsinki.

Engeström, Y. (2001). Expansive learning at work: Toward an activity-theoretical reconceptualization. *Journal of Education and Work, 14* (1), 133-56.

Engeström, Y., Engeström, R., & Suntio, A. (2002). Can a school community learn to master its own future? An activity-theoretical study of expansive learning among middle school teachers. In G. Wells, & G. Claxton (Eds.), *Learning for Life in the 21st Century: Sociocultural perspectives on the future of education* (pp 211-224), Oxford, UK: Blackwell.

Fåhraeus, E. R., & Jonsson, L.-E. (2002). *Distansundervisning – mode eller möjlighet för ungdomsgymnasiet?* (Distance education – Fashion or facility in upper-secondary schools?). Forskning i fokus, nr. 1. Kalmar: Skolverket (In Swedish with a 24-page summary in English.).

Herring, S. C. (Ed.) (1996). *Computer-mediated communication: Linguistic, social and cross-cultural perspectives,* Amsterdam: John Benjamins.

Kollock, P., & Smith, M. (1996). Managing the virtual commons: Cooperation and conflict in computer communities. In S. C. Herring (Ed.), *Computer-mediated communication: Linguistic, social and cross-cultural perspectives* (pp 109-128), Amsterdam: John Benjamins.

Nardi, B. A. (Ed.) (1996). *Context and consciousness: Activity theory and human-computer interaction*, Cambridge, MA: The MIT Press.

Nardi, B. A. (1996). Activity theory and human-computer interaction. In B. A. Nardi (Ed.), *Context and Consciousness: Activity theory and human-computer interaction* (pp 7-16), Cambridge, MA: The MIT Press.

Phelan, P., Davidson, A. L., & Yu, H. C. (1997). *Adolescents' worlds. Negotiating family, peers, and school*, New York: Teachers College Press.

Salmon, G. (2000). *E-moderating - the key to teaching and learning online*, London, UK: Kogan Page.

Säljö, R. (2000). *Lärande i praktiken - ett sociokulturellt perspektiv* (Learning in Practice – A sociocultural perspective), Stockholm: Prisma.

Vygotsky, L. S. (1978). *Mind in society: The development of higher psychological processes* (M. Cole, V. John-Steiner, S. Scribner, & E. Souberman, Eds. and Trans.), Cambridge, MA: Harvard University Press.

Wells, G., & Claxton, G. (2002). Introduction: Sociocultural perspectives on the future of education. In G. Wells & G., Claxton (Eds.), *Learning for life in the 21st century: Sociocultural perspectives on the future of education* (pp 1-17), Oxford, UK: Blackwell.

Wells, G., & Claxton, G. (Eds.) (2002). *Learning for life in the 21st century: Sociocultural perspectives on the future of education*, Oxford, UK: Blackwell Publishing.