DUSC
Dutch Scandinavian Cooperation in Higher Education

Collaborative Learning in Distance Education
Report from a DUSC project

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Chapter 1  Background and Origin

The DUSC initiative

In the summer of 1997 four institutes of higher education in the Netherlands, namely Hogeschool Haarlem, Hogeschool Holland, Hogeschool Amsterdam and Hogeschool Rotterdam formed the Randstad Consortium in a joint effort to develop expertise with Scandinavian institutions of higher education in Denmark, Norway and Sweden, to begin with.¹

The consortium received a subsidy from the Dutch Ministry of Education, Culture and Science (Ministerie van Onderwijs, Cultuur & Wetenschappen), issued within the framework of a scheme to stimulate the structural, international cooperation of higher educational institutes up to the year 2000. With this scheme, and hence within the subsidy’s confines, the Dutch Minister of Education sought to encourage a structural collaboration between the educational institutions of a number of European countries, including those mentioned above.

A steering committee of the Randstad Consortium, consisting of the Heads of the International Offices of each of the Dutch higher educational institutes and an independent programme manager, started mid 1997 by establishing an outline of the intended “Dutch Scandinavian Cooperation in Higher Education” (known as DUSC from then on). Information and Communication Technology was an explicit objective within DUSC from the start of the programme, but was regarded at first as a sub-component of three broadly formulated projects, namely:

- Double degree programmes
- Innovations within Teacher Training Colleges & Education
- Active Learning

The already existing partnerships of the four higher educational institutes² were taken as a point of departure for inviting Scandinavian institutions to participate in DUSC. The result of this was eight partners from Denmark, Norway and Sweden who were all paid a visit and informed about the objectives of the intended cooperation. There were positive reactions and common interests; in short, the conclusion was that cooperation could be beneficial to all parties.

The official start

A starting conference in Amsterdam, the Netherlands, in October 1998, was the kick off for the process of cooperation. Representatives from all the participating higher educational institutes from both Scandinavia and the Netherlands, were present in the hope of developing

¹ In the course of the project Finland was added to this list.
² Another term that is also used is: Universities of Professional Education.
joint activities on the basis of the preparations done in the steering committee and the several (Dutch) project groups around the three above-mentioned themes.

One group that was formed under the proposed project of Active Learning was a project group interested in developing a module to train lecturers in how to develop a course for distance education, making use of the concept of collaborative learning. This DUSC project group (one out of approximately 10 project groups) was later to be called CLIDE, Collaborative Learning in Distance Education.

After a difficult first year without much progress (due to different factors such as drop-outs, lack of interest and trying to find new partners) the CLIDE group made a real and solid start at the second (annual) DUSC conference held in Oslo, Norway in November, 1999. The conference provided the project group, now consisting of four lecturers in higher education from three different institutes, with the opportunity to draw up a solid work plan of activities, which formed the basis of cooperation for the months to come. ICT was to be the main means of communication, in line with one of the specific objectives of the DUSC initiative.

**Project aims, target group**

The aim of the project was to develop a module to train lecturers in how to develop a course based on the concept of active learning in distance education. The idea was that up to now lecturers have been trained to develop an active learning course in a classroom situation, but often do not have the skills to develop such a course for their students at a distance, whether the students live near school or far away in another country for example.

The strength of collaborative learning, which is brought forward by many educational theorists, lies in the importance of social interaction to learning. Learning in relation to the individual means: collect, produce, manipulate, synthesize, transform and report. In relation to social interaction it means: cooperate, communicate, share and exchange, facilitating a great diversity of learning aspects.

As Information and Communication Technologies opened new ways of learning, ICT allowed new ways for group interaction and support, whilst at the same time providing access to a global network of distributed (personal) knowledge and expertise of peer learners, experts, teachers, trainers and tutors.

The members of the project group decided it was best to actually go through the process themselves in order to gain experience in how to implement and deal with active learning in distance education. Their plan of activities was based on this principle.

After the development of the module the module was to be tested and evaluated by running it with a selection of interested lecturers within the educational institutes of the DUSC network. At a later stage, after enhancing the quality of the module based on the experiences of delivering the course in the test group, the module would be disseminated to lecturers or teachers outside the DUSC network.

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3 Report DUSC conference 7 and 8 October 1999. Oslo College Norway
4 The participants of the Clide group were: Sija Geers (initiator and coordinator), Hogeschool Haarlem, Netherlands, Leif Erik Otterå and Ida Knudsen (Høgskolen i Bergen, Norway) and Anja Stofberg, Hogeschool Rotterdam, NL.
Chapter 2  PHASE ONE: development of the module

Plan of Activity

During the joint DUSC conference in Oslo, October 1999, a “Plan of Activity 2000” was developed for the project group. The objectives stated in the plan clearly divided our work into two different phases: Firstly, To develop a module to train lecturers in how to develop a course based on using the concept of collaborative learning in distance education, and secondly, To test and evaluate the module. Accordingly, the first few months we were supposed to cooperate and collaborate in a creative design and development process, and then, for the next months, try out our results with a group of students. Most of the collaboration was to be mediated by means of electronic networks. This way of organising a project work seemed very useful and interesting, because by developing a course in a collaborative way (phase 1), we would go through processes similar to our students when the developed module was to be tested and evaluated (phase 2). We believed that this experience would make us better teachers and tutors for our students. For distance education courses in general, this way of developing a course may prove to be successful.

For the first phase, the Plan of Activity outlined four different elements or themes to be worked out by the project group:

- The concept of collaborative learning
- The choice of the digital learning space
- The practical experience
- Critical success factors

These themes were placed in a timetable to ensure a reasonable progress in the project: Phase 1 had to be finished by October/November 2000, in due time to start phase 2 primo December 2000.

In phase 2, starting primo December 2000 and ending in May 2001, our developed module was to be tested and evaluated by about 10 lecturers/academic staff from the DUSC participating institutions.

Working methods

The initial plan was to use the seven-jump procedure, known from the Problem Based Learning literature in our collaborative work in the project group. In many branches of college training, this method gives good results in traditional collaborative processes. In this CLiDE project, we realised at an early stage that PBL was perhaps not the best basis for collaboration in our considered themes. This can have many different causes: It may be due to the fact that the project group members originated from different academic traditions, with

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diversified teaching experiences in very different subjects. Not all of us were familiar with the use of the PBL method, and we found out that the objectives in the project did not sufficiently match the PBL model.

This was in fact a “distance project group”, with members in two different countries (Holland and Norway). We had to rely on electronic communication, and decided to do the greater part of our collaboration based on the asynchronous system BSCW. BSCW is a computer-based conferencing tool, developed at German National Research Center for Information Technology (GMD), and have facilities for a great range of functionalities: Managing discussions and collaborative processes, possibilities for sharing documents, sending and receiving messages, organising the information in many different ways, searching and statistical possibilities, among others. We found this tool to be a good place for our discussions and contributions toward our final product: The module. We could all reach our common space in BSCW from wherever we were in the world, and so our project work, as far as this collaboration is concerned, was distance-independent.

The themes A through D (see above) were organised to secure the best structure and progress: Each of the project group members was assigned the role of moderator for one of the themes, and thus our responsibilities were shared by all of us. It was also our intention that being in charge in the moderating role would provide us, the project group members, with valuable experience in this aspect of conferencing and collaboration work. By doing this in phase 1 of the project, we felt we would be better prepared for the testing and evaluating part (phase 2).

We also planned other activities, other ways to do part of our project. In theme B, *The choice of the digital learning space*, we used a videoconference session, in addition to BSCW. In theme C, *The practical experience*, we used a synchronous, computer-based conferencing tool (Microsoft NetMeeting), and after theme C, we planned and carried out a face-to-face meeting in Bergen. See below for experiences with these different sessions. A web-site was also established for the project; there we gathered some overall information, plans, links to literature, etc.

**The collaboration process on BSCW**

The collaboration process toward the course module gave us a lot of challenges. First of all we had to get familiar with the BSCW tool, and how to use it in this setting. We experienced the importance of carefully organising our material, and many times we had to rearrange part of the structure to make the content clearer. A typical screen showing our discussions in the phase 1 period is shown in fig. 2.1. Each of the folders can have content organised in a similar way as shown here. On the top, we find the name of the folder, and where it is located in the hierarchy. On the top of the page, and behind the arrows in right column, we also find menus and buttons for different possible actions to perform on individual objects. For some kinds of actions, the buttons/links are placed by the individual objects (see fig. 2.1).

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7 [http://home.hib.no/ansatte/leo/clide/](http://home.hib.no/ansatte/leo/clide/)

8 These figures shows how the BSCW interface look like after September 15th 2001 (see [http://bscw.gmd.de/](http://bscw.gmd.de/)). The interface was a bit different when we actually performed this project.
Next to one of the folders, “Bergen Meeting”, we see a different icon, because this folder is indexed as a “Meeting folder” in BSCW, and some special action buttons are activated. If we look into this folder, shown in fig. 2.2a, we find some information about the meeting, and
behind the arrow in the top right corner there is a menu to choose from. We open “Attachments” and get fig. 2.2b. This is an interface similar to fig. 2.1, with some objects, menus and some action buttons. The objects have an icon attached, to show what kind of object it is. In this example, there are two pictures and one “discussion” in the attachments folder. Inside the discussion (not shown here) we will find some notes, comments and ideas. In the “View” menu on top of the page we can choose how to present the information. The possibility to choose, among different options, the interface between the individual person and the BSCW system is very important in order to facilitate matters for each group member.

