

Table 1 - Sample of Research Involving Asynchronous Computer Mediated Communication (CMC): Chapter 3 - Research on Online Learning

Topic: Asynchronous CMC	Author	Description/Procedures	Results	Instructional strategies/activities suggested by study
Cognitive processing and interaction in online computer conferencing	Hara, Bonk & Angeli (2000)	<ul style="list-style-type: none"> ▪ Content analysis with quantitative data on participation ▪ 20 graduate students in online applied educational psychology course ▪ Used First Class software ▪ Four weeks of course randomly selected and analyzed for participation rate, interaction type, social cues, cognitive and metacognitive skills 	<ul style="list-style-type: none"> ▪ Interaction patterns became more complex and interactive over time but were dependent upon quality of initial questioning ▪ Increase in the number of times students referred to other students comments evident across course ▪ Social cues decreased over time and were more formal initially but became less formal with additional social cues ▪ Inferencing was the most common cognitive skill demonstrated followed by personal judgment ▪ Most messages were found to represent an in-depth level of processing (55%) with the majority reflecting a cognitively elaborate level (70%) 	<ul style="list-style-type: none"> ▪ Acknowledge crucial role of moderator in determining and encouraging depth of dialogue ▪ Provide frequent feedback, templates and examples to stimulate student ideas & avoid anxiety ▪ Provide meta-comments or weaving statements that summarize the discussion ▪ Promote student ownership and dialogue using strategies such as starter-wrapper ▪ Use asynchronous tools such as issue-based forums/debates, comment labeling for deeper discussions ▪ Use synchronous chat tools for building rapport, brainstorming ideas, communicating with guest experts
Interpersonal communication patterns in asynchronous computer-mediated course	McDonald, J., Campbell-Gibson, C. (1998)	<ul style="list-style-type: none"> ▪ Content analysis with Chi-square statistic to test categories created by qualitative content analysis ▪ Used First Class software ▪ 19 graduate students randomly assigned in to small groups with instructors to identify and describe the interpersonal interactions, over time, and to determine patterns, if any, of group development based on interpersonal needs. 	<ul style="list-style-type: none"> ▪ A pattern to interpersonal issues in group development was evident demonstrating elements of Schutz's (1983) model of group development (Inclusion, Control, Affection) and follows a linear trend. ▪ Groups using asynchronous computer conferencing have similar interpersonal issues, at comparable stages as face-to-face groups 	<ul style="list-style-type: none"> ▪ Use of asynchronous computer conferencing can be considered for group activities and group development ▪ Be aware that interpersonal issues are important at beginning of course ▪ Instructors need to model openness or expressions of feelings and self-disclosure and solidarity, demonstrations of affection, acceptance or warmth in asynchronous environments creating an environment of trust

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Patterns and amount of participation and relationship to role in electronic discussion	Zhu (1998)	<ul style="list-style-type: none"> ▪ Descriptive study ▪ Graduate students in Instructional Technology at two campuses ▪ Used email and VAX notes computer conferencing software ▪ Electronic computer conferencing discussion messages from two weeks coded into categories - question, reflection, discussion, comment and answer. ▪ Each comment examined in light of four participant categories - contributor, wanderer, seeker and mentor. 	<ul style="list-style-type: none"> ▪ As evidenced by note length, students wrote thoughtful reflections, discussions, comments ▪ Instructor scaffolding was high at beginning of course (50% of messages) and tapered off (20% of total messages) ▪ Students did not synthesize discussion to level expected, offering personal feelings but few insights or summaries ▪ Students acted as contributors, mentors, and wanderers ▪ Wandering did not interconnect issues but added to the discussion, created cognitive conflicts and urged reader to think ▪ Notes were mostly in categories of discussion, comment, reflection, information sharing and scaffolding ▪ Interaction more frequent at the peer level (horizontal) rather than at the mentoring level (vertical) ▪ Students did not focus discussion around introductory questions and ignored the wrapper summarizing activity 	<ul style="list-style-type: none"> ▪ Monitor, implement and revise student roles in conferencing ▪ Require instructor approval for introductory and synthesis comments ▪ Recruit other students for facilitator and mentoring roles each week ▪ Pair advanced students as mentors to novices ▪ Promote issue-based introductory questions allowing students to develop own ideas and thoughts

