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Citation for the published paper:

Amhag, Lisbeth. (2013). Collective webinars in higher distance education. Collective webinars in higher distance education, issue ID 40354, p. null

URL: <http://hdl.handle.net/2043/16403>

Publisher: AACE, E-Learn 2013

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Collective webinars in higher distance education

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Abstract: The aim of this study is to study, compare and analyze students' participation in synchronous webinars, directly F2F and their use of dialogue exchange and chat communications to develop an individual and collective meaning and understanding of the course content. Another aim is what possibilities flipped/inverted mini-lectures before follow-up webinars can provide as an expanded resource. One group of 15 students had synchronous webinars and one group of 22 students had flipped mini-lectures a week before follow-up webinars. The study joins the research tradition about sociocultural theories and computer supported collaborative learning, CSCL, as well the theoretical approach, termed *Computer Self-Efficacy* (CSE), concerned with individuals' media and information literacy. Important conclusions from the results of collective synchronous webinars, flipped mini-lectures and chat communications are that they are important tools for students to be able to manage their learning activities and evaluate their participations, abilities and collaborative learning through communicative exchanges of knowledge. However, there are challenges for teachers to reach mutual engagement, common interests and joint creativity, but also use the role of technology in mediating interactions.

Keywords: *Computer-Supported Collaborative Learning; Distance Education; Distance Learning; Flipped classroom; Online Learning; Self-efficacy; Webinar*

INTRODUCTION

The development of distance education over the last decade has resulted in a *new way of teaching and learning in and with*. The society has gone “from the *linking of information* to the *linking of people*” (Warschauer & Grimes, 2007, p. 2) and the majority of the students are using different online interactions for social purposes. However, in higher education students also need to learn how to argue, review critically and share knowledge and experiences with other students and teachers in a structured and scientific manner. Moreover, one of the goals in the Swedish Higher Education Ordinance, e.g. on graduation student teachers, describe that they shall demonstrate the ability to critically and independently utilize and reflect on own and others' experiences and relevant research (SFS 2010:541, p. 7). For this purpose this research will examine and analyze if an e-meeting system would give distance education students greater opportunities to participate in online synchronous webinars (WEB-based semINAR) directly face-to-face (F2F) with other students and teachers. The study also attempted to determine if any technical problems, other than lack of communication skills on a higher level, were more easily overcome.

The increasing bandwidth and different multimedia tools of today have led to extended possibilities for distance education to include online webinars, which are synchronously broadcasted via the Internet (Mohorovii, et al., 2011). An online webinar is here defined as an interactive, synchronous webinar for direct F2F discussions, with a predefined aim, during real-time and a specific time period, by the guidance of a teacher, or later during the course by a student. The potential of online synchronous webinars is that everyone can see and hear each other and at the same time communicate via text-based chat and / or asking questions.

Activities, such as tutoring and group discussions regarding theoretical concepts, literature, experiences and course assignments; as well as the opportunity to give and receive peer feedback; to collaborate with common notes, documents and whiteboards; and to share screens and software with others, can all be a part of the course structure in order to mediate meaning and learning on a higher level.

Another possibility is that teachers can prepare the synchronous webinars by recording briefings or flipped/inverted mini-lectures on methods, concepts, and literature in support of PowerPoint, pdf-documents, pictures, or movies and / or use these presentations directly in the beginning of the webinar for deeper discussions and exchanges of experiences. Furthermore, the synchronous webinars can be recorded for later asynchronous viewing online in the learning management system (LMS) in order to provide students with the opportunity to take a step back, reflect, evaluate and compare various contributions.

These activities can be compared with “into an ongoing stream of activity”, involving explicit and implicit “stimulus means” (Wertsch, 2007, pp. 180-184). They are explicit through tutoring, sharing recorded mini-lectures or other students’ expertise and experiences directly F2F and via text-based chat and / or asking questions, as opposed to implicit through inner reflection and uncovering thoughts that tend to be hidden and non-transitory and are therefore, more difficult to detect.

