Making Distance Learning Collaborative

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Abstract

The paper outlines a way of study that makes distance learning collaborative, discusses the potential of and problems in computer support, and concludes by putting up a list of requirements to the design of computer support. The ideas presented build on ten years of experience with project organised computer supported distance learning at Aalborg University, Denmark, in which the authors have played an active role.

Keywords — Collaborative learning, experiential learning, distance learning, project organisation, problem orientation, CSCW, and CSCL.

1. Introduction

Collaboration as a goal of learning goes together with other learning goals such as integration of theory and practice and coping with uncertainty and change. As teachers at the Open University for ten years, the authors have experienced collaboration as a learning goal among the students. Most distance students are employed, studying part time. Quite often they make their employer pay their fee. Employers do this because they want to expand the organisation's potential for "organisational learning", while the students themselves want to expand their current professional competence. The wish to obtain collaborative skills is one instance where goals of the employers and the employees come together. "Organisational learning" is a concept put forward and given meaning by Argyris [1] and Schön [9]. Inspired by Bateson they emphasise the importance of generating double-loop learning through the questioning of assumptions. The skills required to engage in double-loop learning are skills that in a wider perspective enable humans to cope with uncertainty and take action in a multicultural and multivoiced and ever changing environment. Collaborative skills do not only make people responsive to, but more likely innovators of change, based on what Schön [9] has called reflection-in-action. Such skills do not necessarily come along with academic training. However, these skills are increasingly demanded among academic professionals.

The basic hypothesis of this paper is that the development of collaborative skills through academic learning requires a way of study and a study environment that:

(a) lets a group of students formulate a shared goal for their learning process

(b) allows the students to use personal motivating problems/interests/experiences as spring boards

(c) takes dialogue as the fundamental way of inquiry.

The project and problem oriented study form was implemented at Aalborg University as the overall pedagogic strategy twenty years ago as a response to experental learning, the radical trend in pedagogy in Europe in those days. Today, it is no longer an experiment but forms a solid foundation for the university studies at Aalborg University, despite the fact that experiential learning is no longer the dominating pedagogical fashion, The project organised and problem oriented study form has proved its effectiveness as well as its efficiency on strictly economic and qualitative terms.

For the last ten years the project and problem orientation has proved its relevance also in the Open learning activities carried out in Aalborg. Most of the students at Open University want to improve or change career and enhance their ability for reflection-in-action, building on their professional experience. For these students the project organised and problem oriented study form offers a great opportunity, but also, especially with respect to time and location constraints, a challenge and some problems. The following is a brief outline of the foundation and experiences with problem and project oriented distance learning at the University of Aalborg, Denmark, especially with respect to how collaborative skills are acquired.

2. Basics About the Project Organised and Problem Oriented Study Form

Project pedagogy has been the working principle for university pedagogy at the reform universities in Denmark, respectively Roskilde University Centre and Aalborg University since the beginning of the nineteen seventies. In the founding days the emphasis was on the critical potential in letting the students take their point of departure in practical problems and personal experience. Today the project organised and problem oriented form of study simply seems to work well, providing high rates of accomplishment at a satisfying level of qualification. In contrast to the traditional university pedagogy building on lectures, information dissemination and self study, research [3; 8; 7, 2] have shown that the students through the project pedagogy develop the above mentioned "collaborative skills". Through *problem orientation, interdisciplinary, exemplary learning, participant control, project work* the students develop the ability of team building, critical discussion, reflection-in-action and the ability to take action in less structured and uncertain environments, and the students express in general great satisfaction and high motivation, in internal as well as in external quality assurance evaluations. Lately, in a ranking survey conducted by the largest newspaper in Denmark, the students at Aalborg University expressed the highest degree of satisfaction with teaching and learning among Danish students including those coming from traditional universities[1].

2.1. Theoretical foundation

While in the theory of organisational learning, collaborative skills are seen as important to obtain, they in the pedagogical theories behind project pedagogy are rather taken as a precondition:

The theory of experiential learning views learning as a social construction process. The German Marx-inspired critical pedagogical philosopher Oscar Negt [6] has suggested that the university may be viewed as an "emancipatoric room". Through critical (and ideology-critical) studies combining personal experiences with theory through the collaboration between teachers and students the traditional scientific paradigm is transcended and alternative scientific paradigms emerging. On the personal level, the learner get the chance of viewing her/his professional practice in the light of different scientific paradigms.

The theory of "situated learning" formulated by Lave and Wenger [4] takes apprenticeship learning as the archetypal instance of learning, and suggests that collaboration understood as legitimate peripheral participation in a practice is the most fruitful way of learning. Through participation the students informally and successively learn to deal with practice, to acquire the university culture and discourse.