Fig. 2.2b

Just to show how the discussions appear on the screen, one small discussion is shown in fig. 2.3. This discussion is in the latter part of phase 1, planning the start of phase 2. The name of the discussion is “Organisational aspects”.

It is not our intention to go into details about the BSCW structure in this report, only to show some examples. However, one of the main objectives in the project is to do collaborative projects by means of electronic communication, and it is therefore important to identify how some system characteristics influence the collaborative process and collaborative learning.

**Videoconference**

Although the BSCW asynchronous system was used throughout the project as the main working arena, we were aware of the fact that collaboration benefits from the use of a synchronous tool, where certain aspects of communication are concerned. Therefore we decided for one of the themes to have a videoconference session. To be well prepared for the videoconference we studied some useful information, which was provided by the “Video Development Initiative” and the “Videoconference Protocols”.

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9 South-eastern Universities Research Association (SURA) “Video Development Initiative” ([http://sunsite.utk.edu/video_cookbook/](http://sunsite.utk.edu/video_cookbook/))

10 From Ministry of Education, British Columbia ([http://www.bced.gov.bc.ca/vidcon/protocol.htm](http://www.bced.gov.bc.ca/vidcon/protocol.htm))
The two Norwegian participants gathered in a studio in Bergen University College, and the two Dutch participants gathered in a studio in Hogeschool Haarlem. With up to six simultaneous ISDN lines the video quality was pretty good. We found these sessions valuable supplements to our asynchronous communication method since we were able to talk to each other as if we were in a real, physical meeting. It was our experience that a lot of different topics can be discussed and sorted out better this way because of the opportunity of an immediate response. Especially matters of planning, timetables and division of roles and tasks can be done much more effectively via a synchronous tool than an asynchronous tool such as BSCW. At our videoconference we discussed our past experiences with the BSCW tool, characteristics of our communication and talked about other communication tools we would like to use in this project. And last but certainly not least, viewing our collaborative partners on the screen was really stimulating because of the fact that we could see our partners’ facial expressions right in front of us, thereby making the difference between a physical meeting and a virtual one like this almost insignificant. Nevertheless, we found videoconferences to be a rather exhausting (though inspiring) experience, probably because it is so intensive. You have to keep focused on a number of things (the screen, the contents, the camera, the way you should wait a few seconds before you react and more) that do not come
to you automatically, which is all due to the strict protocol of the videoconference in order to make it successful and efficient.

**NetMeeting conference**

Videoconferences used on a regular basis based upon the ISDN-technology will be rather expensive. It is expensive to hold open lines for hours, and expensive equipment is necessary to obtain sufficient communication quality. There are indeed other ways to communicate synchronously, and we decided to try Microsoft’s NetMeeting, based on the H.323 Internet protocol[^1]. This tool does not give the same “feeling” of being present in a physical meeting, because with NetMeeting we usually sit alone in our office, communicating with our collaborators through the computer.

With NetMeeting we experienced other difficulties, namely the inability to operate through the firewalls of our institutions. This was, and still is, a serious obstacle for synchronously computer-based communication systems. For security reasons, the people in our institutions in charge of the network security will not open up gates for this kind of communication. In this project, we evaded the problem by using computers outside the firewalls, and thereby got some experience with the tool, but for future application, special provisions must be made within our institutions to make the use of NetMeeting more accessible for staff members in (international and distance) projects like these.

**Face-to-Face (f2f) Meetings**

If possible, this is of course the best way to meet other people, talk together and collaborate on a subject. In this project, it was our intention to examine different ways to collaborate where f2f meetings were impossible or at least very inconvenient. Fortunately, even if we were located in two different countries and regular f2f meetings were inconvenient, we did manage to meet four times during these two years, in Amsterdam, Oslo, Bergen and then again in Amsterdam and Haarlem. Looking back, what we regarded as most important during these meetings was the opportunity to get familiar with each other, to have a better idea of the people we were going to cooperate with, to hear each other’s voices, feel the atmosphere and to get attuned to each other. Sometimes in our virtual meeting place misunderstandings arose, and we experienced a f2f meeting as a good place to clear things up.

It was our intention to have a f2f-meeting for our project students, to prepare the ground for the collaboration process, to make good and workable arrangements and agreements before starting on the virtual part of the collaboration. We realised that the fact that we were able to meet physically as the very beginning of our project had immense consequence for the communication in our group. Unfortunately it was not possible to arrange a similar f2f-meeting for our project students, and the project suffered from that.

[^1]: H.323 is a protocol, which supports synchronous communication over the Internet
Chapter 3  
Considerations and extracts from the module

Leading principles

Here we would like to present a number of the leading principles that formed the basis for the design of our module. Our first priority was to keep things manageable for our students (and for us) and therefore limit the number of tasks to four in all, in fact just as we had defined our four themes in the initial work plan.

The first task was meant to make the students familiar with the general structure of BSCW and at the same time allow our students to introduce themselves on the web, tackling two essential elements of web based learning, namely the social and technological side. There were assignments to get to know some of the important operations with the folders and establishing a kind of routine with the BSCW system was another important goal (see learning objectives for task 1 later in this chapter).

Our second task was designed with a view to providing our “students” with the two different perspectives in distance learning situations. This was done by presenting them with a case written from the perspectives of the two different parties involved in education, in other words from the student’s and the teacher’s point of view. As the participants themselves had only just become used to the system, we considered that they were highly likely to recognize the learning situation, partly as students themselves now, but they would also be able to assess the case from the perspective of the teacher, which is after all part of their daily business and regular responsibilities, being lecturers themselves. We hoped to generate a lively discussion in the student group around the case, which was based on a familiar and realistic situation.

The different tools used for collaborative learning in web based education (see chapter 2 and appendix 2) was the focus of task number 3. By getting a taste of one or more of these tools we intended to make our participants aware of the fact that each tool has its strengths and weaknesses. By experiencing this themselves they would be better prepared in making solid choices for one tool or another in the design of their own courses.

Instead of a problem case as the starting point we then formulated a number of statements or propositions for our participants to discuss among themselves in order to challenge them to find arguments for and against these statements and to provide them with ample opportunity to exchange views with each other and stimulate interaction in this way.

All the knowledge and skills, both technical and social, would then be put to good use in task 4 as they were required to write a joint paper on one topic of their choice from a list of options. All the options dealt with collaborative learning in web based environments, but each had a different focus. This is where they could show the real process of collaboration via the web, whether they chose BSCW as their main (but asynchronous) channel of communication or (the synchronous options of) NetMeeting or a videoconference to round things off. In our introduction to the task we supported them by advising them on a workable procedure to tackle this complex task.
As for group composition, we had decided to divide the participants over small groups with a maximum of 5 per group. This allowed our students, in our view, to work comfortably with a limited number of people and to maximise the learning potential within the course.

As regards schedules and deadlines, we thought it best to divide the four tasks over a period of 6 months, allowing our participants plenty of time for each task.

**Extracts**

After outlining the leading principles behind the design of the CliDE course it is now time to display the contents. The next page shows a map of the BSCW hyperstructure of the course, which is followed by pages showing some of the individual web-pages, as the user sees them on the web.
This is a map of part of the hyperstructure of the module. Each rectangle represents a folder, a file or a discussion. The objects labeled M1 – M24 are shown in the following pages. These labels have been created exclusively for this printout version, to identify the objects and the linking of objects.
CLiDE course

Name                  Shared  Note  Date          Events  Action

CLiDE cafe

Social Talks and Events

Introduction to the course

2000-12-06

Public Discussionspace

2000-12-06

Resources

2001-03-04 22:52
INTRODUCTION COURSE
TO TEACHING STUDENTS IN WEB-BASED EDUCATION

The DUSC project group called CliDE offers you this unique opportunity to get acquainted with the new developments in education based on the possibilities that Internet offers.

Objectives
- To identify the complexities of working and communicating with new media, esp. electronic / computer conferencing
- To raise the level of instructional competencies for effectively teaching and learning with new media based on the principle of collaborative learning

Course content
- A discussion on course-related issues via an asynchronous digital learning platform (BSCW)
- A problem case to be solved by using a Problem Based Learning approach, to be presented at a videoconference
- A project around assessment, using asynchronous and synchronous ICT tools

Method
Based on the principle of “learning from personal, practical experience” the participants will learn, in a multidisciplinary group, to understand and recognise the new attitude, behaviour and skills that tutors require in order to create and support students’ learning in on-line courses. At least three different ICT tools will be used for these computer-supported collaborative learning processes.