The main aim of this project is therefore to study, compare and analyze students’ participation in synchronous webinars, directly F2F and their use of tutoring, dialogue exchange and chat communications to develop an individual and collective meaning and understanding of the course content. Another aim is what possibilities flipped/inverted mini-lectures before follow-up webinars can provide as an expanded resource. The aim of the project is to illuminate the following questions:

- How and in what way do students participate in synchronous webinars as a tool for student learning and development?
- What possibilities can webinars and flipped/inverted mini-lectures provide that focus on dialogues and learning through communicative exchanges of knowledge?

ONLINE HIGHER EDUCATION

Since 2002, the National Agency for the Swedish Net University (in 2006 the name changed to the Agency for Networks and Cooperation in Higher Education), has been responsible for increasing the availability and extent of ICT (Information and Communication Technology) in higher education (Schagerström, 2003). The authority closed down in 2009, and since then all faculties and institutions in Sweden have been burdened with greater responsibility to ensure widening participation and educational development, for future online education and the quality of online teaching or university pedagogy related to online teaching.

The classic study by Scardamalia and Bereiter (1994) is often discussed as a source of inspiration for web-based learning environments. They argued over twenty years ago that different software, along with email, bulletin boards, and presentation materials, must be subsumed by more powerful implementations, or what they call “knowledge-building environments for progressive discourse” (pp. 37-38). Students should see themselves as contributors to knowledge, not as passive recipients. The teacher’s role is to show commitment, which then leads the role of the expert. According to Wenger (1998/2004), the *community of practice* is maintained by the participants’ mutual engagement, common interests and joint enterprise as well as a shared repertoire with a set of rules, means and working methods. Wenger describes assumptions of learning and the nature of knowledge with four premises: 1) we are social beings which is a central aspect of learning, 2) knowledge is a matter of the competence to evaluate, 3) knowing is a matter of participating in the pursuit

of such valuation and 4) meaning is our ability to experience the world and engage with it meaningfully (ibid. p. 4). In this project about webinars in distance learning in higher education we discuss theories, literature, experiences and course assignments, and other collaborative learning processes, such as tutoring and scaffolding, and feedback processes in different webinars, which involve both explicit and implicit “stimulus means” (Wertsch, 2007).

The different tools in an ordinary web-based learning management system (LMS) often provides the students with a combination of synchronous and asynchronous communication (Scheuer, et al., 2010), but several studies have shown that these tools, mostly asynchronous one, like email and discussion forums, are often used voluntarily (e.g. Ferreday, et al., 2006; Jones, et al., 2008). Furthermore, teachers implicitly assume that the participants are able to use the different tools on their own and others’ knowledge development (e.g. Aviv, et al., 2003; Garrison & Arbaugh, 2007; 2008; Schoonenboom, 2008). Nevertheless, these studies focused on how web-based learning develops from an individual perspective as a phenomenon that arises among people in a specific situation, instead of, as an opportunity to share knowledge and experiences with interactive multimedia tools, as in synchronous webinars with different interfaces and tools, in a structured and scientific manner from a collective perspective.

However, the processes of collaborative learning are possible to both study and design and implement in higher education settings (Amhag, 2011; 2012; 2013; Amhag & Jakobsson, 2009; Jaldemark, 2012). Moreover participating in such processes of learning is multifaceted, as the activities involve combining, arguing, listening, evaluating, and presenting, as well as others’ individual beliefs. First, the belief of personal efficacy, in particular, is a belief in the power to produce desired outcomes and forestall undesired ones. Second, a self-efficacy feeling, is the belief in one’s own ability to perform the course activities successfully (Bandura, 1982; 1989; 1997). Both of these efficacy forms are considered to be situation- or task-specific key factors in how people construct knowledge, in this project, student’s ability to use interactive multimedia tools, communicate during synchronous webinars, manage information, understand concepts, and evaluate.

