# Drama as a metaphor for the design of situated, collaborative distributed learning

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## Abstract

This paper deals with the complexity of designing distributed collaborative learning (CSdCL). The complexity is found in the integration of those pedagogical,- organizational- and technological aspects that influence a collaborative learning process. From a basis understanding of this complex triadic feature of CSdCL, a metaphor from theatre is suggested as a framework for understanding and approaching design of CSdCL situations. Three CSdCL-examples from practice are analyzed and critical aspects of CSdCL are explored from the perspective of this new framework to demonstrate the benefits of using a holistic metaphor to comprehend and capture the challenge of CSdCL design.


**Keywords**: Collaborative learning, CMC, design, metaphor, drama.

## Introduction

*Computer support for collaborative learning (CSCL)* is a new research field including a focused study of the use and development of computer-based artifacts to support collaborative learning . There is no clear conceptualization of the field, but all approaches distinguish themselves from the traditional, 'transmissive' model of learning in which the instructor is assumed to be the sole source of knowledge and skills. Unlike the teacher-centered models, pedagogical approaches to collaborative learning treats the learner as an active and reflective participant of a collaborative community.

Focused studies within CSCL research deal with computer support for *distributed collaborative learning (CSdCL)*. Such approaches build on the communicative potential of communication technology for designing and organizing collaborative learning communities among geographically dispersed students.

Several experiences with CSdCL, however, have indicated that the deployment of CMC-systems to collaborative learning situations is a complex challenge, in design as well as delivery. This complexity is positioned in the interplay between organizational, pedagogical and technological aspects.

This paper describes and discusses the nature of this complexity and its challenges to design of CSdCL-situations. The empirical basis consists of three CSdCL cases, all of which are claimed to depart from the idea of collaborative learning, but with different emphasis on the interactive processes amongst the peers. The situated complexity of each of the cases is explored and indentified using Aristotle's fundamental idea of *drama as the representation of a complete whole action*.

The section "theoretical perspectives" deals with the problem of the very fundamental theoretical perspective of the designer of CSdCL and stresses the importance of a conscious theoretical approach.

In the three next sections the empirical cases of CSdCL are introduced, and their individual theoretical basis are touched upon.

The section "Theater: a metaphor for understanding and design" forms the forum for the introduction to drama and theater as the point of departure for understanding and approaching CSdCL design.

Finally, the section "Concluding remarks" provides an account of concluding remarks on some important principles for design of CSdCL

## Theoretical Perspectives

In this section we turn to the perspectives behind design, and we explain in what way these are related to learning theory.

Collaborative learning models treat the learner as an active participant in a collaborative community, and see active participation as a key element in the individual development of cognition.

At a broad level it may be stated that collaborative learning in a certain sense captures and connects the twoÑoften contrastingly described Ñworlds of learning modes: learning through individual detached reflection and learning through dynamic interaction in a social community.

With an ontology that rejects dualism, and an epistemological view of the world that fundamentally gives prior to social behavior and social interaction in the acquisition of knowledge, it also clearly follows that it is necessary first to review the *conditions of inter-personal interactions* before a discussion of learning and principles of learning is initiated (Sorensen, 1996b). Especially, this is crucial in situations where one is about to investigate and define *new*, *virtual* learning spaces and environments in which inter-human interaction has a significant status in the learning process.

There are numerous studies reporting *computer support for collaborative learning* (CSCL) building on various traditions of learning; such as the tradition of collaborative learning and the tradition of distance learning.

In relation to the former we refer to the Socio-cognitive theory represented by Piaget, and the socio-cultural theory represented by Vygotsky. In comparing these two major theoretical understandings, one may say that the latter seems more focused on the goal and the outcome of human activity, while the former seems more concerned with the methods of active cognition through interactions, e.g. in order to provoke cognitive conflicts cognition. In practice, these two views may be interpreted as mutually interdependent in terms of how learning takes place. Research on CSCL that is inspired by Vygotsky tends to focus on computer support for collaborative actions amongst peers with different intellectual or knowledge abilities (e.g. between students and teacher), whereas the research inspired by Piaget emphasizes computer support for social interactions amongst collaborative actors with an equivalent level of knowledge. In past research around CSdCL, however, these two views are often combined and exist harmoniously as one perspective behind design.