Studyload
An average of 2 hours a week for a period of 6 months, running from Dec through May. (Tip: inform your employer to regard this as staff training, or professional development)

Prerequisites
Some experience in a coaching/tutoring role to support students’ project work.
Equipment requirements: Standard computer (PC or Mac) with internet connection. Check with the Sys. Adm. in your institution for possibilities to use synchronous communication tools (e.g. Microsoft Netmeeting).
Access to videoconferencing equipment in your institution, to be used once or twice, or find a group partner within reach, who has the necessary videoconferencing equipment.
Also make sure you are able to get the necessary technological support on-site, just in case.
<table>
<thead>
<tr>
<th>Data</th>
<th>Task</th>
<th>Content</th>
<th>Media</th>
<th>Studyload</th>
<th>Tutor Group A</th>
<th>Tutor Group B</th>
</tr>
</thead>
<tbody>
<tr>
<td>4 – 23 December</td>
<td>1</td>
<td>Introduction to the unit, BSCW, the group</td>
<td>BSCW</td>
<td>6</td>
<td>Anja Stofberg</td>
<td>Sija Geers</td>
</tr>
<tr>
<td>8 January till 17 February</td>
<td>2</td>
<td>Collaborative learning in Distance Education</td>
<td>BSCW discussions</td>
<td>12</td>
<td>Leif-Erik Ottera</td>
<td>Ida Knudsen</td>
</tr>
<tr>
<td>19 February till 31 March</td>
<td>3</td>
<td>Tools</td>
<td>BSCW Discussions Netmeeting</td>
<td>12</td>
<td>Anja Stofberg</td>
<td>Sija Geers</td>
</tr>
<tr>
<td>2 April till 1 June</td>
<td>4</td>
<td>Project, defined by the studentgroup</td>
<td>choice of the studentgroup</td>
<td>10</td>
<td>Leif-Erik Ottera</td>
<td>Ida Knudsen</td>
</tr>
<tr>
<td>4 – 8 June</td>
<td>5</td>
<td>Evaluation</td>
<td>a digital questionnaire</td>
<td>2</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

M3
Task 1

Name           Shared  Note  Date          Events  Action
Introduction   2000-12-06
Assignments   2000-12-06

Notes: Introduction

Timetable

Task 1 runs from December 4th to December 23rd. If you want to continue in the Christmas holiday, feel free to do so. Task 2 will start January 8th.

Learning objectives

1. Familiarising yourself with the BSCW.
2. Finding your own and the group working methods.
3. At the end of this task you can operate at an BSCW "expert" level.
1) Introducing yourself

This will perhaps be your first contribution to the BSCW discussion space. In order to get the structure as clear as possible, we will ask you to do the following when you decide to do this first assignment:

1. Click the "Reply"-field right above this text.
2. In the screen you now come into, clear the "Subject"- and "Message"-field (make them empty)
3. Write your contribution in the "Message"-field (make sure the "Subject"-field is still empty).
4. Click the "Create new note"-button at the bottom.

Later on, we will not give you detailed instructions about how to post contributions, that is one of the things you will learn in this first task.

Well, here is your first assignment:

Write an introduction of yourself. Include what you feel you want your group know about you.

As part of the introduction you are asked to write a short (1 to 2 pages) story about your name. Some or all of the following are possible paths to include in your story:

- Who gave you your name? Why?
- What is the ethnic origin of your name?
- What are your nicknames, if any?
- What do you prefer to be called?

2) Edit Preferences

At the bottom of this page (and most of the pages in BSCW) you will find a field named "Edit Prefs". Click it.

You have now the opportunity to decide a lot of preferences for your BSCW account. Whenever you want to go in here, you can make the changes you want to.

This first time I will point your attention to the buttons in the top horizontal bar: Choose first the button "Edit details". Here you can write in information about yourself. This information will be accessible to the members of your group. If you have a picture somewhere on the web, you can give the address here. Take a look at the possible options.

Next, click the "Events" button in the top bar: Here you can, among other things, chose to get a notification by email whenever something happen in your BSCW discussion space. Very useful.

This is only a short introduction to the preferences options you have in BSCW. Later on, you should go back here and refine your choices even more.

(There were four more assignments, but not shown here)
Welcome to task 2

Introduction task 2

Assignments

In order to not mix the assignments together, they are now organised in another format than in task 1: The individual assignments are now separate "Discussions" in this folder. You just use the "Reply" or "Add note" button to make a contribution.

CLiDE course - Task 2

Dear CLiDE-students,

I will wish you all a very happy New Year! (In fact, this is the real start of the new millennium.)

It is time to start on Task 2 in our CLiDE course. Unfortunately the numbers of active students are now so small (three or four), that we have combined the group A and B into one group (as we discussed before Christmas). I have moved the material from old to new folders, and cleaned up a bit.

(This editing caused some problems since my name unrighteously pop up as author of some of your contributions when I move them from one folder to another. I apologize this, caused by automated processes in the system. I hope you nevertheless now will find what you need to proceed in the course.)

Some of you have done good work with the exercises in Task 1. It is still possible for you to complete Task 1, and even if some of the exercises remain unsolved, you can start right now with Task 2. If you feel a bit uncomfortable with BSCW, or feel that you are not skilled enough, I will recommend that you use some more time with the Task 1-exercises. Just to demonstrate that a lot of different formats are possible with BSCW, I have written this piece of information as a HTML-file on my local web-server, and used the "Add URL"-button to place it here (to get back to your ordinary BSCW-screen, use the "Back"-button of your browser).

I will be your main tutor in Task 2. My name is Leif Erik Otterå and I am a lecturer in the Faculty of Engineering Education, Bergen College. My experience with this kind of work are some years with web-supported teaching in my classes, and I have learned a lot about asynchronous communication the last two years in the DUSC project.

Feel free to ask questions whenever you want to, here in BSCW or email, and I and the other three tutors will do our best.

Regards

Leif Erik
Notes: **Introduction task 2**

- **Timetable**
  Task 2 runs from January 8th to February 17th. Your main tutor will be Leif Erik Ottera.

- **Resources**
  In the resource folder, you will find the Word-document "Collaborative Learning in Distance Education", which, together with other links in that folder, can be a help for you in Task 2.

- **Learning objectives**
  At the end of this task the student will be able to

  1. Identify problems and possibilities students and teachers encounter when working in a digital learning environment,

  2. Be aware of the learning possibilities when the role of the teacher changes from that of an expert to that of a tutor or mentor,

  3. Be able to point to possible ways of solving such problems connected with new learning methods.

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**Assignments**

In order to not mix the assignments together, they are now organised in another format than in task 1: The individual assignments are now separate "Discussions" in this folder. You just use the "Reply" or "Add note" button to make a contribution.

- **Watch and listen!**
  2001-01-18 16:35

- **Read the following problem CASE**
  2001-01-12 10:38

- **1) Can you identify all the problems in this case?**
  2001-01-12 10:38

- **2) Why are there problems?**
  2001-01-12 10:38

- **3) What can be done to solve these problems?**
  2001-01-12 10:38

- **4) How can one avoid these problems from the start?**
  2001-01-12 10:38
A student working on a collaborative project via a computer conferencing system mentions the following in a personal communication to his tutor: "If this is the classroom, you can just nod your head to show your agreement. I am not always sure if I am contributing enough or not. Other people in my subgroup, like Peter and May, are really active. I feel a sense of competitiveness. So, my survival skill is not to respond. In fact, I haven't got any feedback about my contributions. Another thing is that from the e-mail I simply cannot tell what you think, although I understand each sentence and word. You can tell from the classroom what the professor thinks about you from the body language and the way they talk. So, I feel I am not getting enough assessment."

And the following was said by one tutor supervising the same web-enabled course: "I think that computer skill-wise the students are not able to handle some of the assignments and exercises. They still need help. I guess both them and us, we are not used to this kind of environment at all. If you are in a classroom, a teacher can lead them during the process, so whenever they have problems, we can just fix it, right on the spot. However, if there is anything wrong here, there is no way we know. There is no way we can fix it right away and make it smooth for them. So that is frustrating for them and also frustrating for me because sometimes you feel you've everything you could, but it just doesn't work out that way. And then there are times that students complain that the instructions and assignments are so ambiguous, but you don't really know whether it is just an excuse or if it is real. You just don't know."
CLiDE course - Task 3

Dear Ben, Klaus -Dieter and Henk

After reading the contributions from you on our web-site the last couple of days, I we think it is time to start on the next task where focus will be on the tools for ODL. In fact you have already touched on some of the questions we are going to discuss under task 3. For instance Henks statement during the discussion: “Further it took me more time than I thought to get used to the BSCW during the first assignment” and Klaus - Dieter discussing what to do when students lack computer skills, are some examples. This will be a good starting point for task 3, which will more closely focus on the tools to use for ODL.

As your main tutor in task 3, I will present myself. I am a lecturer (half time) in the faculty of Teachers Education. The other part of my job is a position as leader of further educational courses and ODL. For the last 10 years I have been involved with satellite-vidophone and web supported ODL - courses.

As your tutor I hope to be able support your learning process and at the same time learn something myself. To show you a typical teaching situation for me just a year ago, I present a picture of my "Classroom", the desk at my office.