Bandura stresses that “self-percepts of efficacy influence thought patterns, actions, and emotional arousal” (1982, p. 122), and the result of efficacy beliefs shape the students’ outcomes, and expectations of their individual performance. Those of high efficacy expect positive results; those of low efficacy expect poor results (Bandura, 1997). In this way, self-efficacy is a key determinant because it affects performance both directly and by its influence on these other factors (Bandura, 2002). Furthermore, collective efficacy is rooted in self-efficacy and the experience of it, and it will affect what the students choose to do as a group, how much effort they put into it, and their remaining power when efforts of the group fail to produce results (Bandura, 1989). The individual and collective efficacy through participating in synchronous webinars and the use of interactive multimedia tools, is defined in this study as the ability to develop *computer self-efficacy*, as a level of *media and information literacy*, which is important for education, teachers and life-long learning, recommended by UNESCO (Wilson et al., 2011).

PREVIOUS RESEARCH

Despite increasing ICT-use, research on the quality of collective synchronous webinars, and the use of flipped mini-lectures and their effectiveness is lacking in published investigations. The dominant part of online teaching takes place via different LMSs, where the teacher organizes the outline, mostly based on writings. For example, the studies of Lindberg and Olofsson (2005) and Roos (2005) showed that teachers put a lot of emphasis on organizing and administrating the education, and publishing schedules and information on how the

program was structured. There was also an emphasis on individual work and examinations, instead of acquiring others' knowledge and skills, the ability to gather and interpret information, and formulate and solve problems, and thus having better tools to deal with changes. Linell (2001) emphasized, that in research on human learning and development there has been a long tradition of viewing communications only from an individual or monological perspective. He argues that this tradition tends to view utterances and their meanings only as the speaker's communicative intentions and describes the listener's task as that of recovering these intentions. He describes this perspective as the *transfer-and-exchange model of communication*.

According to Matusov (2007, p. 218) this characteristic of education was common in many academic subjects, which tend to lack a strong discursive community, because the students rely upon their own opinions which are often uninformed, capricious and poorly developed. He believed that this situation is shaped by the invisible authority of social traditions, as well as voices of the external authority of expert texts or teachers. Other researchers have stressed that academic education should place more value and emphasis on the processes of argumentation, engaging in higher-order thinking, which can be seen as "wise thinking" and to some extent "creative thinking" (Craft, 2006), and also other forms of reflective interactions that support students' higher-order thinking and motivation to collaborate in effective ways (e.g. Amhag, 2011; Amhag & Jakobsson, 2009; Erduran & Villamanan, 2009; Meyer, 2003; Richardson & Ice, 2010; Schellens & Valcke, 2005).

Additional studies (e.g. Amhag, 2012; 2013; De Wever, et al., 2009; Dochy, et al., 1999; Scheuer, et al., 2010; Topping, 2005; 2009), have highlighted the fact that students not only need to "learn to argue", but also need to learn good argumentation practices, through argumentations about specific topics; moreover, they need to use peer learning processes, such as peer assessment, self-assessment and co-assessment. Other researchers, such as Stahl, et al., (2006), as well as Stahl and Hesse (2007), described web-based learning as a collaborative process in which participants negotiate and share meanings within a larger motivational and interactive context. They consider the web-based learning environment as a knowledge-building practice that is mediated by technically designed artifacts, in which participants are involved in creating interpersonal meaning.

Only a few studies have examined the impact of synchronous webinars. For example Nelson's (2010) study, about the learning outcomes of synchronous webinar versus classroom instruction among 224 nursing students showed no significance difference between the groups. A synchronous webinar was just as effective as classroom instruction. Rich's (2011) study, which measured the impact of synchronous webinar instruction, showed that there was a lack of evidence about the actual outcomes of participation in a synchronous webinar. However, these studies focused on organizing and administrating the education from an individual perspective.

