Learning in Multicultural Environments: Learners as Co-designers

Laura Zurita
Aalborg University, Denmark
zurita@hum.aau.dk

ABSTRACT
This article will analyze how the teacher should collaborate with the learners in a co-design of virtual learning environments. Teachers design learning environments to fulfil a set of goals and aims, with a target group in mind. However, if there is a mismatch between the target group and the course, the learners will react to it either by exercising resistance, or by trying to adapt the artefact to their needs. In such cases, the teacher can use the learners' contribution as an input to the design. By using cultural historical activity theory, this paper will analyze those processes of co-design, using a case study as an example, and suggest that teachers recognize and support the role of learners as co-designers. On the one hand, it will contribute to the motivation of the learners. On the other hand, it will improve the quality of the course, adapting it to the needs and wishes of the target group.

Keywords
Activity theory, co-design, adaptation

INTRODUCTION
There are great expectations to the use of Information and Communication Technologies (ICT) in education bringing about a change in the teaching and learning. While it has been shown that the introduction of ICT can be a catalyst for change, and a good opportunity to reflect over teaching practices, curricula and educational organization, we cannot assume that ICT by itself will produce those changes (Bruce 1993; Zurita and Ryberg 2005). To create changes, we have to be aware of the complexity of the pedagogical practice, and design carefully our Virtual Learning environments (VLE). The design has to pay attention to the fact that the virtual students need a design that motivate them and centres in their needs and activities: even a superficial look at existing on-line courses shows that this is not always the case. As Bonk et al point out, "while learning theories about a learned centred learning are being more and more accepted, e-learning artefacts still are largely based in a teacher centred world – view. Therefore we need to develop and integrate our VLE artefacts designed to support learners' creativity and team working". (Bonk 2003). It is important to give first priority to meeting the learners' needs and designing learning environments based on the learner's activities, needs and goals.

As Asensio (Asensio 2000) argues, it is important that the design and the structure of the course fit into the issue and the philosophy as the class, more than having a particular way of teaching. This is a goal oriented design process, where we analyse the goals to be reached, and then using the tools necessary for the learners to reach it.

However, even when the course has been carefully designed, sometimes there is a mismatch between course and the target group: the course does not seem to work, and the students react either by exercising resistance, or by behaving in unexpected ways. This article presents a course where some of those mismatches happened. Instead of just taking it as a failure either of the teacher or of the students, the strategy was then to adapt the course during the implementation process. This article is a consequence of the learning gained this process, and intents to be a contribution to the understanding of how to improve the consistency between teacher's and students´ goals and understanding of the tools in on-line courses.

To study the relationship between tools and goals, I will use cultural historical activity theory (or just "activity theory"): this theory studies real people in real setting, because, as Christiansen points out "It is not possible to understand artefacts unless you understand activities in practice" (Christiansen 1996). That way, we can link theory and the world, "ascending from the abstract to the concrete" (Engeström 1987). Related to this context-oriented research is the intention that HCI research

provides analysis and recommendations to practitioners, in line with (Brooks 1991), cited in (Nardi 1996), connecting research with the world of practice.

The rest of the paper is organized as follows: The next section gives an account of the theoretical framework. After that the methodology and the aspects of the case to be analyzed will be presented the next section will describe and analyze mismatches in the implementation of the course, and underlying contradictions and how teachers and learners worked together to solve them. The article then finishes with some conclusions about the learning experiences had.

ACTIVITY THEORY AND ITS RELEVANCE IN THIS CASE

I draw on activity theory in order to represent relevant aspects of pedagogical practice, using the model developed by Engeström (Engeström 1987). Engeström´s model draws on central insights on the cultural-historical tradition within psychology (Leontiev 1978; Vygotsky 1978).

In activity theory the unit of analysis is 'an activity system', which is usually visualized by a single-triangle model (Engeström 1987). In this figure I see that a subject (or group of subjects) interacts with the world using artefacts (instruments/artefacts) in order to transform an object into an outcome. The object is not to be confused with artefacts, as the object is not necessarily a 'thing' as such. The object of the activity is what people collectively or individually are working on and which is transformed into an outcome. (Foot. 2002).