When the picture was taken I monitored a counselling session with 5 students who live out on an island off the coast of Western Norway. Besides video-conferencing I used the computer and web site for this course. I made the home page myself using the Microsoft program FrontPage 2000. I also used a digital camera to take pictures of student activities during our "face to face" starting conferences, to be used on our home page.

Regards
Ida

M13
BSCW is an asynchronous communication tool, which means that we are not necessarily present in the discussion space at the same time, but only leave our message there. This usually demands extra disciplined behaviour from us as participants, in order to take responsibility of the discussions and the learning process. As learners we think different, our considerations can lead us in different directions, in fact lead us into different "folders" in the BSCW space. Misunderstandings can arise, and since we are not present simultaneously, it can be difficult to clear things up.
Notes: 1) Advantages and disadvantages of asynchronous communication tools

The above-mentioned statement indicates that an asynchronous learning tool is a disadvantage. Discuss (or refer to own experience) different learning situations where using an asynchronous communication tool may be a disadvantage, and situations where it can be an advantage.

Notes: 2) Video Conferencing

Can any of the problems you encountered in the former assignment be solved by means of a video conference or other tools?

Notes: 3) Tools and learning

Learners are changing in the way they learn, and so should the tools for learning. (What requirements should these tools meet?)

Notes: 4) Facilitating web-discussions

Facilitating asynchronous discussions is harder than facilitating synchronous.

Notes: 5) How to choose a web-based computer conferencing system

Discuss the following question: When choosing a web-based computer conferencing system for distance education (like BSCW or Blackboard or Web CT) there is no point in doing a survey on the product features of such systems. You will just end up in a sea of functionalities, where you easily get lost trying to compare systems.
Learning objectives

- collecting, synthesizing, absorbing and elaborating on the material you have been working on in a productive way
- gaining an insight into the potential and complexity of web-based collaborative learning methods
- gaining an insight into how group processes can stimulate but also hinder the final product results
- experiencing the search for a suitable working method to deal with the complications in working towards a common goal
- finding a suitable studying routine for collaborative work in web-based environments
### Notes: **Resources**

- **Resources**

  The two documents you got familiar with in task 2 and task 3. Moreover, the links provided on the Clide website, see the URL in Clide Course folder under Resources.

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### Notes: **Timetable**

- **Timetable**

  This task runs from 2 April until 1 June, taking into account some holidays within this period. Tip: exchange with each other information about absent periods, to avoid surprises.

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### Notes: **Assignments**

- **Assignment with instructions**

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Produce a written paper/report as a JOINT effort, where you apply the knowledge and skills you have gained so far in the course of this module. You can choose ONE subject from the following list of options. This means that your first move should be to discuss and decide on WHICH option you will start working for your joint paper. Some more instructions around the paper follow under this list.

Here's the list of options:

1. Write a paper on the diverse requirements for successful cooperation/collaboration in internet-enabled courses.
2. Write a helpful manual for students or an introductory chapter for students who are about to undertake their first collaborative project via the web.
3. Write a paper meant for the (central?) department of your university which designs, plans, develops and implements educational material for the many different course/study programmes offered in the university. The paper is supposed to be a crucial advisory policy document which is needed for the further strategic planning of internet-enabled courses within the university. Needless to say, it should include conclusions, analyses and recommendations.

Further instructions:
For ALL of the papers the following issues/requirements need to be dealt with: student skills, personal qualities, educational material, teacher roles, responsibilities, (open-ended) working methods, possibilities and impossibilities, pros and cons, (in) suitability for learning activities, supportive actions, bottlenecks, solutions, dealing with lurkers, degree of interactivity and involvement, structure, learning objectives, composition of groups, language of assessment and feedback, critical success factors. Do use literature references as befits a lecturer in higher education.

However, the very first step is to come to some workable agreement about how to work towards the common goal in your group, in other words to find a suitable working method in your group. Discuss the different roles that are to be divided among you: the initiator, the moderator/coordinator, the decisiontaker, the motivator/stimulator, the timekeeper, the summariser, the planmaker, the observer, the clarifier, the researcher, the evaluator, the analyst etc.
Naturally, you can also discuss the various roles that YOU think are necessary to bring this task to successful completion.
Chapter 4 PHASE 2: Test and Evaluation of the Module

Participants

Having designed the module, the project moved into the next phase and the time had come to test our newly developed course by delivering and evaluating it. Before we turn to the participants in the module, an explanation is needed about the way we approached our students-to-be.

Recruiting potential candidates proved more difficult than we had anticipated. Although all the institutes participating in the DUSC network were approached, at a very early stage, with the free offer of our course in collaborative learning via the web, there was hardly any response, strangely enough. Despite the fact that our initial attempts failed, the group kept trying to find candidates via personal networks and approaching people individually, which finally resulted in a group of 8 “students”, all employed at institutes for higher education, which are part of the DUSC network. The group of candidates can be described as a diverse group, consisting of lecturers in different disciplines and in different settings.

Approach

Our plans were to start the course at the annual meeting of the DUSC network, which was to be held at Gävle, Sweden in November 2000. We had planned to hold a half-day workshop, specifically aimed at getting started with our Clide course, both technically and socially. Much of the material we had studied about web-based education and distance learning had made us aware of the fact that it is extremely difficult to start and successfully finish a course with a virtual group. Major reasons for this are the technical difficulties that students have to overcome in getting started to work with the material and the equipment, and the social side of working in a group with people who are unfamiliar to you. The face to face workshop was meant to address both obstacles and pave the way towards a well-run educational course via the internet, building on the knowledge and practical skills on the one hand and having broken the ice (probably even establishing good contact) with the group members of the module ahead. However, at a late stage the DUSC steering committee cancelled the annual meeting at Gävle due to the minimal interest of partners from the Scandinavian side, which meant that our plans for introducing and starting up the course had to be dropped as well, unfortunately.

Two subgroups

It was decided that working in two small groups of four would be more beneficial to the group members than working in one bigger group. The opportunity of giving (and getting) more stimulation and a more personal approach, thereby fostering more involvement were seen as advantages in a smaller group. Besides, it was expected that participants couldn’t easily hide behind the others in a smaller group.
In the process of running the module, however, we decided in favour of forming one group because of cancellations, as it appeared that after the first task only three students had proved to be active.

**Getting started**

A week or two before the course started all the participants were notified by way of an e-mail (of a social character) that the course was due to start within a short period and that they would receive a formal invitation to register with the BSCW platform. When the formal and functional automated message from the BSCW server was sent, it was preceded by a few less formal words from the tutors, wishing the candidates good luck with the course. Another e-mail was sent on the starting date announcing the fact that the course had then officially started.

The next step was up to the participants, namely to register by giving a user name and a password, which automatically allowed each participant entrance to the workspace with all the course material designed for them. Registering proved to be difficult for one of the candidates, so the initial process had to be repeated a few times and quite a few e-mails had to be sent before registration was successful for this participant. Half way in week 2 of the first task 5 (of the 8) participants had registered.

**Contributions to task 1**

From the start the tutors intended to work via the principle of: “learning by doing it”. Apart from that, there were more specific objectives to reach. For the first task the learning objectives were:

- Familiarising yourself with the BSCW system
- Finding your own and the group working methods
- Operating at the BSCW “expert level” at the end of the task

The assignments designed for this task had an introductory and familiarising character. They were meant to introduce the students to each other, to establish some ground rules to work with each other and to try out a number of the most useful buttons and options.

The results were as follows:

- all in all 20, “objects” (the BSCW term for contributions) were posted
- 5 participants registered
- 3 contributed to task 1, also taking into account the one contribution that was made by one participant after the time span set for task 1 was over.

As for the quality of the contributions one can conclude the following:

- not all the assignments were finished
- some of the contributions (for different assignments) were incomplete
there was no discussion in the group among themselves, even though one assignment specifically required this

**Contributions to task 2**

The learning objectives for this task were:

- identifying problems and possibilities in digital learning environments
- raising awareness of learning possibilities when the role of a teacher changes from expert to coach/tutor/mentor
- increasing skills in solving the above-mentioned problems in digital learning environments

The assignment for this task was designed by way of a case to be solved by the students jointly, while pointing them to some resources for them to use for this task. (From this task onwards the two subgroups were rearranged, in other words put together in order to find more challenge and stimulation within the group, leading to a better learning environment we hoped.)

The results were as follows:

- all in all, 15 objects were posted by the participants
- all 3 participants responded
- the participants started late, half way through the time span set for task 2
- there was discussion among the group, in other words there were reactions towards each other and the process was grew more active towards the end of the task
- there was no group answer to the questions, even though the task specifically required one
- one of the participants volunteered to be the group moderator of the task (when the tutor hinted towards him to undertake that role). However, there was no real and effective moderation done.