THEORETICAL APPROACH

This research is based on socio-cultural theory in which our understanding of language, communication, culture, and various aspects of the social context for student learning and development is central (Vygotsky, 1978, 1988; Wertsch, 1991, 1998, 2007). Wegerif (2007) identified three paradigms through which ICT in education has been traditionally theorized: 1) associationism, which typically posits the computer as a teaching machine; 2) constructivism, in which the computer acts as a "mind tool"; 3) and socio-cultural theory, through which the computer is understood as a "mediating means" for collaborative learning. Wegerif wishes to propose a fourth paradigm: "computer as support for dialogic space".

From a dialogic perspective the internet is not so much a “tool of tools” but a cacophony of voices offering countless opportunities for dialogic engagement with multiple perspectives on every topic (p. 181).

According to Wenger (1998/2004) sociocultural theory of learning is a question of collective appropriation of tools through language, and how students use language as a tool for learning. The concepts of Wenger are divided into four components: 1) *meaning*, as a way of talking about our abilities, individually and collectively, 2) *practice*, as a way of talking about different perspectives that can sustain mutual engagement in action, 3) *community*, as a way of talking about social arrangements and suggesting that our participation is recognizable as a capability, and 4) *identity*, as a way of talking about our learning (p. 5). According to this perspective, people’s dialogues, interactions, and interplay constitute a determining factor for the individual’s as well as the group’s learning and knowledge development.

This means that according to Wertsch (2007) student interactions are seen as social practices in relation to what is happening in the local and situated practice. These social and situated local practices are possible in synchronous webinars with collective the appropriate collective tools through language, such as tutoring, scaffolding, and discussing via webcam, microphone/headset and chat. These activities are also language-functional tools for learning and development. When students become more and more comfortable with how they can discuss and present various assignments and literature, they gradually change their ways of carrying out their participation. The ongoing process of negotiated meaning during the synchronous webinars entails interpretations and actions, doing and thinking, and / or understanding and responding (Wenger, 1998/2004, p. 54). An important starting point in this definition consists of the Russian linguist Mikhail M Bakhtin’s (1981, 1986/2004) specific approach to understanding dialogues. Bakhtin emphasizes that every utterance, spoken or written, is always formed by a *voice* and expressed from a particular viewpoint or perspective. In other words, utterances contain *dialogic overtones* that can, for example, be composed of assertions regarding the world, ontological conclusions or hypotheses regarding phenomenon. This also figures in our utterances in the form of putting words in someone else’s mouth or borrowing expressions from others or from literature: in other words, reusing what others have previously uttered, which is, *multivoicedness*.

The approach of sociocultural theories is related to Computer Supported Collaborative Learning (CSCL), which also relates to the computer context and collaboration for learning and development in Computer Mediated Communication (CMC). CSCL is a relatively well-developed area of research and as a phenomenon for several paradigms of computerized contexts for learning (Gunawardena & Anderson, 1997; Koschmann, 1996; Terry, 1997). The first paradigm is entitled, CAI (Computer Aided Instruction), in which teachers, by using one-way communication effectively, can deliver and monitor learning. The second paradigm is known as ITS (Intelligent Tutoring Systems) in which computer programs should set problems and give feedback to the student. Interest in the personal development of knowledge came first in the third paradigm, Logo-as-Latin, which was followed by the fourth paradigm, CSCL. This finally emerged paradigm is based on the research community of origin from the understanding of language, culture, and various aspects of the social environment, but also from the context and collaboration for learning and development. The element that distinguishes the CSCL paradigm from others, as a whole, is that it is not possible to understand learning solely from individual actions or development. In this way, socio-cultural theory builds bridges across the social-individual divide, between what happens outside and inside a person, between action and thought, between the collective and the individual, and between the creative and reproductive.

