*** Course Overview *** INFO 782: Issues in Informatics Fall 2011 (September 19-December 3) online Professor Gerry Stahl Gerry.Stahl@drexel.edu

Course Description

INFO 782 examines recent developments in a selected informatics area as a case study. It focuses on research results and leading-edge application of information technology in practice. It helps students prepare for success in information science and technology fields. It addresses issues and methods for maintaining technical knowledge throughout a professional career.

When you have completed this course, you should be able to:

- Understand the rate and nature of change in the informatics field.
- Maintain technical knowledge throughout a professional career in an informatics field.
- Understand and discuss recent developments in the case-study topic.

The course this quarter will focus on: "Studying Virtual Math Teams". The selected area of informatics is Computer-Supported Collaborative Learning (CSCL). The case study includes various aspects of a leading-edge CSCL research project. The course will cover many aspects of research in information science and will involve students in extending the research through critical thinking, discussing and writing. A number of researchers from the Virtual Math Teams project will be involved in this course and there will be multiple opportunities for course participants to be involved in on-going research and in related events. It should be a stimulating introduction to research in informatics.

Within CSCL, the theory of *knowledge building* stresses that knowledge emerges through collaborative processes of continual refinement. The research papers to be read in the course each evolved through many stages: early drafts, conference papers, journal articles, dissertations, book chapters. They received feedback at a workshop during the CSCL 2007 conference, during online critiquing sessions and through critical editing. While each essay was carefully polished for publication, every one can still be criticized from multiple perspectives. In this course, we will be trying to refine and extend the ideas in these essays. Each student will gradually focus on a set of ideas that builds new knowledge on the basis of the course readings and will propose, draft and revise a research paper presenting this new knowledge. The course work is all designed to support this collaborative and individual knowledge building.

This seminar will introduce current research and theories of informatics. It will draw on a recent book on a major research project that has been taking place at the iSchool @ Drexel:

• Stahl, G. (Ed.). (2009). Studying virtual math teams. New York, NY: Springer.

The book reports on research during the period 2002-2009 directed by the course instructor; the Virtual Math Teams (VMT) Project is still ongoing. The book was published in hardbound in Fall 2009 and in paperback in Fall 2010. We will be reading and critiquing the entire book this quarter and will try to advance the ideas presented in the book. Chapters in the book will be supplemented by more recent

VMT research reports. Students are encouraged to purchase the paperback version to have a hardcopy version. An electronic version will be downloadable from the course Blackboard site. The electronic version will facilitate searching and the paperback version will facilitate reading, browsing and annotating.

The Virtual Math Teams Project (VMT) is an on-going research project at the iSchool, Math Forum and Schools of Education at Drexel and Rutgers. It has been federally funded with 7 grants for a total of \$5.7 million from 2002-2016. The goal of the project is to provide computer support and educational approaches for middle-school and high-school students to explore mathematical phenomena collaboratively in an online setting. The VMT software is an integrated system, including a social networking portal, chat rooms, shared whiteboard, dynamic math tools, a wiki and web browsers. Small groups of students typically work together for an hour at a time, co-constructing interesting mathematical representations and chatting about mathematical properties. The VMT research team has produced many books, journal articles and conference papers about their work. The project takes a "design-based research" approach, in which iterative software development is driven by user studies of usage. The project team now includes iSchool faculty members Forte, Goggins, Khoo, Rode and Stahl as well as Math Forum staff and Education faculty from Drexel and Rutgers-Newark.

The course will look at information systems for group use as *computational artifacts*, as *collaboration media* and as *informational resources*. It will consider educational, psychological, technological, communication and research aspects. No previous knowledge about these approaches will be required. Participants will range from undergraduates to faculty members.

The course will be organized in seminar style. Students will prepare commentaries on the readings, working in online small groups. Critical, creative, well-grounded perspectives on the readings are encouraged. The course will work toward the writing of research papers that build new knowledge on topics related to the research in the book.

The course is organized as a graduate-level seminar course. It requires careful reading of 50-75 pages a week of research literature. It requires writing critical reviews of the readings and the composition of a publishable research paper. Most communication will take place *asynchronously* using the VMT wiki system, but about one hour per week of *synchronous* collaboration within a small group of students is also required using the VMT chat system. You will collaborate with a group of people who can meet online at the same time as you can—based on a brief survey that you will fill out with your preferred meeting times.

This one-time course offering may not be repeated in the future. The content and instructor of this course change each time it is offered. This is an opportunity to discuss the instructor's own perspective on informatics research. There will be no lectures and no exams. Collaborative learning with your classmates will be stressed. Your grade will be based on the quality of your (individual and group) weekly assignments. If you object to the format of this course, you should consider taking it at another time.