As for the quality of the contributions:

- the contributions can be characterised as good, with many important issues and showing quite some reflection.
- the contributions also showed that the participants used their prior knowledge of learning processes and introduced their own facts and views
- at the end of the task, one of the participants questioned the requirement of producing a group answer, which led to an explanation from the tutor. The rationale behind this requirement (increasing the quality of learning) was however never reacted to
- exchanging views was the main thing, but the contributions could not be regarded as active collaborative learning
Contributions to task 3

After some deliberation it was decided by the tutors jointly to expand the time span for task 2 with one week to provide more opportunity for solid contributions and to give the collaborative side to the learning activities a chance to flourish. As we estimated a later start in task 3 wouldn’t be harmful to the learning process in general. In fact we had anticipated it would strengthen it due to the growing activity that we noticed towards the end. Besides we considered that the successful completion of task 2 would set off a more intensive collaboration process in task 3. This turned out to be a false assumption.

The learning objectives for this task were:

- identifying the differences and possibilities between synchronous and asynchronous tools in distance learning
- assessing the value of each of the tools for a specific learning situation, in other words: when does one use what tool and for what purpose?

The assignments were meant to make a start with the BSCW system for the discussion of a number of selected statements, all focused on the use of different tools in distance or web-based learning. Again resources were supplied with the task, e.g. a succinct chapter outlining what tools were available and how they were used in distance education in general. In the course of this task the students would automatically find the need for some synchronous learning, using a tool like video-conferencing or chatting.

The results were as follows:

- all in all, 14 objects were posted by the participants
- all 3 participants contributed
- one participant reacted to all the tasks and input in this task
- another participant reacted twice
- the third participant was the first to react but reacted only once
- there was no synchronous learning by way of a videoconference (or chat meeting), although one of the participants did suggest it
- there were some attempts to try and organise a joint videoconference; the rest were individual contributions without reactions to follow them
- after a promising start, activity soon dwindled to none

As for the quality of the contributions:

- the contributions were interesting and showed relevance to the task at hand
- the contributions showed reflection and consideration relating to the issues in the task, much along the same lines as for task 2

Contributions to task 4

This section can be brief, there were simply no contributions towards this task. The reason for this will most probably be that this final task was meant to build on all the knowledge and
skills gained so far, but above all it was the task that was specifically designed as a project task to be performed by the group as a whole. As there had been no real collaboration process in the previous 3 tasks, the tutors’ expectations for their students rounding off this task successfully had fallen as the course developed through tasks 1, 2 and 3.

**Input from tutors**

Before the start of the module, it was decided that the moderation was to be done by tutors in pairs. Although all the tutors had sufficient knowledge and skills on both the “tech” part and the “touch” part, it was thought best to have pairs of tutors consisting of a more technically oriented tutor together with a tutor who felt more at ease with the social (and educational) side of the module. Moreover, the pairs needed to be of mixed nationalities.

The two tutors would then take turns in taking the leading role in the moderation of the course, and would turn to the other if he/she needed advice or support in the moderation task. All four tutors agreed that their main role in the course would be (among others) giving stimulation and guidance, giving positive feedback, steering the discussions towards the learning objectives, raising awareness to important issues and crystallizing the learning, in fact all the elements of successful coaching of people.

Some of the methods that were used were e.g. showing examples of ways to do things, hinting towards the participants possible avenues to follow, a short video where the tutor encouraged the participants and showed support, offering additional interesting material to work with, pointing the participants to relevant items from their fellow-participants to stimulate further collaboration etc.

At the end of each task the main tutor summarised what had been achieved and rounded off with encouraging remarks towards the next task.

**Evaluation**

Although the tutors had planned a full evaluation with the participants, we didn’t get round to doing it due to the decreasing response in task 3 and the final task. In fact, our final e-mail thanking all the participants for their contributions left ample room for comments or reactions, but none were made. Still, if one reads the contributions carefully, there are definitely a number of evaluative remarks worth mentioning. Here is a collection of those with quotations from the workspace:

**Issue 1: Starting position of participants**

- better facilitation of participants as regards time, equipment and support within the organisation they work for was one of the suggestions for improvement

“Full of enthusiasm I agree to participate, because I really am interested. Then I realise that it takes time and it is not part of my job. Further it took me more time than I thought to get used to BSCW during the first assignment. And I feel computer related problems very
discouraging. …. Also it would be quite helpful to have some technical support and well equipped computers.”

“I agree, it is hard and difficult, and conditions should be more supportive”.

“Of course the situation is not funny. I am very much convinced that it will become even worse in the future, as no institution will be able to pay all the up-grading necessary to make the technology work.”

“For me personally that means that next time I will put more effort in negotiating facilities in terms of time input with my superiors”.

- Credits for being active in a course as a kind of reward for efforts on the part of the participants, was another suggestion

“Maybe it is an option to start up a new module with some “real” students who can get some credits for their activity (motivation/obligation)”.

“Also it could be considered to use rewards as a means to get more commitment.”

**Issue 2: Starting a virtual course without a face to face introduction**

- The high drop out rate of this Clide course may be due to the lack of a face to face introduction.

“Maybe a course like Clide could start with two days training in subjects related to e learning:
- how to collaborate
- how to give feedback
- how to work as a group
- how to accumulate insight instead of contradict opinions
- how to support each other

additions welcome”

**Issue 3: Design and structure of the course**

- An open structure with tasks and assignments to be filled in by the participants leads to difficulties, was the experience of the participants

“The assignments are very openly structured, not to say unstructured to be a guidance in a learning process where you have to count on naïve innocent persons like me, who are not that easily moved forward.”

“One of the problems with distance communication is, I think, to stream(?) the discussion and the program.”

“Might it be that more concrete assignments would give more results?”
“Maybe this is somehow contradictory to the specific nature of e-learning but it could be helpful to plan something like a weekly online ‘chat hour’. To make sure that the participants would have contact at least once a week and react to each other immediately.”

“Is discussion the best way to learn?”

“Could we bring more variety in the type of assignments?”

“But learning is not the same as communicating (although it does not exclude it). When we arrange learning activities by the web, content has to be transported.”

“Should we commit ourselves to a more tight time schedule?”

**Issue 4: Videoconferencing**

- A videoconference must be planned and prepared, which is a problem.

“For a videoconference you need more preparation (planned time, conferencing room / equipment). I think videoconference should be well overthought (?) and cannot be held frequently. Or there should be a prearranged programme (ex. Every second Monday of the month).”

**Issue 5: Discipline**

- It is difficult to establish and keep up the routine of visiting the virtual workspace and contributing twice a week.

“To have the discipline to look at the discussions every two days as Ida suggested is not always easy.”

“Not to run away from my personal responsibility. In this respect I see (looking at myself) a problem of discipline and priorities. I think e-learning demands a great deal of discipline.”

“I think we will have another practical problem. Our own problem ‘time’. We are very close to 17th of February. What can we do on this?? How can we solve our own problem? Is this only our problem or could this be a main problem in long distance learning??”

**Issue 6: Atmosphere**

- assessing the temperature or atmosphere in the group process may be a good reflection and indication of the group products and results.

“In my former contributions I tried to relate to the questions from my own experience, merely thinking aloud, brainstorming. I received reactions from you xxx, mainly pointing out that my opinions were wrong. For me that blocked the discussion. It did not motivate me to continue
the discussion. Maybe it would be good to model our reactions more as feedback instead of a “right or wrong” discussion.”

“Till now, I haven’t reacted. Because I was a little bit shocked after finishing the last task. Well we start up the new task, I hope with a good discussion and result.”

Having come to the end of this chapter, the tutors would most probably corroborate that these issues were also the issues that affected the process and product of their collaborative work while designing and working out the Clide course. The difference that the tutors persisted and the participants dropped out is possibly due to the fact that the tutors knew that they were working towards a most concrete product in the form of a module and that the tutors were indeed facilitated by the DUSC subsidies as regards their time input in the construction of the module.
Chapter 5 Afterthoughts and Conclusions

Looking back now, we can conclude that our Clide project within the DUSC programme was one of the more successful projects that could stand the test of time. Although the project had its difficult moments, there was a general feeling of commitment to continue and finish the project properly. Keeping a long term international relationship or collaborative project going is not an easy matter; all the time one has to work on it to keep it moving and in order to round things off successfully. Out of sight, out of mind, a well-known proverb, is definitely still applicable in international projects at a time that more and more demands are made upon staff members within higher educational institutes.

Success factors

Let’s try to indicate some of the factors that contributed to the success of the CLIDE project, in our view:

• A project embedded within a larger subsidy programme or structure

The DUSC programme offered an ideal opportunity to work out an international project like ours. The facilities that were created for us within the three year programme as regards time, money and expertise in running a large scale international cooperation programme, provided us with a solid base to work from by its excellent management and organisational structure. It allowed us to meet each other at the annual DUSC meetings, keep abreast of new developments around the internationalisation of higher education and pool experiences with the other international projects and learn from that. Moreover, it provided us with a network of lecturers to test out our product, the module, and to disseminate it among all the interested institutes after the DUSC programme had come to an end.

• Group composition

The number of people (four in all) was the ideal number to work with. The fact that we came from a diversity of four different study programmes within higher education but were strangely enough often in total agreement with each other, can also be seen as a positive factor.