In relation to the latter the tradition of *distance education* must be added. Such tradition does not exist in Denmark (a, geographically, small country with no need for bridging distances). This is in sharp contrast to other Scandinavian countries - in particular Norway - where the correspondence institutions form an important alternative model of learning. In contrast to the tradition of collaborative learning, this tradition rests on the understanding of learning as an individual and independent process, and of written assignments as something to be sent to a tutor for comments and guidelines for further progress. Organizationally, the correspondence model provides the same learning flexibility with respect to time and space as CSdCL. CMC-systems have been considered promising in terms of adding a social component to the individualistic learning process. social learning environments within the tradition's ideals of flexibility.

## Distributed Collaborative Learning: Three Cases

We present three empirical cases. The examples have certain features and conditions in common, but there were also significant distinctions between the cases. The most outspoken of which were the interpretation of collaborative learning, and the educational and learning perspectives embedded in the tradition of the delivering institutions.

### Distributed Collaborative Learning: Case 1 Pedagogical Online Seminar

*Pedagogical On-line Seminar* (POS) was arranged and run by NKS Distance Education (partly in cooperation with the University of Oslo) as a part of the EC-project COSTEL.

The principal aim of POS was to give future consultants, teachers and educational administrators an appreciation of the strengths and weakness of the use of CMC-application in distributed collaborative learning environments. The actual number of participants was 26, mainly college and university teachers from the Scandinavian countries.

The foundation for design was the pedagogical and didactic principles of pedagogical seminars, taking place within an academic community. The inter-personal interactions took place in one virtual conference shared by the tutors, (POS) designers and the participants. Two tutors (experts on distance education and CSdCL) had a central position in the virtual conference. In the beginning of each week, the tutors presented a summary of parts of the seminar literature (selected articles on distance education and CSdCL) associated with the planned theme. In addition, some issues from the articles were selected for discussion. The tutors' role was to follow up on the discussions with comments and further discussion topics.

In order to acquire experience and knowledge on the topic of using CMC-systems for collaborative learning situations, the participants were expected to take actively part in the discussions. The discussions were pulled off by contributions of good quality, in the sense that they expressed the results of serious,

preceding reflections in relation to the readings. Each contribution to the dialogue was often of considerable length. The dialogues, however, did not developed into interactive, dynamic discussions among the participants, and the general style of most of the contributions was one of written assignments (Sorensen, 1996).

The POS used the text-based conferencing system, PortaCOM, as the mediator of the interactional activities. The underlying metaphor behind the design of the interface is one of text and transfer of text, and of the processes of writing, sending and receiving texts.

## Distributed Collaborative Learning: Case 2 Online Education and Training

*Online Education and Training* (OET) was run in parallel to the POS course by the Open University in collaboration with the University of London.

The principal aim of the OET course was to give students an appreciation of the strengths and weaknesses of the use of CMC-applications as teaching and learning media. The main emphasis in the course was on the potential of the virtual conferences for supporting inter-personal interaction and learning. During the course, students experienced a variety of different styles and ways of using CMC, including teacher-led, tightly moderated, conferences, online small-group work, inter-personal networking, peer review, and online guest lectures and seminars. By the end of the course, participants should be able to decide whether CMC presents an effective solution for some of their own training and education problems, and be able to apply concepts from the course to their own context.

The course attracted 47 participants, from the UK, Australia, Iceland, Israel, Russia, Spain, and the USA, including university and polytechnic lecturers, school teachers, educational advisors, nursing trainers, a prison training officer, and information technology and computing advisors. The course was divided into five modules, each lasting three weeks, and each with a different tutor/moderator responsible. The tutor set up and moderated the discussion environment on the CMC system for his or her module. One major conference was set up for the course, with one or more topics for each module of the course, and topics for socializing, practicing the system commands, project outlines, queries, and so on. Topics and conferences were added as and when the need arose.

The potential of the CMC-application was viewed to be associated with at least three central aspects of the collaborative learning process: 1) learning through interaction with a group, 2) helping the learner to structure knowledge, and 3) making possible a certain level and type of social interaction among the participants.

The OET experience was very dynamic and interactive. In the case of the OET course, many participants felt obliged to spend far more than the estimated 100 hours on the course which the tutor team had planned.

The diverse structure of the virtual environment seemed to help the orientation and perception of the participants in terms of overviewing and separating the various parts of the content. Also, the occasional division of people into smaller groups seemed to have a positive effect with respect to the establishment of group identity and confidence in submitting entries. Also, the social forum was widely used and seemed to play an important role for the separated learners.

The conferencing system used was CoSy. A text-based and command-based system which, conceptually, in its interface metaphors, attempts to mirror to the user an already familiar world of communication as interaction.