Goals and objects are different concepts: The goals are immediate and reachable, while Objects are defined as both material and ideal, and as ideal, unreachable "but being a horizon, the object is never fully reached or conquered." (Engeström, 1999, p. 381) The object of the activity is both material and/or ideal (conceptual), and this double nature is part of its being (Foot. 2002). Foot argues, too, that the understanding of an activity system hinges on understanding its object. (this is an interesting issue for ethnographic research, or rather for all research, as it implies that I do not understand, do not really know what is going on, unless I understand the underlying, unspoken, motives. Goals are, however, easier to study because it is easier to define for the users to define their goals, or at least at some level. This article focuses in the goals of the subjects, their motivation at the conscious level.

The upper part of the individual triangles reflects the notion that human activity is always mediated by artefacts and that the psychological and cognitive processes are developed and transformed through these artefact-mediated activities (Vygotsky, 1978). In the model, the activities of people is modelled into a hierarchy with three levels: activity, action & operation. Activities can be broken down into goal-directed actions that have to be undertaken in order to satisfy the object. Actions are conscious and are implemented through automatic operations.

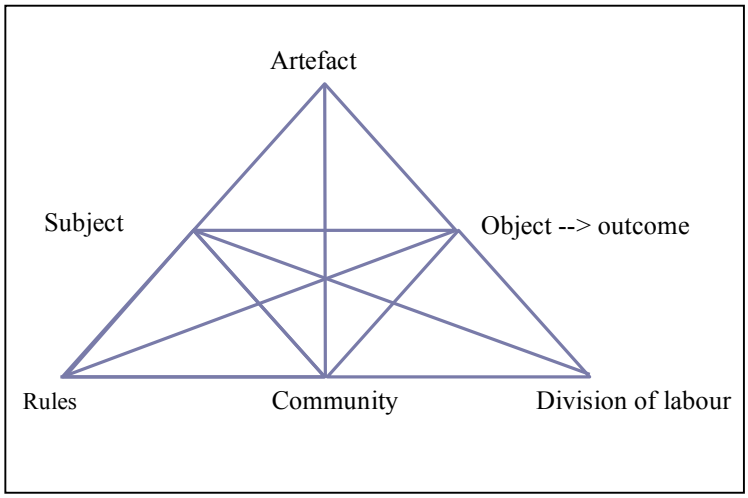

Figure 1: Activity system (Engeström 1987)

The Activity Theory emphasis on social factors and on interaction between agents and their environments explains why the principle of artefact mediation plays a central role within the approach. First of all, artefacts shape the way human beings interact with reality. Second, artefacts usually reflect the experiences of other people who have tried to solve similar problems at an earlier time and invented/ modified the artefact to make it more efficient. This experience is accumulated in the structural properties of artefacts (shape, material, etc.) as well as in the knowledge of how the artefact should be used. So, the use of artefacts is a means for the accumulation and transmission of social knowledge. The artefacts influence the nature, not only of external behaviour, but also of the mental functioning of individuals (Ryder 2005). The

artefact, then shape not only the activity, but the way I think about the activity and its goal, too. Thus, introducing a new artefact will change the whole activity system, because it will make us think in another way in what we do.

The lower part of the triangle originates from the further development of the theory by Leont'ev, who stressed the collective nature of activity systems (Leont'ev 1978)}, and that human activities are mediated by rules and norms, and reflect a certain division of labour. This was graphically expressed in the triangular model by Engeström (Engeström 1987)}.

The activity system is not a clearly defined unity "out there" in reality. The researcher defines the unit of analysis, and delimits the activity system depending on her purposes. An activity system can be defined at any level: from the micro level (a secretary writing a letter at his desk) to the macro level (how an hospital work), and the researcher defines its boundaries, depending on the activities we are analyzing. Likewise, the doings of people flow dynamically between the hierarchies: an new activity is learn, and can become an automated operation when it is rutinized. Likewise, an operation that has to be performed in a new setting may not be executed automatically any more, and will need to be learn as a conscious action.

A central notion within activity theory is that the driving force of development and change stems from contradictions within and between the components of the activities. Contradictions and the resolution of these contradictions are the principle of the activity's self-movement and development. There are different types of contradictions: primary contradictions happen inside the nodes of the system. Secondary contradictions happen between the nodes, tertiary contradictions happen between a activity system and a culturally more developed activity system. Quaternary contradictions happen between neighbouring activity systems (Engeström 1987).