Note: The latest version of this document will always be available at:

http://gerrystahl.net/teaching/fall11/overview782.pdf

Note: The course wiki is available at:

http://vmt.mathforum.org/vmtwiki/index.php/Studying_VMT_Seminar

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Course Readings

The course content is presented by the readings. Students are expected to read them carefully, take notes and be critical. The reading assignments are listed in the Course Assignments table below. The book that you must purchase and download is:

• Stahl, G. (Ed.). (2009). Studying virtual math teams. New York, NY: Springer. 626 pp.

The other readings are available for download:

Week 1: Introductions (Ch. 1, etc.)

- Stahl, G., Koschmann, T., & Suthers, D. (2006). Computer-supported collaborative learning: An historical perspective. In R. K. Sawyer (Ed.), *Cambridge handbook of the learning sciences*. (pp. 409-426). Cambridge, UK: Cambridge University Press. Web: <u>http://GerryStahl.net/elibrary/global</u>.
- Stahl, G., & Chai, S. (2010). Group cognition as a new science of learning: An interview with Gerry Stahl. *China Education Technology [in Chinese]. 2010* (May). Web in English: <u>http://GerryStahl.net/pub/chinaed2009.pdf;</u> in Chinese: <u>http://GerryStahl.net/pub/chinaed2009_Chinese.pdf</u>.
- Stahl, G. (2011b). How I view learning and thinking in CSCL groups. *Research and Practice in Technology Enhanced Learning (RPTEL)*. Web: <u>http://GerryStahl.net/pub/rptel2011.pdf</u>, YouTube video: <u>http://youtu.be/h5MpUJnTipM</u>.
- 4. Stahl, G. (2009a). A chat about chat. In G. Stahl (Ed.), *Studying virtual math teams*. (ch. 1, pp. 7-16). New York, NY: Springer.

Week 2: Supporting Collaborative Mathematics (Ch. 2, 3, 5)

- 5. Stahl, G. (2009b). The VMT vision. In G. Stahl (Ed.), *Studying virtual math teams*. (ch. 2, pp. 17-29). New York, NY: Springer.
- 6. Stahl, G. (2009c). Mathematical discourse as group cognition. In G. Stahl (Ed.), *Studying virtual math teams*. (ch. 3, pp. 31-40). New York, NY: Springer.
- 7. Stahl, G. (2009e). From individual representations to group cognition. In G. Stahl (Ed.), *Studying virtual math teams*. (ch. 5, pp. 57-73). New York, NY: Springer.
- Stahl, G. (2011) "Computer-Supported Math Discourse Among Teachers and Students." Proposal DRL-1118773 to the National Science Foundation Discovery Research K-12 (DR K-12) Program funded starting September 1, 2011. PI: G. Stahl; co-PIs: S. Weimar, J. Silverman, M. Khoo, S. Goggins, A. Forte, J. Rode; collaborative proposal with Rutgers, PI: A. Powell. <u>http://GerryStahl.net/publications/proposals/dr2011.pdf</u>.

Week 3: Case Studies from Design-Based Research (Ch. 6-8)

- Stahl, G., Zhou, N., Cakir, M. P., & Sarmiento-Klapper, J. W. (2011). Seeing what we mean: Co-experiencing a shared virtual world. Paper presented at the international conference on Computer Support for Collaborative Learning (CSCL 2011). Hong Kong, China. Proceedings pp. 534-541. Web: <u>http://GerryStahl.net/pub/cscl2011.pdf</u>, slides: http://GerryStahl.net/pub/cscl2011.ppt.pdf, YouTube video: http://youtu.be/HC6eLNNIvCk.
- Sarmiento-Klapper, J. W. (2009a). The sequential co-construction of the joint problem space. In G. Stahl (Ed.), *Studying virtual math teams*. (ch. 6, pp. 83-98). New York, NY: Springer.
- 11. Çakir, M. P. (2009). The organization of graphical, narrative and symbolic interactions. In G. Stahl (Ed.), *Studying virtual math teams*. (ch. 7, pp. 99-140). New York, NY: Springer.

12. Zhou, N. (2009). Question co-construction in VMT chats. In G. Stahl (Ed.), *Studying virtual math teams*. (ch. 8, pp. 141-159). New York, NY: Springer.

Week 4: Interaction Analysis and Data Representation (Ch. 20-22)

- 13. Çakir, M. P., Xhafa, F., & Zhou, N. (2009). Thread-based analysis of patterns in VMT. In G. Stahl (Ed.), *Studying virtual math teams*. (ch. 20, pp. 359-371). New York, NY: Springer.
- 14. Fuks, H., & Pimentel, M. (2009). Studying response-structure confusion in VMT. In G. Stahl (Ed.), *Studying virtual math teams*. (ch. 21, pp. 373-397). New York, NY: Springer.
- 15. Strijbos, J.-W. (2009). A multidimensional coding scheme for VMT. In G. Stahl (Ed.), *Studying virtual math teams.* (ch. 22, pp. 399-419). New York, NY: Springer.
- 16. Stahl, G. (2012a). Interaction analysis of a biology chat. In D. Suthers, K. Lund, C. P. Rosé & N. Law (Eds.), *Productive multivocality*. Cambridge, MA: MIT Press. Web: <u>http://GerryStahl.net/pub/multivocal.pdf</u>.