## Distributed Collaborative Learning: Case 3 Problem Oriented Project Pedagogy

*Problem oriented project pedagogy* (POPP) is the theoretical and practical foundation for institutional based collaborative learning environments at the Aalborg University (AAU). Problem oriented project pedagogy views *critical reflections* on problems of practice - rather than *solving* tasks or problems pre-defined by an academic community - as a conditional principle of development of cognition. This builds upon the didactic principle of *problem orientation*. Creativity, engagement and motivation are as important as problem orientation. In this respect *participant's control* is essential. This means that the students should *own* the problem, *formulate* it, and *define* it. Critical reflections, creativity, engagement and motivation are necessary processes in order to penetrate the problem. A 'project' is the organizational frame for collaboration amongst peer-students.

An objective in these CSdCL situations, is that the computer should be the mediator in the peers' creation of a common collaborative environment, in order to achieve learning and producing a common final project report. This means that the computer application is not only supposed to occupy the mediating role, but also a role in the coordination of individual contributions, of tasks and responsibility, and as a means for discussing, negotiating and reflecting on knowledge and individual experiences.

The students were three women, with family and full time work. The overall aim of their project was *critical reflections on CSdCL*, based on problem oriented project pedagogy.

Critical reflections and intensive cooperative work is a demanding process in which engagement and commitment are critical factors. It was experienced, however, that these critical factors meant extra work

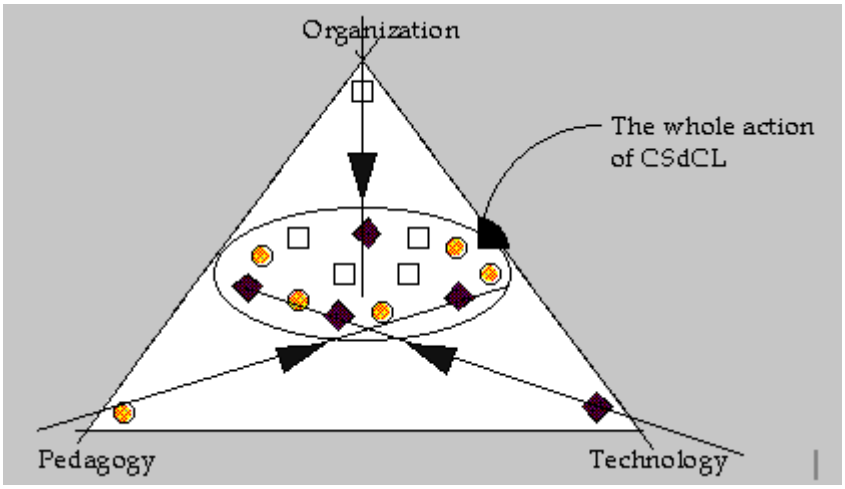
(instead of being experienced as a means for developing cognition and learning) when taking place in a learning process realized through CSdCL. Discussions took place, but they did not end with a common consensus, because the students did not manageÑor did not give priorityÑto negotiate and confront their individual perspectives and contributions.

The distributed problem oriented projects used the conferencing system FirstClass as the mediator of the collaborative activities. Similar to PortaCOM, the information transmission paradigm of communication, seems to have been the focus behind the design of the technology, only in FirstClass it is not a general text metaphor, but a general mail metaphor that constitutes the point of departure for the design of the interface.

## Theater: A Metaphor for Understanding and Design

In the former sections, we presented the collaborative learning approach which frames the design of the three cases of CSdCL, and we illuminated the basic features of the interactive and collaborative activities that took place in each of the CSdCL cases. The cases indicate a varying degree of conflict between theoretical intentions in the CSdCL design, and the expected effects in the actual delivering process. The conflict is present in Pedagogical On-line Seminar (POS), but it appear to be even more outspoken and critical in the case of problem oriented project pedagogy (POPP).

As we see it, this complexity of design and practice of CSdCL may be due to a weak integration of pedagogical, organizational, and technological aspects. The interpretation of *integration* is illustrated in the following figure.