Another theoretical approach, termed Computer Self-Efficacy (CSE), has been used in research concerned with individuals’ intentions to use information technology, as in this

study, students' participation in collective synchronous webinars and opportunities through which to challenge different efficacies and make assessments of their ability to apply knowledge, and manage and evaluate activities, collectively as individuals (Bandura, 2002; Compeau & Higgins, 1995; Tams, 2011). However, CSE is not about skills to use special software or to start up a computer, it is about ability to apply one's knowledge when using computer technology for broader tasks and collaborations (Compeau & Higgins, 1995). A greater sense of CSE has been shown to influence individuals' choices regarding computer use and attitudes about the Internet and *media and information literacy* in general. In the case of teachers, the research of Chang and Tung (2008), Papastergiou (2010), and Player-Koro (2012) indicated that a strong sense of CSE, affects both how often and how IT is used in the daily educational practice. Methodically, CSE has been used and concretized through Compeau and Higgins (1995) three interrelated dimensions: *magnitude*, *strength*, and *generalizability*. The *magnitude* of CSE can be understood as a reflection of the student's competence, based on the abilities to analyze, communicate, manage information, and understand concepts and meta-cognitive skills, such as problem solving, interpreting, reflecting and evaluating. The *strength* of CSE refers to the confidence the student has in his or her ability to perform various tasks. *Generalizability* of CSE reflects the degree to which online studies are limited to a specific area of a learning activity, such as *media and information literacy*, to use different software and computer systems.

However, it is still a challenge for teachers to provide online synchronous webinars with different multimedia tools conducive for critical- and higher-order thinking and collaborative learning. Therefore, it is important to further investigate the different ways in which students can use their own and others' experiences, texts, and productions that support dialogues, interactions, and reflections, as well as student-teacher interactions.

METHOD

In this study is the students' use of collective synchronous webinars, flipped mini-lectures and chat communications in groups as a decisive tool for learning focused upon. The study monitors two groups of students. Group 1 with 15 vocational student teachers (women=9, men=6) participating in a web-based course in Vocational Teacher Education with synchronous webinars. Group 2 with 22 vocational student teachers (women=16, men=6) participating in a web-based course in Vocational Teacher Education with flipped mini-lectures a week before follow-up synchronous webinars. In both groups the students were divided into groups of four or five students in each. Vocational Teacher Education in Sweden comprises 90 credits and includes six courses of 60 credits in educational sciences, integrated with teacher training of 30 credits at a partner school or within their own teaching position as unauthorized teacher.

Implementation

The students worked individually with problem-based course assignments with deadlines. In group 1 the students during the web-based course had three tutor-lead collective synchronous webinars directly face-to-face, with a predefined aim, during real-time and specific time period. In group 2 the students a week before the three webinars as above had flipped mini-lectures. During the webinars the student had discussions about course literature, theoretical concepts, experiences and course assignments and they could also have chat communications and / or ask questions.

Data collection

In this way, the data collection in group 1 consists of three collective synchronous webinars and the students textual chat communications and / or asked questions during the webinars. In

group 2 the data collection consist of three webinars with flipped mini-lectures a week before and their textual chat communications and / or asked questions during the webinars. All webinars were recorded and made available online in the students learning management system (LMS), named It's learning, after the webinars were ended in order to take a step back, reflect, evaluate and compare various contributions. These webinars and chat communications were analyzed by Wengers (1998, 2004) three components; meaning, practice and community. The data collection was also complemented by interviews (six students from each course) about their participations and uses of the meanings content and communications exchanges during the webinars and chat communications. In group 2 was also a survey conducted after the course about the training features had contributed to their learning, activity and media and information literacy (response options in a 6-point scale: 1. Disagree - 6. Exactly right, and two open-ended questions).

Ethical considerations

When the students were asked if they wanted to participate in research regarding their participating in synchronous webinars in a distance education setting, they signed an agreement. They also got a guideline for the e-meeting system and received an online review of the tools (webcam, microphone / headset and chat). For example, the e-meeting system Adobe Connect has three interfaces with chat: 1) sharing desktop, program and whiteboard, 2) F2F discussion via webcam and microphone/headset, and 3) collaboration by using whiteboard PowerPoint, PDF-files, pictures and video. When the data collection was complemented by interviews, all students were asked by email if they wanted to contribute in a research interview. Six students enrolled from each group (including both women and men).