Although a positive and creative spirit within a project group is an essential ingredient, we would like to propose that a project group in order to be successful should incorporate (within the group as a whole), a range of capabilities or characteristics, such as enthusiasm, motivation, a sense of structuring and timing, imagination, critical thinking, compromise, self-discipline, realism, flexibility, decisiveness, helpfulness, expertise, resourcefulness, loyalty, confidence, open-mindedness, willpower to continue, willingness to share and

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12 Actually this was in stark contrast to the participants in our test group who had decided to take part in the experimental project group without any facilities whatsoever.

13 To be precise: Radiotherapy, Mathematics, Social and Cultural Education and Teacher Training College for primary education.
interdependency to name a few. As it happened, quite a number of those (and more) ingredients were present among the members of our group, in fact we complemented each other in many ways. Despite the fact that one never knows in advance what the strengths and weaknesses of a group will be, there is a lot to say for checking this matter at an early stage.

- **The use of a computer conferencing tool**

According to us, our asynchronous BSCW tool facilitated the way we could work together. It meant a continuous meeting place for us, a stable base to work from and at the same time an easily accessible archive of all the material that we discussed and all the activities that we undertook.

- **Nature of the project**

Building up expertise together, developing yourself and the group as a whole by going through a number of separate and clearly structured stages with each other, taking rotating independent responsibilities (to keep each one of us alert and motivated), pooling resources and knowledge, making joint selections, and then taking these personal learning experiences even further by putting them to use in the same project: this variety of elements and concrete tasks kept the project alive and contributed highly to our achievements.

Last but certainly not least, it must be stated that there was an interesting spin off for our institutes. Without too much trouble we could translate, as it were, our efforts into concrete actions within the working environment where we usually operate and these activities were warmly welcomed. All in all, we feel we have greatly benefited from this unusual experience provided for us by the DUSC programme.

**A final word**

As we have mentioned earlier, a great deal of the project was based on our assumption that developing a distance learning (or web based) course by a team of tutors who make use of the same methods and equipment and who go through the same processes as the students they develop the course for, is a more successful course of action than the development of such a course within one institution by a home-based team of tutors.

Our recommendation would be to explore and research this assumption further in future international projects.
Appendix 1  The Concept of Collaborative Learning

1. Preface

This module is based on the experiences of your course tutors, who accumulated a wealth of information and expertise in the past year by going through a number of learning processes while working on the construction of this module. In this first chapter you will find information about our working process, our concept of collaborative learning including the teacher’s role and the value of collaborative learning in web-based education.

2. Introduction

In our project we set out to work via the principle of learning by doing, in other words to experiment on collaborative learning in distance education by developing this project and this module in a collaborative way. At our initial meeting in Oslo (October 1999) we jointly decided on a number of themes (all in all 4) to work on. We also decided that each theme would be explored with a different ICT tool, in order to find out how effectively each of these tools works and to experience the strengths and weaknesses of each of the tools. The first (and permanent tool) to be used was the discussion group method or CMC (Computer Mediated Communication) at the BSCW site (Basic Support for Co-operative Work, based in Germany). The first theme focussed on discussing our own individual concepts of collaborative learning.

At the initial meeting in Oslo, decisions had also been made to assign special responsibility to one member of our group for each of the themes, which meant that each theme was “moderated” by a particular group member, who would monitor the process, summarise the contributions, keep a general overview and write the final paper on the theme as input to the module, next to his/her own participation in the discussion. All the themes, worked out into separate papers, were meant to build up and produce the material for the module for tutors/lecturers in higher education who are starting on (or considering) projects using collaborative learning in web-based education.

Things worked out a little differently in the end. At our interim (physical) meeting in Bergen, we adjusted our plans and course of action and came to a number of decisions, which resolved our tasks of writing the actual module.

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14 These 4 themes were: A. The concept of collaborative learning, B. The requirements of the digital learning environment, C. The practical experience and D. Critical success factors.
15 This can be found at: http://bscw.gmd.de
3. **What is collaborative learning?**

Our joint definition of collaborative learning is as follows: “active learning in groups with the purpose of achieving competence and generating/creating knowledge by co-operating, communicating, sharing and exchanging”.

However, the process side to this definition leaves ample room for questions and consequently, different views. Examining a number of issues in the collaborative learning process logically leads one to focus more closely on the two main components, namely the tutor’s/lecturer’s role in collaborative learning and the student’s role. The element of distance education, or Internet-enabled education adds a special dimension to this, which will be dealt with along the way.

4. **The teacher’s/lecturer’s role in collaborative learning**

The role of a teacher/lecturer is not the traditional one anymore, where students expect the teacher to tell them what to do, how to do it and pass on a lot of knowledge along the way. There is general agreement that the role of a lecturer has changed into assisting, facilitating and coaching the learning process of the students, giving feedback, stimulation, inspiration and encouragement, observing, helping and guiding where necessary.

Some will add that the teacher must become a collaborative member of the system without surrendering the unique powers and responsibilities of leadership that can and must facilitate and guide the learning process.

If we agree that it is the overall responsibility of the lecturer to make the arrangements and create such a learning environment that collaborative processes can take place and are sustained, then this leaves us with the question: how active or passive should a lecturer be in his role?

Experiences from our group show that it is difficult to keep a group on the right track, especially in a virtual setting. Tackling this problem is definitely up to the lecturer to a great extent, but how and how frequently is often not clearly defined in advance.

One aspect that may form an essential element in a collaborative project is the start. It is in fact THE moment for a lecturer to introduce himself and the project assignments to be worked out. In (collaborative) project work within an educational institution one easily notices that it is difficult to get the students going when they feel they haven’t got a good grasp on the tasks at hand or when they don’t seem to understand the goals and assignments ahead of them. For projects in distance education, in a virtual classroom, this will not be any different, in fact it could definitely make things worse. Some complicating factors could be: To what extent e.g. are the students familiar with all the ICT tools to be used in the project, what equipment can be used collectively, which individually? what to do if there is no response at all from your fellow group members or if systems are somehow incompatible? Knowing or not knowing who your (sub)group members are could be another factor, which could complicate things and put students off.
These and other complicating factors can be recognised and dealt with effectively (or: anticipated and alleviated) when the web-based education project starts with a **live or physical meeting** with group members and tutor / lecturer. With the right starting programme (dealing with the product and the process side of the project) students can jointly prepare the ground for the coming period of virtual project work and feel stimulated to really commence with their project (while the tutor is still physically available to them). The starting meeting would be the ideal moment to decide on working procedures and to create the right group atmosphere (or group culture), after familiarising themselves with the tasks at hand and getting to know their lecturer, their coach for the coming period. This solid foundation at the start could mean the difference between success and failure, as we all will realise that in distance education the absence of face-to-face contact could lead to students hiding behind their computers and not responding to messages, even if they are meant as encouragement or assistance.

However, if by any chance such a solid, physical start together cannot take place because of financial reasons e.g., then it is still feasible to take up a collaborative project in distance education in our opinion, but that would definitely require special competencies on the part of the students (as well as the tutor) in order to finish a project successfully.

5. **The importance of collaborative learning**

Cognitive research on educational practices emphasises the significance of collaborative learning in human cognitive and social development. The emerging research on collaborative learning in distance education involves the mutual engagement of participants in co-ordinated efforts to build new knowledge and to solve problems together\(^\text{16}\). In a shared problem-solving process, students who have partial but different information about the problem in question appear to improve their understanding through social interaction. In fact, the diversity of cognitive styles, heterogeneity of developing competencies, differences in experiences and knowledge, and a multiplicity of interests are strengths rather than weaknesses in collaborative learning. In other words, the idea behind collaborative learning is that one can capitalise on cognitive diversity through joint problem solving and one can make use of the particular talents of the individual group members. If one person is a good organiser, it may be a good idea to let that person pull the project together and assign “jobs” to everyone else. If one person is a computer person, then perhaps that person can introduce and help the rest of the group with the electronic resources.

Our idea is that still many teachers are relying on the so-called “one to one” learning model and focus more on individual students than on trying to create collaborative learning groups of students, and possibly also (as in our module) on collaborative learning communities of teachers.

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6. ICT tools and collaborative learning

As ICT can now facilitate a digital learning environment, it is high time teachers/lecturers experience this learning environment for themselves to assess its potential for the richness of intellectual activities they can now create in their instructional design of modules. Collaborative learning in web-based education can be enjoyable, cognitively challenging, socially meaningful and culturally relevant, as we hope you will experience yourselves in the course of this module. As in all teamwork, collaboration involves working together under conditions that emphasise peer-exchange, shared goals and the added value of co-operative enterprise, which is why collaborative learning implies the acquisition (by individuals) of knowledge, skills and/or attitudes occurring as a result of group interaction. Computer conferencing is a particularly suitable vehicle for generating this kind of collaborative work, as this tool involves a shared space for the exchange of ideas and the work on a common (written) product.

As it is our goal to increase your understanding of the collaborative learning process and the students’ actual experiences in an Internet-enabled course, we hope you will also experience the way students manage their feelings of isolation in a virtual classroom, and the way they resolve potentially frustrating problems, two aspects that can easily be discussed and resolved in a face-to-face meeting.