The corners of the triangle represent aspects of, respectively, organizational, pedagogical and technological features. *Organizational aspects* are related to the educational tradition embedded in the perspective of the delivering institution. In the POS example the tradition of the delivering institution was distance education, rooted in established methodologies of correspondence education. In the POPP example the tradition was problem oriented project pedagogy, with confrontations of perspectives and a certain degree of peer interdependency as two fundamental principles. In the OET example, the tradition was built on a view to Òemploy the fullest range of communication technologies to teach a full university undergraduate curriculum to any adult who wanted such educationÓ (Moore & Kearsley, 1996, p. 26). *Pedagogical aspects* are connected to theories and practice of collaborative learning, and to the roles which students and tutors are expected to fulfill due to the pedagogical approach. In the POS example, the pedagogical approach was academic seminar, and its interactive nature. In the POPP example, the pedagogical foundation was built on critical reflections and problem orientation, and the meaning of inter-human interaction to these didactic principles. And in the OET example, the approach was focused upon interaction through communication technologies. *The technological aspects* are connected to conditions and limitations of available technology.

The difference in the extent to which practice of the three cases actually reflects their individual theoretical basis, may indicate that a 'holistic view' on CSdCL as a phenomenon of its own has not been applied in design. Although a new mediating artifact has been brought into the picture, it seems that this - only to a limited extent - has spawned changes in the two other categories of aspects.

In the following, we adopt the perspective that to design CSdCL situations which can be characterised by 'quality' and 'success' with respect to learning, we do not need fragmented metaphors to help the understanding of this challenge. We need metaphors that eliminate the borders between them. Such a metaphor, 'the metaphor of drama', for a holistic comprehension of the challenge of CSdCL design, has been applied on the three cases. Both theatrical design and CSdCL design, are aimed at creating representations of worlds that are like reality, only different.

In order to structure the design of a play, Aristotle suggested six qualitative elements that have a certain relationship to each other: *action, character, thought, language, melody and spectacle.* The structure of these elements may be considered in terms of a hierarchy, with a certain relationship between them. Each

element has a causal or material (technological) relationship to the elements above or below.

## Concluding Remarks

Today - and in the future - the challenges of educational designs will be framed by the conditions imposed by a society based on lifelong learning. Especially, this need is found within the area of continuing education and competence development for adults, with limited possibility to follow institutional-based learning due to commitments, both in relation to work and social life. The communicative potential of different communication technologies in combination with the increasing emphasis on collaborative learning approaches, has during the last years been considered as promising with respect to design and organization of flexible learning.

Many experiences of CSdCL, however, clearly demonstrate, that the 'transfer' of collaborative learning processes from being traditional, institutional based phenomena to becoming virtual, distributed phenomena mediated by communication technology, has been far too simplified. Compared to traditional collaborative learning situations, distributed collaborative learning situations have become even more blurred because of a weak correspondence between interpretations of collaborative learning in design, and the resulting CSdCL situation.

The weak correlation between theory and practice appear to be most outspoken in CSdCL situations that emphasize critical reflections through dynamic and confronting interactive processes together with a high degree of commitment and mutual responsibilities amongst peers.

Design of CSdCL has been carried out under the implicit assumption that the learning environment and framework are invariable factors in CSdCL design. Finally, as pleaded for here, we need, in this new approach, to understand CSdCL, not as a learning situation established from fragments of entities of technology, organization and pedagogy, but as a holistic phenomenon, requiring a new perspective that is able to capture its holistic nature.

The metaphor of drama offers such a perspective. In applying theater as metaphor, we have explored and put into focus some critical aspects of CSdCL design:

- CSdCL design is not a 'left-hand' activity. It cannot be easily applied as an 'add-on' phenomenon in a traditional educational institution. It requires resources at several levels (money, time and people).
- CSdCL design has to depart from a fundamental theoretical understanding and awareness around the interactive conditions in an asynchronous and text-based environment, and from a conscious view on the roles of interaction and collaboration in collaborative learning.
- CSdCL design needs to find a balance between tradition (experiences of practice) and transcendence.
- CSdCL design has to depart from a holistic perspective, capturing the entire *expected* and *new* roles and actions on behalf of the actors (students, teachers).
- The language of CSdCL design needs to submit to the rules of the language games of 'the play' - the pedagogical approach of distributed collaborative learning.

Understanding CSdCL in terms of an integrated wholeness, does not make the actual practical challenge appear too much simpler. So far, we know that the need for reflective considerations on past practices are essential, and that it is only through analysis of actual delivering processes spawning continuos re-designs that good CSdCL situations are born. There are also clear indications that these analysis and evaluations must go hand in hand with a basic theoretical understanding of design perspective as well as a clear and conscious view on how learning takes place. What, in addition to this, we plead for here, as a pertinent and transcending factor in terms of guiding CSdCL designs towards success, is a holistic view on the whole action of learning as it may unfold, synchronously, on a stage in the theater of lifelong learning.

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