DISCUSSION

Important conclusions from the results of the collective synchronous webinars, flipped mini-lectures and chat communications are that the time and space for learning expands. The students find the flipped mini-lectures to be more effective than the collective synchronous webinars, but they find also that the webinars are an important tool that teaches them how to manage their learning activities and evaluate their participations, abilities, and collaborative learning through communicative exchanges of knowledge. In the interviews the students emphasize the importance of being able to have F2F-discussions at a distance regarding course assignments, theoretical concepts, and literature, not just writing in threaded discussions.

The results of the survey in group 2, on "flipped" mini-lectures before the follow-up webinars and chat communications, shows that the majority of the students believe that the "flipped" mini-lectures (87%) and then webinars (73%) have contributed to their learning, in comparison with campus lectures at the start of the course (67%). All the students feel they have media and information literacy, and prefer to work in dialogue with others (93% strongly agree). However, in group 1 with only synchronous webinars, there was a lack of evidence about the actual outcomes of the collaborative participation. The factor *meaning* (dialogue exchanges) and *community* (social configurations) were present, but factor *practice* (shared perspectives) deficiencies to keep the students mutual engagement, common interests and joint creativity. Lot of task shifting between different perspectives dominated, often without depth or clearance. Proposals by the students highlights that teachers might organize and prepare the webinars further, by recording briefings or mini-lectures in order to reach a deeper discussions and exchanges of experiences. Furthermore, there are challenges to encounter the students as accountable participants and use the role of technology in mediating interaction, collaboration and learning in a structured and scientifically manner, as well prevent the preliminary technical dilemmas.

REFERENCES

- Aviv, R., Zippy, E., Gilard, R. & Aviva, G. (2003). Network analysis of knowledge construction in asynchronous learning networks. *Journal of Asynchronous Learning Networks*, 7(3), 1-23.
- Amhag, L. (2013). Creativity in and between Collaborative Peer Assessment Processes in Higher Distance Education. I *Creative Education*, 4(7A2), pp. 94-104, (Special Issue on Higher Education), DOI: 10.4236/ce.2013.47A2011. DOI 10.4236/ce.2013.47A2011
- Amhag, L. (2012). High school students' argument patterns in online peer feedback. E. Favaron, P. M. Pumilia-Gnarini, E. Pacetti, J. Bishop and L. Guerra (Ed.), In *Handbook of Research on Didactic Strategies and Technologies for Education: Incorporating Advancements*, pages 711-723, 2 Volumes. <http://www.igi-global.com/chapter/high-school-students-argument-patterns/72113>.
- Amhag, L. (2011). Students' Argument Patterns in Asynchronous Dialogues for Learning. In *Research Highlights in Technology and Teacher Education 2011*, (pp. 137-144): Ed/ITLib Digital Library <http://storefront.acculink.com/aace>.
- Amhag, L. & Jakobsson, A. (2009). Collaborative Learning as a Collective Competence when Students Use the Potential of Meaning in Asynchronous Dialogues. *Computers & Education*, 52(3), 656-667.
- Bakhtin, M. (1981). *The Dialogic Imagination: Four Essays by M. M. Bakhtin* (C. Emerson & M. Holquist, Trans.). Austin: University of Texas Press.
- Bakhtin, M. (1986, 2004). *Speech Genres & Other Late Essays* (V. W. McGee, Trans. Vol. 9). Austin: University of Texas Press.
- Bandura, A. (2002). Growing primacy of human agency in adaption and change in the electronic era. *European Psychologist* 7(1), 2-16.
- Bandura, A. (1982). Self-efficacy Mechanisms in Human Agency. *American Psychologist* 37:122-147.
- Bandura, A. (1997). *Self-efficacy: the exercise of control*. Basingstoke: W. H. Freeman.
- Chang, S-C. & Tung, F-C. (2008). An empirical investigation of students' behavioural intentions to use the online learning course websites. *British Journal of Educational Technology* 39(1), 71-83.
- Compeau, D. R. & Higgins, C. A. (1995). Computer self-efficacy: Development of measure and initial test. *MIS Quarterly* 19 (2), 189-211.
- Craft, A. (2006). Fostering creativity with wisdom. *Cambridge Journal of Education*, 36(3), 337-350.
- De Wever, B., Van Keer, H., Schellens, T. & Valcke, M. (2009). Structuring asynchronous discussion groups: the impact of role assignment and self-assessment on students' levels of knowledge construction through social negotiation. *Journal of Computer Assisted Learning*, 25, 177-188.
- Dochy, F., Segers, M., & Sluijsmans, D. (1999). The use of self-, peer- and co-assessment in higher education: a review. *Studies in Higher Education*, 24(3), 331-350.
- Dysthe, O. (1996). *Det flerstämmiga klassrummet* [The polyphonic classroom]. Lund: Studentlitteratur.
- Erduran, S. & Villamanan, R. (2009). Cool Argument: Engineering Students' Written Arguments about Thermodynamics in the Context of the Peltier Effect in Refrigeration. *Educación química*, 119-125.
- Ferreday, D., Hodgson, V. & Jones, C. (2006). Dialogue, language and identity: critical issues for networked management learning. *Studies in Continuing Education*, 28(3), 223-239.