[1] Jyllands-Posten, April 30, 1995.

The activity theory, coming out of the so-called cultural historical school of soviet psychology of the thirties suggests that learning takes place in spiral processes starting in outer experiments dealing with the material in a goal oriented way, preferably in co-operation with a more capable peer Vygotsky [10], continuing as a process of inteorisation and a further process of externalising, such as helping other less capable peers.

2.2. Pedagogical implementation

The idea of collaboration as the vital point also in learning at the university level, has, as mentioned, found a practical pedagogical implementation in the project organised and problem oriented study form as practised at the University of Aalborg.

The key principles of this pedagogy is - in addition to traditional theoretical academic training - to integrate three levels of involvement:

(1) The subjective condition. The problem has to be immediately meaningful and take as the starting point the experiences and the interests of the students

(2) The objective condition. The problem has to illuminate or reveal the historical and the societal circumstances of the problem.

(3) The action level. The problem shall point to action for the students, producing alternative ways of dealing with (professional) practice.

At the beginning of each semester the students are building teams in a problem formulation process driven by personal experience and/or curiosity. As they strive to investigate their problem, they - through the discussions with their supervisor - are faced with the scientifically theoretical and methodological demands that constitutes their discipline, as well as with the diversity of opinions and world views represented in the group. Since they are working on the same project and are faced with an examination of the project at the end of semester, the frustrations and break downs in understanding produced under these circumstances mostly turn out to be productive to the individual learning process as well as to the quality of the outcome, the project report.

Through their discussion the students develop skills to formulate a valid argument and judge its potential falsification, just like if they were students all on their own. Since they have to do it in a peer group, they at the same time are forced to take the argument further than they would dare to and be able to, being on their own.

The need of shared understanding stimulates the student's social imagination and enforces them to go behind every-day knowledge, seeking a shared view based on relevant information. In this process they de-

velop communicative (and meta-communicative) competencies, and the ability to participate in intellectual collaborative work process.

2.3. Organisational and environmental frame

The studies of the about 10.000 students at Aalborg University are organised in "themes", one per semester, and the basic elements of the curriculum are subsumed accordingly. The students form "storgrupper" (big classes) with a group of teachers attached. The themes constitutes the professional profile of the education. The themes focus on the core elements of the subjects (theories and methods) to be studied. The themes are organised in such a way, that increased and progressed knowledge and learning may be obtained throughout the study.

Within a theme, half the study time is spend on lectures and course activities (introductions and overview of the core disciplines) and half the study time is spend on collaborative project work (exploring a scientific and a professional practical problem in depth).

All students in a "storgruppe" share course activities while project work run in groups of five plus/minus two students. This way of organising provides a shared framework for the students' and teachers' discussion and inquiry, which although motivated out the students interests, is framed under supervision, so that a satisfactory level of insight in the curriculum of the discipline is guaranteed.

The implementation of the study form puts certain demands on the physical and organisational environment. For the group work to be effective it is necessary that each group have a study-room of their own, so that they can keep something like ordinary working hours at campus, go back and forth between the group room and the library and the lectures, have discussions and enjoy their meals in the canteen. Their "life" forms a platform of contact to the academic milieu and to older and younger students, which generates a lot of possibilities for informal, peripheral learning and socialising.

3. Project Organised Learning When Distant

At the spring term 1995, 1200 students were studying half-time under the Open Learning Programme at Aalborg University.

Two of these courses, Health care informatics and Humanistic informatics (100 students) are using computer conferencing, FirstClass, as the main communicative infrastructure. The courses are organised so that the students are offered a distance learning packet (against small payment) offering communication software, and modems.

The Open Learning courses are based on the concept of problem oriented project work. The idea of using FirstClass is to build a virtual university as a scientific community for the open university students and more specific to support the distributed students' project - and course work.

Besides using the conference system, students and teachers use other conventional media, and the students attend four weekend seminars in a year on campus.

At the first seminar they form groups around initial problem formulations and get introduced to the electronic communication facilities. Each group form at conference group in FirstClass, and the "storgruppe" forms one too. During the first "in-between period" the Open Learning students mostly use the project group as a reading and discussion forum, and prepare only a small pilot project to learn the methodology.