Having finished the course you will realise just what the complexities of working and communicating with new media consist of and the role you, as a tutor, will have to play to effectively teach with the new ICT tools.

In this module we have chosen to use BSCW as the basic and permanent digital learning environment. More (factual) information about ICT tools will follow in the next chapter.
Appendix 2  The Tools of Collaborative Learning

1. Introduction

This course focuses on the communication part, or more specifically, the collaborative learning part of distance education, by means of computer based tools. In the following paragraphs, we will present some views and questions about three different tools, and draw attention to specific characteristics, which should be kept in mind when choosing tools for computer based communication.

It is important to realise that there is a wide range of computer based tools available for educational purposes, more or less specialised tools for specific tasks. When choosing tools for a course, we should think deeply about the level of Web integration we want for the course. Bonk et. al. (1999)\(^{17}\) describes in their paper how, in a systematic way, the web can be integrated in a course at different levels. When the issue is collaborative learning, we have chosen to limit our scope to three different tools addressing three different aspects of communication. These are an asynchronous computer based communication tool (BSCW), a synchronous computer based communication tool (NetMeeting) and videoconference. This chapter is an introduction into the functionality of these tools with respect to collaborative teaching and learning. Some references for further reading will be given, when and where applicable.

By using a tool in the communication process of teaching and learning, other than the natural and often subtle forms of communication, like body language in face-to-face meetings, these tools will, in one way or another, influence the pedagogy, or in other words the way the teacher teaches and the way the student learns. In most kinds of distance learning settings, where a student can physically “hide” from the teacher and classmates, the responsibility of the learning is in a more explicit way placed on the student him/herself. When the course, in addition, relies heavily on technology based tools, like computers, students will face new, additional, challenges. It is important for teachers to be aware of these challenges and needs, in order to give their students the best possible preparation before the course and the best possible coaching during the course.

2. Asynchronous and synchronous tools

Computer based communication through the Internet has traditions before the World Wide Web came into common use (with the introduction of Mosaic in 1993). There were several conferencing systems available; most of them based on the telnet protocol, where participants could send their messages to a shared virtual room. The technology was called Computer Mediated Communication (CMC). Most of these virtual conferences were what we call asynchronous. That means that the participants don’t have to be present in the virtual room at the same time, they just read messages and leave their new messages there. Later on, other participants log in, respond to messages and keep the process going. The functionality of

these first virtual conferences was to a great extent limited to the exchange of text messages. Other file formats, like graphics and sound, had to be transmitted through other Internet Protocols (like ftp). Along with this technology, telnet-based synchronous communication systems were developed. These were systems where participants simultaneously were logged into a telnet host, and a message was immediately seen and recognised by the others. Two of the most popular systems of this kind in the early nineties are called Multi User Domain (MUD), and MUD-object oriented (MOO).

With the web-technology all this changed dramatically. Systems became a lot user-friendlier, and several different functions could be integrated into one single tool. Fundamentally, the web is an asynchronous system, but synchronous tools can be integrated, as the applications can be seen and used through the web browser.

The following matrix (next page) gives an overview of the required functionality and the tools needed and available in this course. The different tools will be discussed in more detail later. A prerequisite (not mentioned in the table) is a satisfactory Internet connection and a later web-browser version.

3. **BSCW (Basic Support for Co-operative Work)**

When developing this course, even when writing these chapters, your tutors in the project group communicated extensively through the asynchronous tool BSCW. In this process we gained valuable experience in the functionality of the system and we learned what works and for what purpose, we learned how to behave in a virtual meeting place, how to perform the moderator's task, and so on.

One of our first common experiences was the importance of having the system introduced properly before a course starts. To avoid a confusing structure, to learn where and how to post contributions, to learn the meaning of the different symbols frequently used and shown on the site, to give ourselves an overview of possible functions and options, that’s all crucial for how we will succeed with the tool, and for our attitude to work this way. BSCW, like most modern similar systems, has extensive online help and there is also a complete (100 page) manual available to print out. To get familiar with the way BSCW works we just have to spend a few hours, so that one is able to work effectively and efficiently with the system. It will save you many frustrations later, and make BSCW an even better tool. Some of this introduction can be done at the conference in Gävle or can be made as part of the first lessons, in collaboration with group partners and under the supervision of a tutor.

3.1 **The functionality of the BSCW System**

This paragraph is a quotation from Wolfgang Appelt and Peter Mambrey\(^ {18} \):

The BSCW Shared Workspace system is an extension of a standard Web server through the server CGI Application Programming Interface. A BSCW server (Web server with the BSCW extension) manages a number of shared workspaces; i.e. repositories for shared information,

\[^{18}\text{Wolfgang Appelt and Peter Mambrey: Experiences with the BSCW Shared Workspace System as the Backbone of a Virtual Learning Environment for Students, a paper presented at the EDMEDIA99 conference in Seattle, USA, June 1999 (http://bscw.gmd.de/Papers/EDMEDIA99/index.html)}\]
accessible to members of a group using a simple user name and password scheme. In general, a BSCW server will manage workspaces for different groups, and users may be members of several workspaces (e.g. one workspace corresponding to each project a user is involved with or, in the case of teleteaching, each course that a student has selected).

<table>
<thead>
<tr>
<th><strong>Function</strong></th>
<th><strong>Tool</strong></th>
<th><strong>How to use</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td>Introduction, general info</td>
<td>Web-browser, like Internet Explorer</td>
<td>A web-address (URL) will be given</td>
</tr>
<tr>
<td>Create short notes / replies</td>
<td>BSCW</td>
<td>Through your web-browser</td>
</tr>
<tr>
<td>Create formatted text</td>
<td>Word processor (like Word etc.)</td>
<td>Upload file to BSCW</td>
</tr>
<tr>
<td>Create graphics etc.</td>
<td>Any standard application</td>
<td>Upload file to BSCW</td>
</tr>
</tbody>
</table>

**Asynchronous communication:**
- Visit the common virtual room, the virtual meeting place / workspace: BSCW, Through your web-browser
- Create messages: BSCW/email
- Read messages: BSCW/email
- Communicate with your tutor: email/BSCW

**Synchronous communication:**
- Computer based: NetMeeting, (Free) part of the Microsoft Windows package. Can communicate with similar applications on other platforms (Mac a/o.)
- Videoconference: Video studio (with ISDN-lines)
- Face-to-face / live meetings / telephone: Car/Aeroplane/Train/Ship, Will be used if possible

Assignment submission: email/BSCW

A shared workspace can contain different kinds of information such as documents, pictures, URL links to other Web pages, threaded discussions, member contact information and more. The contents of each workspace are represented as information objects arranged in a folder hierarchy.

In addition to the normal download of information from a Web site, users can also upload information from their local file system into a BSCW workspace. For example, a teacher may
upload exercises into a workspace. Students download them onto their computers and later upload the "homework" they were expected to perform back into a workspace for review by the teacher. The following are the main features of the system:

- **Authentication**: People have to identify themselves by name and password before they have access to BSCW workspaces.

- **Version management**: Documents within a workspace can be put under version control, which is particularly useful for joint document production.

- **Discussion forums**: Users may start a discussion on any topic they like and the system presents the threads in a user-friendly manner.

- **Access rights**: The system contains a sophisticated access rights model which allows, for example, that some users may have complete control over an object in a workspace whereas others have only read access or no access at all.

- **Search facilities**: Users can specify queries to find objects within BSCW workspaces based on names, content or specific properties such as document author or document modification date. Furthermore, queries may be submitted to Web search engines and the result of the query can be imported into workspaces.

- **Document format conversion**: These facilities allow users to transform a document into their format of choice, e.g., a proprietary document format into HTML, before downloading it.

- **Interface to synchronous communication**: Through this interface users can specify synchronous sessions and launch respective tools, e.g., audio/video conferencing software or shared whiteboard applications.

- **Customisation**: Through user preferences the users can modify the system interface to some extent, e.g., whether or not they want to use a JavaScript or ActiveX enhanced interface.

- **Multi-language support**: The interface of the system can be tailored to a particular language by straightforward extensions. Several languages (e.g., French, Spanish, Catalan) have been created by users of the system and are publicly available.

A co-operative system should provide awareness information to allow users to co-ordinate their work. The *event service* (activity reports) of the BSCW system is an attempt to provide users with information on the activities of other users, with respect to the objects within a shared workspace.

Events are triggered whenever a user performs an action in a workspace, such as uploading a new document, downloading (‘reading’) an existing document, renaming a document and so on. The system records the events, and presents the recent events to each user. ‘Recent’ in this context means events which have occurred for an object since the user last ‘caught up’ action, an operation by which users can tell the system they are aware of the events that have occurred so far and no longer wish to see them in the workspace. Events can be caught up at different levels, from individual objects to complete workspace folder hierarchies.
Each event entry describes what was done, when and by whom. Although this approach for providing group awareness is very simple, feedback from users of the BSCW system indicates that information such as 'A uploaded a new version of document X', or 'B has read document Y' is often very useful for group members in co-ordinating their work and gaining an overview of what has happened since they last logged in.