Some authors claim that contradiction in the system should not be solved, but I have to live with them. (Turner and Turner 2001; Turner and Turner 2001; Barab, Barnett et al. 2002). I do not agree with the claim, as I think that the behaviour of people in activity systems and the changes in activity system can have as a goal to solve, or at least, remediate contradictions. Contradictions are he vehicles of change in activity systems, but it does not mean that they necessarily good. So, even as I understand contradictions a factor of change, they are neither positive in themselves, nor static nor unavoidable. As it will be shown in this article, in some cases it is possible to remediate, and even solve contradictions through changes and developments in the activity systems. It is useful to distinguish contradictions that are manageable and people learn to live with in their every day life (they are called tensions in some literature, to avoid the dramatic term "contradictions"(Collins, Shukla et al. 2002)), and those that are unsolvable and lead to a point of double binding, where it things cannot go on like this any more. These is the point of "is not possible to go on as usual any more" (Christiansen 1990, p. 117), demanding that the system change to another state. Thus contradictions within activity systems can both be understood as hindering development, at the same time as being the principle of development, which depend on whether the contradictions are addressed and resolved or not. The idea of contradictions as a source of change is consistent with the research that shows learning (and change) should be caused by an internal motivation, in order to get a robust, lasting process (Hardré 2003). The subject must feel the imbalance, being confronted with problems without immediate solutions. This is also expressed in Engeström's interpretation argumentation that, where individuals and collectives are in a double-bind situations, they may react by trying new solutions and strategies, transforming of existing activities and practices into qualitatively new ones (Engeström, 1987). This is what Engeström refers to as expansive learning. It relates to the learning level 3 in (Bateson 1972) where we learn about thing in another level. The changes on the system can be big and demand adaptations, and transformation of the system. As Engeström says , "learning 3 is dangerous" (LUTV 2002), as it can bring so deep changes that the system gets destabilized.

The theory states that the activity is an unity, that there is a correlation between the subject, the subject and the artefact and changing some aspect of the system will change all the aspects of the system (Zurita and Ryberg 2005)}. In this way, it is a very useful theory to explain processes of change, learning and transformation, as the dynamic nature of activity systems is a central characteristic (Turner and Turner 2001); Turner, 2001 #73}}. Presenting learners in a context, activity theory describes the learning process as distributed among the participants and in the context of the activity (Polin 2004). Therefore the context that surrounds the learner is a part of the learning process, and have to be included in our understanding of it.

Activity theory is particularly interesting when examining goals and objects of the people that both are teaching and learning. Likewise, it offers a framework to see how technology is used in teaching and learning, as it considers that the artefacts are a materialization of some concepts, and will help to analyze how technology is a representation of the world as I see it. Furthermore, a central assumption within activity theory is that remediation of an activity will always result in some

kind of change in the activity. In a earlier paper, Ryberg and I made a contribution to the conceptualisation of the different modes of change and development caused by the introduction of new artefacts into an activity system, and I argued that when introducing new tools in a learning setting, the appropriation of the tool by the subject happen best by "thoroughly negotiating the future directions and plans (…), as to stimulate dialogues and motives for re-evaluating and revising existing practices."(Zurita and Ryberg 2005). Negotiation is a key work when introducing changes in teaching and learning practices

CASE AND METHODOLOGY

This case is based upon a series of workshops held by the author in the context of the project. The ELAC-project links universities in Denmark, Spain, United Kingdom, Costa Rica, Nicaragua and Mexico. Together these universities form a European and Latin American Consortium. Within this consortium the Latin American partners are responsible for regional implementation of relevant courses. The European partners will provide relevant expertise to facilitate and support implementation of those courses. Intercultural collaboration is a central value for the work in the ELAC project, as the partners, aware of the mutual differences and respectful of them, are working together towards a common goal: helping in the capacity building of the LA university teachers in the field of e-learning.

As a part of the capacity building component in the project, the partners have agreed on a training program to the university teachers of the local universities. The four European universities contribute to this training program, each inside their own tradition. The Aalborg University will contribute with some courses, during the three year the program will last. The fist course of ours in the course: "Practical workshop: Development of an on-line course". A more detailed description of the project is to be found in (Zurita 2005).