- Garrison, D. R. & Arbaugh, J.B. (2007). Researching the community of inquiry framework: Review, issues, and future directions. *The Internet and Higher Education*, 10, 157-172.
- Gunawardena, C. N. & Andersson, T. (1997). Analysis of a global online debate and the development of an interaction analysis model for examining social construction of knowledge in computer conferencing. *Journal of Educational Computing Research*, 17(4), 397-431.
- Jaldemark, J. (2012). Boundless writing: Applying a transactional approach to design of a thesis course in higher education. In A. D. Olofsson & O. J. Lindberg (Eds.), *Informed design of educational technologies in higher education: Enhanced learning and teaching*, (pp. 135-151). Hershey, PA: IGI Global.
- Jones, C., Ferreday, D. & Hodgson, V. (2008). Networked learning a relational approach: weak and strong ties. *Journal of Computer Assisted Learning*, 24(2), 90-102.
- Koschmann, T. (1996). *Paradigm Shifts and Instructional Technology: An Introduction*. Illinois: Southern Illinois University.
- Lindberg, O. J. & Olofsson, A. D. (2005). *Training Teachers through Technology. A case study of a distance-based teacher training programme*. Umeå University: Department of Education.
- Linell, P. (2001). *Approaching dialogue: Talk, interaction and contexts in dialogical perspectives*. Amsterdam & Philadelphia: Johan Benjamins Publishing Company, 2nd Ed.
- Matusov, E. (2007). Applying Bakhtin Scholarship on Discourse in Education: A Critical Review Essay. *Educational Theory*, 57(2), 215-237.
- Meyer, K. (2003). Face-to-face versus threaded discussions: the role of time and higher-order thinking. *Journal of Asynchronous Learning Networks*, 7(3), 55-65.
- Mohorovii, S., Lasi-Lazi, J. & Stri, V. (2011). *Webinars in Higher Education*. Paper presented at the MIPRO 2011.
- Nelson, L. S. (2010). *Learning outcomes of webinar versus classroom instruction among baccalaureate nursing students: A randomized controlled trial*. ProQuest Dissertations and Theses, College of Nursing, Denton, Texas
- Papastergiou, M. (2010). Enhancing physical education and sport science students' self-efficacy and attitudes regarding information and communication technologies through a computer literacy course. *Computer & Education* 54, 298-308.
- Player-Koro, C. (2012). Factors Influencing Teachers' Use of ICT in Education. *Education Inquiry*, 3(1), 93-108.
- Rich, R. L. (2011). *A framework for synchronous web-based professional development*. ProQuest Dissertations and Theses, Stockton, California.
- Richardson, J. C. & Ice, P. (2010). Investigating students' level of critical thinking across instructional strategies in online discussions. *Internet and Higher Education*, 13, 52-59.
- Roos, B. (2005). *ICT and formative assessment in the learning society*. Umeå University: Department of Education.
- Scardamalia, M. & Bereiter, C. (1994). Computer support for knowledge-building communities. *The Journal of the Learning Sciences*, 3(3), 265-283.
- Schagerström, T. (2003). *Fakta om informations- och kommunikationsteknik i Sverige 2003* [Facts about information and communication technology in Sweden 2003]. Statens institut för kommunikationsanalys.
- Schellens, T. & Valcke, M. (2005). Collaborative learning in asynchronous discussion groups: What about the impact on cognitive processing? *Computers in Human Behavior*, 21,