When they come to the second weekend seminar, they have established better social contact, and are able to reformulate the problem. Some re-grouping may take place. During the next in-between period they start doing more systematic inquiry, reading, literature- and information research co-ordinating different perspectives, often re-framing the problem. Some may do empirical studies, related to their work. At the third seminar they have a bunch of new ideas, thoughts, theoretical problems and questions they want to discuss with each other and the teacher. In the third in-between period they get on writing the project. They comment on each others' contributions, discuss and clarify argumentation and point of view, using FirstClass as their primary medium of communication. At the fourth seminar they get on discussing also drawing on the expertise of the teacher. The final period is used to finish the project and to co-ordinate the contributions of the group members. A group examination on campus, which takes its point of departure in the students project work, finally finishes the year.

Over the years - a BA takes 6 years - we see a decrease in the enthusiasm in the net-communication. People now know each other quite well, some want to work alone because they have special professional interests or certain working styles, while others become so fascinated by the academic knowledge presented, that they do not want to spend time on communicating with peers. However, even in those cases then, the students miss the shared knowledge building generated through the group-work.

4. The Effect of Mediating Technology on Group Processes

As stated before, collaboration as a learning goal and collaboration as a precondition for learning are two lines of thought, both leading to a study form that favours collaboration. In addition for those many students, who come to the university as mature practicians, collaboration is a way of overcoming two major problems: the problem of accommodating to the academic discourse and the problem of becoming part of the academic community living at a distance.

Making distance learning collaborative by means of computer conferencing is an attempt to overcome some of the problems related to distant students' out-of-campus-situation: The fear-related-to-building-a-new-identity-mechanism, which is always present in the students admission to the university, is pushed to its limits under distance learning conditions. Difficulties related to the formation of and entrance into the peer group of fellow students without having well-known interpersonal rituals for group formation at disposal, fear related to engagement in the academic discourse, the time and place constraints for students depending on company-employment, and last but not least the trouble building a shared understanding among students with multiple backgrounds, and located in multiple cultures.

Computer conferencing does of course not compensate for all the above mentioned problems. However, in combination with the project organised and problem oriented study form, it offers a new way of dealing with distance learning. Project work, even computer supported at distance, offers the students some kind of a safe base, a playground (or an emancipatoric room) where they may practice the academic discourse, exchange and explore their multiple backgrounds, learn about their different interpersonal rituals for group work and the different perspectives on the subject matter. FirstClass makes it possible to stay in continuously contact despite of time- and place constraints, and it enhances the possibilities of getting to know each other. FirstClass supports some of the work processes necessary for project work: collective messaging and informing, asking questions, exchanging statements, commenting on working papers and a broader access to a community of learners.

However, there are several problems too. Shared commitments and shared goals are always hard to obtain in team work, depending as they are on good faith, accept of intellectual and disciplinary differences, and time and motivation for collaboration. Under distance learning conditions it is even more difficult. Although FirstClass supports some of the activities related to project work, it has its severe limitations related to the narrow codes and the asynchronous communication. Problems which are well-known in the CMC-community. [5]

5. Collaborative Learning in a CSCW Perspective

Despite the fact that CSCW issues tend to relate to working life, and CSCL to the life of education, both the CSCW design community and the CSCL community may learn a great deal from reviewing the Aalborg experiments with project organised and problem oriented team work. The lessons to be learnt concerns the formation and daily work with communication and collaborations in teams in the perspective of (organisational) learning, and ways to accommodate the design of the computer support accordingly.

- Getting to know each other and each others' ways of working, and being aware of one's group mates' state of mind and being able to express one's feelings is important. To some extend a code for the personal aspects of communication develop over time, but sometimes too slowly, sometimes not in the most caring and supportive ways. A strategy (didactic) of enhancing communicative competencies in a distributed community would therefore be convenient:

- In order to enable the students to share goals, knowledge and understanding, when working together on the net, the CSCW-tools, in this case the conferencing system, have to support synchronous communication, in case negotiation of a social or subject oriented difficulty, or a potential misunderstanding may take place.

- Facilitation of work on shared documents, and the possibility of sharing literature electronically in a way that keeps personal comments and suggestions together with, but separable from, the formal writing, is also crucial.

- Since the negotiation of what is really the issue, is a prominent part of the project work, when it is problem oriented, a way of facilitating joint scenario-making and conceptual frame-work building would be an important step forward.

- The Aalborg experiences are made with FirstClass, a well working and well-known on the shelf system, reliable, but with few possibilities for tailoring. A programming environment, that would allow for tailoring together with or by the users, taking advantage of the energy and ideas growing locally, would be a real benefit. There are always major differences between teams and groups of teams in styles and preferences, and what means a push forward for some, is experienced as a lay back by others. Also, if technically smart enough, simply having to negotiate the facilities of the computer support will support the team spirit as much as furnishing and decorating the work environment when being physically together.

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