The course

This course was designed in order to provide an introduction to the design of VLE, and to different pedagogical theories to be used. As electronic platform I used Moodle, an open source based artefact (www.moodle.org).

It was mainly done with the thinking of learning by doing, and letting the learner take the initiative, (Dewey 1960). The learners were to learn the principles of on-line learning while being on-line learners: Understanding the difficulties and complexities of being an on-line learner is a good preparation for becoming and on-line teacher. Following the ideas of Freire, I have to design to support the empowerment of learners, and the dialogue between the actors, allowing learners to teach each other and to investigate together. (Leinonen, Botero et al. 2000).

The target groups were teachers at the Latin American Universities with interest in using e-learning in their learning practice and technical developers.

Data set

Different ethnographic methods have been use to collect data:

Design and use data: Notes were taken during the planning and design processes. The on-line course was recorded and a back up was kept for documentation. Notes were taken during the face to face and the on-line teaching phases. The use of the contributions in the course was recorded too: Absence and presence, number, content and wording. Those data give us factual information about the use of the course, and the development of it at the different Universities.

Course evaluation: A daily evaluation of the course was performed in the face to face phase, and at the end of the on-lien phase. Our evaluation asked what it was goods about the course, what could be done better, and what were the learning experiences had by the learners. The question was intentionally open ended, so that the learners could use their own language and did not feel too directed by the way the questions were asked. I used the input received in the evaluations to adjust the course while giving it. I have kept record of those evaluations. Those data told us about the subjective feelings, expectations and reactions of the students during the courses.

Formal and informal interviews: After the course, formal and informal interviews with students took place and notes were taken. There were semi-structured interviews, (Kvale 1997) letting the learners set the agenda and letting them go in depth into the issues they found more important. Those interviews have been an important source of meta-reflexions of the students about their behaviour and reactions.

Unit and focus of the analysis

I have the course as our unit of analysis. However, in order to study the course, I have to include the conditions in the environment the students lived in. It is not possible to understand artefacts unless you understand activities in practice (Christiansen 1996) Moreover, as Fjuk and Ludgivsen (Fjuk and Ludvigsen 2001) point out distributed collaborative learning must be understood and considered in terms of a complex mix of various interconnected activity systems. "We argue that the profound changes in the area of collaborative learning caused by ICT and networked computers can only be properly understood by extending the unit of analysis from technology and pedagogy themselves to real-life social contexts in which ICT is used (Ibid, p 1)". Therefore when studying our case, I will refer not only to our course, but the context in which the students lived, that had an influence in the course.

In this article I will focus on the primary contradictions, those built in into the nodes of the system. An analysis of other contradictions in the system has been done in another paper (Zurita 2006).

OBSERVATIONS AND FINDINGS

This section presents the course as an activity system, describes the implementation process,, how the learners reacted to it, and how the course had to be modified to adapt to the complexities of the implementation situation, and diagnoses the primary contradictions in this system.

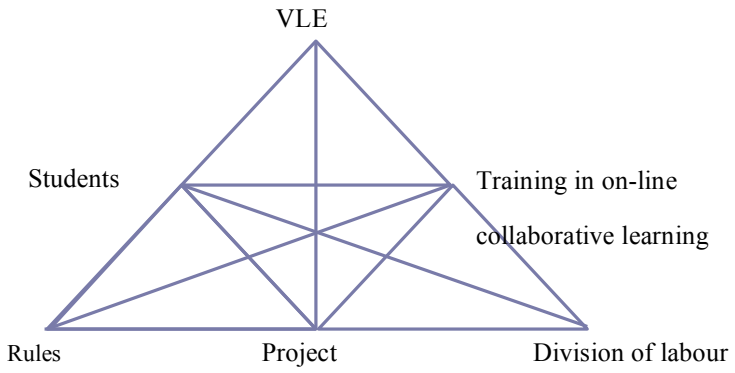

Figure 2: Course as activity system

Figure 2 is a graphical representation of the course: The artefacts is the VLE used in this case, not the pedagogical platform as such, but the concrete environment, including content and the pedagogical underlying pedagogical practice. The subjects are the participants in the course, the students. The object is a better understanding of e-learning and he expected outcome, to train the students in the use of the VLE. Goals are many, as described later. The students are included in a community of participants in the project, with its rules and ways of operating.