Figure 1 is an example of the user interface of the BSCW system. It shows a listing of a folder containing three sub-folders ("bug reports", "proposals & remarks", "software"), a link object ("Public Server"), a MS Word document ("What's New"), an object containing the results of a WWW query at a search engine ("Altavista Search Results"), a meeting object ("final make (beta)") and a discussion object ("What do you think about..."). The icon in front of each object's name indicates the type of the object. Behind each object is the name of the person who created the object and the date when it was created or most recently modified.

![Figure 1. HTML user interface to a BSCW shared workspace](image-url)
At the top of the screen there are buttons for triggering operations such as "Add Member" to provide access to this folder to other persons, or "Add Document", "Add Folder", "Add URL", etc., to create new objects within the folder. Other actions such as "Catch up", "Copy" or "Archive" can be applied to objects which have been marked through the tick boxes in front of each objects' name. Further action buttons appear in a line below each object (e.g., "Modify", "Replace", "Convert", "Edit Query", or "Reply") since they are only applicable to one particular object.

Behind three objects ("proposals & remarks", "software", "What do you think about...") there are so-called event icons which indicate that an event occurred, e.g., the "What do you think about..." discussion object is new since user "elke" visited this folder the last time and there have been modifications within the folders "proposals & remarks" and "software". Clicking on these event icons would give more details about the event, e.g., which user(s) triggered these events.

3.2 Send a message by BSCW or email?

Today most people in the educational community are familiar with the use of email. Why don’t we use email to send messages to our collaborative partners? There are situations we must use email. Since email has become very common, most of the people familiar with email read their mail every day. They don’t have to log in to some specific host, they just turn on their computer. Because of that, it is justified to say that email is a medium that allows “pushing” information instead of the predominantly “pulling” function/principle of the web. With email, we can make sure that we reach the students immediately, and vice versa.

The advantage of BSCW, however, is that the information is structured in a way we find comfortable, in addition to all the other functionality of BSCW.

4. Synchronous tools

In this course we have decided to implement two synchronous tools. It is a fact however, that synchronous distance interaction reduces the potential openness and flexibility of distance education, by insisting that student is in a certain place at a certain time. Nevertheless, as mentioned in the introduction, by addressing different aspects of communication (by using different tools), we may obtain a more total communication and learning environment, with better learning as a result.

4.1 Videoconferencing

“Facilitating attendance at meetings is one of the simplest yet most popular uses of video conferencing. For meetings that already regularly take place and require face-to-face communication, video conferencing can substitute for the actual physical presence of remote participants. This reduces travel costs as well as travel time and makes meeting attendance more convenient, and more likely to occur. Meetings that may otherwise not have been scheduled due to travel costs and time are also enabled via video conferencing. More frequent, short, often informal meetings can enhance the sense of teamwork across groups who are working on the same project. Video conferencing assists with this by providing
remote participants with much of the face-to-face familiarity that comes with physical presence, including the subtle but rich elements of facial expression, body language, and eye contact.”

When thinking about videoconferences, we usually think of group-to-group meeting or one-to-group meeting. In one-to-one meeting, computer based applications may often be more practical, as discussed in chapter 4.2.

In videoconferences, the quality of the audio and video are critical to the success of the participation. If these factors function sufficiently, the participants may feel the conference like a “real” meeting, like all the people are sitting in the same room. It is however important to realise that the virtual character of the meeting demands certain kinds of behaviour from the participants. It is important to be aware of what we are doing in relation to the microphone and camera, and who is leading the meeting or “has the floor” at any given time. Some useful advice about how to behave is given in the Videoconference Protocols.

We have in our project group experienced videoconference with the equipment connected through ISDN lines. This technology is easy to use, we just dial up the actual phone number, and the video quality is good if a sufficient number of ISDN lines are used. A drawback is expensive open telephone lines, if the conference lasts for a while. Equipment of good quality is also expensive, and not all institutions in higher education have this opportunity to hold virtual meetings.

A videoconference of this kind is more or less limited to the transmission of video and audio. Advanced equipment has in addition the opportunity to show documents on the screen. To go a step further, to be able to “real” collaboration at a distance, with sharing and exchanging of documents, text-based chatting a/o., in addition to the video and audio facility, we will in the next paragraph discuss a computer based, synchronous communication tool.

4.2 Microsoft NetMeeting

Microsoft NetMeeting is one of many clients based on the so-called H.323 protocol.

Microsoft NetMeeting was chosen because it is a natural part of the Windows system, it is free, and is characterised as “probably the best known and most widely implemented H.323 client” (Robert Jackson, University of Tennessee). One of the early versions, NetMeeting2.0, was in Network Computing, November 1997 prophesised “We suspect that NetMeeting is going to be the way to go for collaboration, so expect many vendors to follow suit”. A recent review of Microsoft NetMeeting 3.01 is given by Alfred Poor in the PC Magazine, March 31st 2000 (rated 4 of 5 points):

“NetMeeting comes with Windows 98 and 2000. It is bundled with many cameras, and you can download it free from the Microsoft Web site. For an easy installation, NetMeeting has a wizard to help adjust your audio settings. The application's interface consists of a small window showing the incoming video image during a call—or your own local image if you

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19 Southeastern Universities Research Association (SURA) Video Development Initiative (http://sunsite.utk.edu/video_cookbook/)
20 from Ministry of Education, British Columbia (http://www.bced.gov.bc.ca/vidcon/protocol.htm)
21 H.323 is a protocol, which supports synchronous communication over the Internet.
haven't yet connected. To place calls, you can enter a TCP/IP address or use entries from your Windows Address Book, Microsoft or third-party directories on the Internet, or a list of people who have called you.

NetMeeting assigns separate windows to different tasks: text-chatting, sending images, and using the whiteboard, to name a few. You have many windows to manage, but when you're not using the extra features, the main interface is quite clean.

NetMeeting supports the T-126\textsuperscript{22} standard, so its whiteboard can work with other compliant videoconferencing applications. Other collaboration features let participants share control of a program running from one connected computer regardless of their location. This power can give callers access to remote systems' programs—handy for technical support or dialling into your office computer from home. NetMeeting also lets you transfer files to some or all participants in a conference.

Remote access requires security, so NetMeeting encrypts transferred data but not audio or video streams. The program also has user authentication and password-protection features.

NetMeeting is designed to make the most of available bandwidth. The audio stream is given priority, and the video stream is adjusted to fit the remaining bandwidth. Only those parts of the frame that actually change are updated. An entire new frame is sent every 15 seconds to clean up any scrambled images.”

If we don’t have a video camera and/or microphone installed, NetMeeting can still be used for sharing whiteboards, chat, transfer files and sharing applications. You will then not see or hear your collaborative partners, but nevertheless have the feeling of communicating synchronously. In fact, if NetMeeting is used in a many-to-many meeting, the video- and sound facility can be rather confusing, as this functionality is based on a one-to-one communication. NetMeeting used in a setting like that is firstly a tool for collaborating with documents and applications over the network.

\textsuperscript{22} T-126 is an international recommendation describing Still Image [Conferencing] Protocol Specification
References

All references are given in footnotes on the actual page. In addition, we here present all the footnotes:

1 In the course of the project Finland was added to this list.
2 Another term that is also used is: Universities of Professional Education.
3 Report DUSC conference 7 and 8 October 1999. Oslo College Norway
4 The participants of the Clide group were: Sija Geers (initiator and coordinator), Hogeschool Haarlem, Netherland, Leif Erik Otterå and Ida Knudsen (Høgskolen i Bergen, Norway) and Anja Stoferg, Hogeschool Rotterdam, NL.
7 http://home.hib.no/ansatte/leo/clide/
8 These figures shows how the BSCW interface look like after September 15th 2001 (see http://bscw.gmd.de/). The interface was a bit different when we actually performed this project.
9 South-eastern Universities Research Association (SURA) “Video Development Initiative” (http://sunsite.utk.edu/video_cookbook/)
10 From Ministry of Education, British Columbia (http://www.bced.gov.bc.ca/vidcon/protocol.htm)
11 H.323 is a protocol, which supports synchronous communication over the Internet
12 Actually this was in stark contrast to the participants in our test group who had decided to take part in the experimental project group without any facilities whatsoever.
13 To be precise: Radiotherapy, Mathematics, Social and Cultural Education and Teacher Training College for primary education.
14 These 4 themes were: A. The concept of collaborative learning, B. The requirements of the digital learning environment, C. The practical experience and D. Critical success factors.
15 This can be found at: http://bscw.gmd.de
18 (Same as footnote 6)
19 Southeastern Universities Research Association (SURA) Video Development Initiative (http://sunsite.utk.edu/video_cookbook/)
20 from Ministry of Education, British Columbia (http://www.bced.gov.bc.ca/vidcon/protocol.htm)
21 H.323 is a protocol, which supports synchronous communication over the Internet.
22 T-126 is an international recommendation describing Still Image [Conferencing] Protocol Specification