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Online social interchange, discord and knowledge construction	Kanuka & Anderson (1998)	<ul style="list-style-type: none"> ▪ Survey stratified sample of participants and qualitative transcript analysis ▪ 25 invited managers of workplace learning centers across Canada ▪ Asynchronous computer conferencing system (Caucus) ▪ Participation in a three-week asynchronous computer conference responding to a 27 item likert scale indicating agreement related to construction of knowledge, creation of learning communities and technical issues 	<ul style="list-style-type: none"> ▪ Forum perceived as successful in providing opportunities for reflection and exposure to multiple perspectives ▪ Less agreement that the forum provided an opportunity for application of new knowledge and deeper understanding of the issues ▪ Themes emerged related to finding out what others are doing, making contacts ▪ A second theme emerged was disassociation with other forum members, sometime difficult to identify with others, did not discover similar experiences, could not always relate to others ▪ Most of online interaction was acquisition of information compatible with existing knowledge increasing overall knowledge base ▪ Inconsistencies were left unchallenged, changes of topic focus and concepts were not negotiated ▪ Discussion lacks fluidity that occurs in conversational language ▪ It was much easier to ignore contradictions or conflicting information online ▪ Social discord served as a catalyst to the knowledge construction process observed 	<ul style="list-style-type: none"> ▪ Forums devoted to professional activities may need a subject matter expert's or instructor's participation to promote a higher level of sharing among participants ▪ A cognitive process involving social interchange and some social discord may occur in computer conferencing environments ▪ Asynchronous forums can provide reflection and exposure to multiple perspectives but may not, in and of themselves, promote application of new knowledge.

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A framework for understanding how varying expertise, attitudes, and classroom activity structures influence student use of CMC tools	Fishman (2000)	<ul style="list-style-type: none"> ▪ Mixed method descriptive study using qualitative case study methods and automated logs of CMC tool use (system monitoring) ▪ Three science classes with 3 instructors and a total of 275 students in 9th, 10th & 11th grade ▪ Used email, computer conferencing system and Usenet News ▪ Examined the instructors' "comfort level" with asynchronous CMC tools and how this affected student use of these tools in an inquiry-based science curriculum 	<ul style="list-style-type: none"> ▪ Given the asynchronous tools available, students used email (for tasks like communicating with experts) most frequently, followed by a class-based computer conferencing system (collaboratory notebook) and then an Internet wide public discussion tool (Usenet news) ▪ Teachers' self-reported level of confidence using a given CMC tool is positively related to student use of that tool ▪ Student use of tools was a classic "scallop" of a fixed-interval schedule of reinforcement ▪ a "calendar effect" is evident in CMC use based on the school calendar ▪ Use of CMC is attributed the occurrence of the waxing and waning of student activity as tasks are assigned and then due 	<ul style="list-style-type: none"> ▪ Student use of CMC tools is influenced by classroom structure or the way activities are constructed ▪ Students are more likely to use asynchronous tools that their teachers know ▪ Anticipate school calendar influences on patterns of CMC use (e.g. start and end of quarters, before Christmas break) ▪ The structure of the academic task by the teacher drives the use and value of CMC in the classroom ▪ Teachers need support in both professional development and technology to increase their confidence and capability for teaching with these tools

References:

Fishman, B. (2000). How activity fosters CMC tool use in classrooms: Reinventing innovations in local contexts. *Journal of Interactive Learning*, 11(1), 3-27.

Hara, N., Bonk, C.J., & Angeli, C. (2000). Content analysis of online discussion in an applied educational psychology course. *Instructional Science*, 28(2), 115-152.

Kanuka, H. & Andersen, T. (1998). Online social interchange, discord and knowledge construction. *Journal of Distance Education*, 13(1), 57-74.

McDonald, J., & Gibson, C. C. (1998). Interpersonal dynamics and group development in computer conference. *The American Journal of Distance Education*, 12(1), 7-25.

Zhu, E. (1998). Learning and mentoring electronic discussion in a distance learning course. In C.J. Bonk & K.S. King (Eds.), *Electronic Collaborators: Learner-centered technologies for literacy, apprenticeship and discourse*. Mahwah, NJ: Lawrence Erlbaum Associates.