The course was used in an unexpected way from the beginning: as a preparation for the course, the students were asked to visit the course and to participate in a presentation forum, where they had to upload a picture and give a presentation of themselves, and their interest about the course. The goal of this exercise was to create a sense of community, the students presenting themselves to each other. However, the students did not use the forum. They did not feel comfortable with the idea of handling the course by themselves: many of them had not visited it ever. Those that had visited it, did not used the forum either. On the one side, they expected to be instructed and had not read the instructions received with the course. On the other hand, it turned out that they actually knew each other beforehand, so they saw no point in presenting themselves. What I did, then, was to change the activity, and make it a training session in itself. We made the digital pictures, helped the students to find theirs in a common server, guided the students in the uploading process and the writing of their contributions and letting them help each other. The activity was then something else than it had been designed to be. It turned out to be an interesting experience for the students having their pictures uploaded and going into virtual conversations with their peers. Thus, the artefact changed through its use. Instead of being a way of meeting each other, it became a way of learning to upload pictures and teasing each other: This way, however, they ended up becoming familiar with having virtual conversations …. Just taking a "long-cut".

Other exercise, later in the process, was directed to learning how to link elements in the VLE. It was meant to be a short instruction of the type. "go to the URL of the page you want to link, and write directly, or just make a cut and paste of it" (the teachers will show in a projector, and make some exercises, until the class got the routine). There, the action would be

to add the link into the system, by performing some routine operations in a new context. Instead, a strong reaction of the class indicated that for almost everyone in the class, the very notion of a URL and the copy paste "routine" were unknown concepts. The whole activity had to be rethought in the spot, and the simple instruction became something else: a whole class excitedly learning the concepts of url, link and page, and cutting and pasting actively, exercising in it, and fascinated by it. By the nature of the new learning goal, the whole support group of the University got involved in the teaching, and it created a noisy, demanding, and, for a teacher, extremely rewarding classroom, with curious and motivated students learning something that made sense for them . The interest of the students grew, then, as they got the possibility to use the artefact to their own goals: getting some basic ICT competences.

In the evaluation this day, it showed that the students had been appointed to they course without taking into account whether they fulfil the minimum ICT requirements to be able to follow the course as it was designed. The students were appointed to the courses for other reasons. As already shown, this contradiction has to be managed in order to give the course at all, and we managed it by changing the dynamics and the exercises.

As we have seen, too, the student's use of the artefact was less independent than it was expected to be, and they were more prepared to have a teacher centred course than a learned centred one. Thus, they did not explore the course by themselves, or incited activities the course invited them to. They would rather have instruction and felt uncomfortable when let alone with the course. In a way, the students expected a teacher centred teaching style, while the course was trying to introduce learned centred pedagogy. This is a primary contradiction in the implementation of the course: the VLE had been designed a learner centred process, while the students expected a teacher centred process. This contradiction become in itself a subject of study in the course, and was used as an example of learning styles: becoming aware of it was, in fact, a learning experience for all the participants, teacher and students.