957-975.

- Scheuer, O., Loll, F., Pinkwart, N. & McLaren, B. M. (2010). Computer-supported argumentation: A review of the state of the art. *Computer-Supported Collaborative Learning* (5), 43-102.
- Schoonenboom, J. (2008). The effect of a script and a structured interface in grounding discussions. *International Journal of Computer-Supported Collaborative Learning*, 3(3).
- SFS 2010:541. Examensordning yrkeslärarexamen. *Svensk författningssamling*, [Swedish Higher Education Ordinance on graduation the vocational student teachers]
- Stahl, G. & Hesse, F. (2008). The many levels of CSCL. *International Journal of Computer-Supported Collaborative Learning*, 3(1).
- Stahl, G. & Hesse, F. (2007). Welcome to the future: ijCSCL *International Journal of Computer-Supported Collaborative Learning*, 2(1), 1-5.
- Stahl, G., Koschmann, T. & Suthers, D. (2006). Computer-supported collaborative learning: An historical perspective [Electronic Version]. Retrieved 2007-06-07 from http://lilt.ics.hawaii.edu/lilt/papers/2006/CSCL_American_English.pdf.
- Tams, S., Craig, K. & Murphy, R. (2011). *Coping with Interruptions in Computer-Mediated Environment: the Role of Computer Self-Efficacy* Retrieved 2012-03-10, from <http://sais.aisnet.org/2011/TamsEtAl.pdf>.
- Topping, K. (2005). Trends in Peer Learning. *Educational Psychology*, 25(6), 631-645.
- Topping, K. (1998). Peer Assessment Between Students in Colleges and Universities. *Review of Educational Research*, 68(3), 249-276.
- Warschauer, M. & Grimes, D. (2007). Audience, authorship, and artifact: the emergent semiotics of web 2.0. *Annual Review of Applied Linguistics*, 27, 1-23.
- Wegerif, R. (2007). *Dialogic education and technology: Expanding the space of learning*. New York: Springer.
- Wenger, E. (1998/2004). *Communities of Practice - Learning, Meaning, and Identity*. New York: Cambridge University Press, 5th Ed.
- Wertsch, J. V. (2007). Mediation. In H. Daniels, M. Cole & J. V. Wertsch (Eds.), *The Cambridge Companion to Vygotsky* (pp. 178-192). Cambridge: Cambridge University Press.
- Wertsch, J. V. (1998). *Mind as Action*. Oxford: Oxford University Press.
- Wertsch, J. V. (1991). *Voices of the Mind. A Sociocultural Approach to Mediated Action*. Cambridge: Harvard University Press.
- Wilson, C., Grizzle, A., Tuazon, R., Akyempong, K. & Cheung, C. K. (2011). *Media and information literacy curriculum for teachers*. Available from <http://unesdoc.unesco.org/images/0019/001929/192971e.pdf>
- Vygotsky, L. S. (1988). *Thought and language*. Cambridge: MIT Press.
- Vygotsky, L. S. (1978). *Mind in Society: Development of Higher Psychological Processes*. In Cole, M., John-Steiner, V., Schribner, S. & Souberman, E. (Eds.). Cambridge: Harvard University Press.