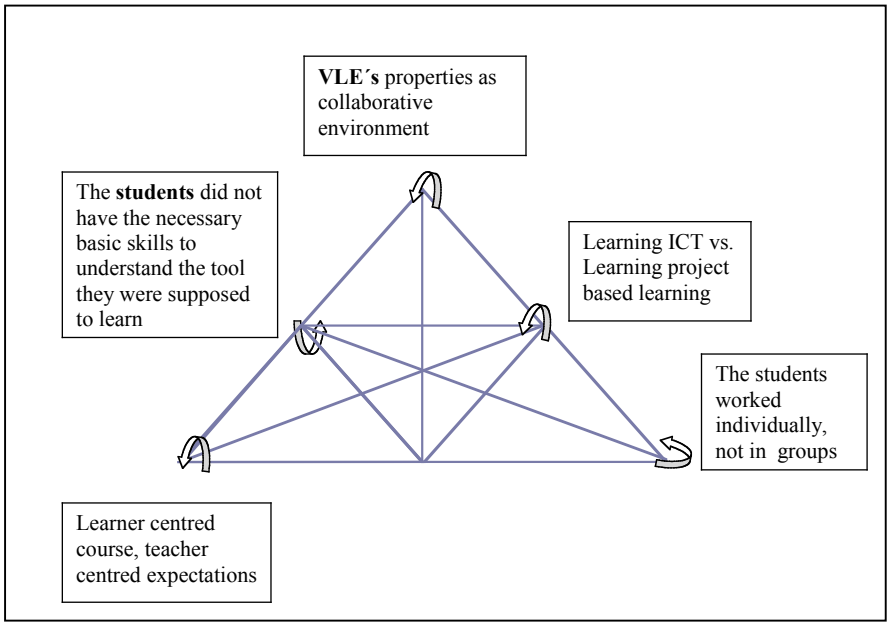

Figure 3: Primary contradictions in the system

The course was designed for the students to work in groups: the groups should have been composed of teachers that taught in the same subject matter, environmental management, in order to establish a foundation for continued work after the face-to-face workshop. Yet groups working together were the exception and not the rule. The teachers were used to an individual way of learning and working. This contradiction was never resolved, but the students managed it by using the forum as a way of communicating with the teacher, instead of with each other. However, this contradiction was thought provoking and inspiring for some students, and has inspired them in later work. This development, however, happened outside the frame of study of this article and will not be described here.

Related with the former point, using VLE for collaboration and communication was very difficult for the students; using written synchronic media for collaboration places heavy demands in the students. As Fjuk points out, there is a contradiction in the use of virtual environments to collaboration and dialogue (Fjuk and Ludvigsen; Fjuk 1998)}. This contradiction is built in the very nature of the VLE, and as the students were no used to IT, and suffered under an inadequate infrastructure, was a burden for them.

DISCUSSION AND CONCLUSION

In the former section we made some observations of the contradictions in the activity system and how they got reflected at different levels, with special focus in the relationship among subjects, artefacts and goals.

We showed that when there was a mismatch between the tool and the goals of the students, the students used the artefact to adapt it to their needs. Negotiation of the use of the artefact between teachers and learners allowed this adaptation and, in fact, changed the artefact. The learners used the artefact in their own way, managing the forums that were meaningful and useful, and ignoring the others. This supports the point of view of Collins, that claims that it is not pedagogically sound just to transfer the design that have been successful in a setting to another setting without adapting it (Collins, Joseph et al. 2004). The artefact that can work in a setting do not necessarily work in another class.

The introduction of innovative ways of teaching created tensions in the system, being important contradictions between the teaching and learning paradigm, the technology and the existing way of thinking. Structures, rules and decision o labouring their education centre should be able to accommodate the new practices. After some time, the system is finding a new balance, with a negotiated solution.

Having designed the course with a clear theoretical framework and being conscious of the goals of the exercises, it was possible to be flexible and adapt the exercises to the situation. Goal centred design allows to adapt to the real life learning situation and the complexities of the implementation of course. By negotiating the uses of the artefact with the users, we can remediate and smooth the contradictions of the system. But by negotiating the use of the artefact, and changing its use and goal, we are, in fact redesigning the artefact. Thus, we can conclude that the students have been co-designers of the course. Being aware of the signals of the students can give a valuable contribution to the development and success of the on-line courses.

REFERENCES

Asensio, M. (2000). "Learning from Failure: A case study of networked learning in Management Education'." *Journal of the Institute of Training and Occupational Learning (JITOL)* **1**(1): 77.

Barab, S. A., M. Barnett, et al. (2002). "Using Activity Theory to Understand the Systemic Tensions Characterizing a Technology-Rich Introductory Astronomy Course." *Mind, Culture, and Activity: An International Journal* **9**(2): 76–107.

Bateson, G. (1972). *Steps toward an ecology of mind.*. New York, Ballantine.

Bellamy, R. K. E. (1996). Designing educational technology: Computer-mediated change. *Activity Theory and Human-Computer Interaction*. B. Nardi. Cambridge, Massachusetts, The MIT Press**:** 123-146.

Bonk, C. J., Wisher, R. A., & Lee, J. (2003). Moderating learner centered e learning: Problems and solutions, benefits and implications*. Online collaborative learning: Theory and practice.* T. S. Roberts, Idea Group Publishing**:** 54-85.

Brooks, R. (1991). Comparative Task Analysis: An Alternative Direction for Human-Computer Interaction Science. *Designing Interaction*. J. M. Carrol. Cambridge, Cambridge University Press**:** 50-59.

Bruce, B. C., & Rubin, Andee Hillsdale, NJ: (1993). *Electronic Quills: A situated evaluation of using computers for writing in classrooms.*, Lawrence Erlbaum Associates.

Christiansen, E. (1990). *On Organizational Competence in System Development. An Activity*

Approach. *Organizational Competence in Systems Development. A Scandinavian Contribution*. G. Bjerknes and B. Dahlbom. Sweden, Studentlitteratur.**:** 107-125.

Christiansen, E. (1996). Tamed by a Rose*. Context and Consciousness: Activity Theory and Human Computer Interaction*. B. Nardi. Cambridge, Massachusets, MIT Press.

Collins, A., D. Joseph, et al. (2004). Design research: Theoretical and methodological issues. *The Journal of the Instructional Sciences* **13**(1): 15-42.

Collins, P., S. Shukla, et al. (2002). Activity theory and system design: a view from the trenches. *Proceedings of CSCW* **11**: 55-80.

Engeström, Y. (1987). *Learning by expanding*. Helsinki.

Fjuk, A. (1998). Computer Support for Distributed Collaborative Learning. Exploring a Complex Problem Area. Dep. of informatics, University of Oslo. **Dr. Scient**.

Fjuk, A. and S. Ludvigsen Activity analysis of distributed collaborative learning and some levels of contradictions.

Fjuk, A. and S. Ludvigsen (2001). The Complexity of Distributed Collaborative Learning:

Unit of Analysis. *Proceedings of CSCL*.

Foot., K. (2002). "Pursuing an Evolving Object: A Case Study in Object Formation and Identification." *Mind, Culture and Activity* **9**(2): 132-149.

Hardré, P. (2003). Beyond Two Decades of Motivation: A Review of the Research and Practice in Human Performance Technology. *Human Resource Development Review* **2**(1): 54-81.

Kvale, S. (1997). *InterView*. København, Hans Reitzels Forlag.

Leinonen, T., A. Botero, et al. (2000). *Information and Communication Technologies (ICT) in Education - From Banking Concept of Education to Problem-Posing Education.* First Annual International Conference on Education, Labor, and Emancipation. The Freirean Legacy: Educating for Social Justice., Florida International University, Miami, Florida, USA.

Leont'ev, A. N. (1978). *Activity, consciousness, and personality*. Englewood Cliffs, Prentice-Hall

LUTV (2002). A video interview with Yrjö Engeström. On line issue. LUTV. Lancaster, Lancaster University, UK.

Nardi, B. (1996). Activity theory and human-computer interaction. *Context and Consciousness: Activity Theory and Human-Computer Interaction.* B. Nardi. Massachusetts, MIT**:** 7-16.

Nardi, B., Ed. (1996). *Conext and conciousness: Activity Theory and Human-Computer Interaction*. Cambridge, Massachusetts, The MIT Press.

Polin, L. (2004). Learning in Dialogue With a Practicing Community. *Learner-centered theory and practice in distance education cases from higher education.* T. M. Duffy and J. R. Kirkley. Mahwah, Lawrence Erlbaum Associates, Inc.

Ryder, M. (2005). What is activity theory?

Turner, P. and S. Turner (2001). Describing Team Work with Activity Theory. *Cognition, Technology & Work* **3**(3): 127 - 139.

Turner, P. and S. Turner (2001). A web of contradictions. *Interacting with Computers,* **14**(1): 1-14.

Vygotsky, L. S. (1978). *Mind in society: The development of higher psychological processes.* Cambridge, MA, Harvard University Press.

Zurita, L. (2005). *Towards a conceptual base for evaluation of e-learning platforms in a collaborative context. IFIP World Conference on Computers in Education,* WCCE, Cape Town.

Zurita, L. (2006). Learning on-line: Users and goals in a multicultural environment. *III Conferencia Internacional "Aprendizaje Virtual y Desarrollo Sostenible: El rol de las Universidades"*. Universidad Nacional, San José, Heredia, Costa Rica, Aalborg University.

Zurita, L. and T. Ryberg (2005). Towards a collaborative approach of introducing e-learning in higher education institutions. How do University teachers conceive and react to transitions to e-learning? *IFIP World Conference on Computers in Education,* WCCE. Cape Town, South Africa.