Week 5: Interaction Analysis and Representation (Ch. 23-25)

- Stahl, G. (2011a). *How a virtual math team structured its problem solving*. Paper presented at the international conference on Computer-Supported Collaborative Learning (CSCL 2011). Hong Kong, China. Proceedings pp. 256-263. Web: http://GerryStahl.net/pub/cscl2011stahl.pdf, slides: http://gerryStahl.net/pub/cscl2011stahl.pdf, Slides: http://gerryStahl.pdf, Slides: <a href="http://gerrySt
- Zemel, A., Xhafa, F., & Çakir, M. P. (2009). Combining coding and conversation analysis of VMT chats. In G. Stahl (Ed.), *Studying virtual math teams*. (ch. 23, pp. 421-450). New York, NY: Springer.
- 19. Trausan-Matu, S., & Rebedea, T. (2009). Polyphonic inter-animation of voices in VMT. In G. Stahl (Ed.), *Studying virtual math teams*. (ch. 24, pp. 451-473). New York, NY: Springer.
- Wee, J. D., & Looi, C.-K. (2009). A model for analyzing math knowledge building in VMT. In G. Stahl (Ed.), *Studying virtual math teams*. (ch. 25, pp. 475-497). New York, NY: Springer.

Week 6: Research-Based Technology Design (Ch. 15-17)

- 21. Stahl, G. (2011c). Keynote: Past, present and future of CSCL. Presented at the Knowledge Building Summer Institute 2011 and CSCL2011 post-conference at the South China Normal University, Guangzhou, China. Web: <u>http://GerryStahl.net/pub/cscl2011guangzhou.pdf</u>, slides: <u>http://GerryStahl.net/pub/cscl2011guangzhou.ppt.pdf</u>, YouTube (3 parts): <u>http://youtu.be/SLC8Ew8J9Hg</u>, <u>http://youtu.be/nrGfYnLRPgg</u>, <u>http://youtu.be/0rh-3FnjLp4</u>.
- 22. Mühlpfordt, M., & Wessner, M. (2009). The integration of dual-interaction spaces. In G. Stahl (Ed.), *Studying virtual math teams*. (ch. 15, pp. 281-293). New York, NY: Springer.
- 23. Stahl, G. (2009f). Designing a mix of synchronous and asynchronous media for VMT. In G. Stahl (Ed.), *Studying virtual math teams*. (ch. 16, pp. 295-310). New York, NY: Springer.
- 24. Stahl, G. (2009g). Deictic referencing in VMT. In G. Stahl (Ed.), *Studying virtual math teams*. (ch. 17, pp. 311-326). New York, NY: Springer.

Week 7: Theory of Collaborative Interaction (Ch. 10-14)

- 25. Medina, R., Suthers, D. D., & Vatrapu, R. (2009). Representational practices in VMT. In G. Stahl (Ed.), *Studying virtual math teams*. (ch. 10, pp. 185-205). New York, NY: Springer.
- 26. Charles, E. S., & Shumar, W. (2009). Student and team agency in VMT. In G. Stahl (Ed.), *Studying virtual math teams*. (ch. 11, pp. 207-224). New York, NY: Springer.
- 27. Powell, A. B., & Lai, F. F. (2009). Inscriptions, mathematical ideas and reasoning in VMT. In G. Stahl (Ed.), *Studying virtual math teams*. (ch. 13, pp. 237-259). New York, NY: Springer.

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28. Zemel, A., & Çakir, M. P. (2009). Reading's work in VMT. In G. Stahl (Ed.), *Studying virtual math teams*. (ch. 14, pp. 261-276). New York, NY: Springer.

Week 8: Theory of Group Cognition (Ch. 26-28)

- 29. Stahl, G. (2009i). Meaning making in VMT. In G. Stahl (Ed.), *Studying virtual math teams*. (ch. 26, pp. 505-527). New York, NY: Springer.
- 30. Epperson, T. W. (2009). Critical ethnography in the VMT project. In G. Stahl (Ed.), *Studying virtual math teams*. (ch. 27, pp. 529-553). New York, NY: Springer.
- 31. Stahl, G. (2009j). Toward a science of group cognition. In G. Stahl (Ed.), *Studying virtual math teams*. (ch. 28, pp. 555-579). New York, NY: Springer.
- 32. Stahl, G. (2012b). Theories of collaborative cognition: Foundations for CSCL and CSCW together. In S. Goggins & I. Jahnke (Eds.), CSCL@work. New York, NY: Springer. Web: <u>http://GerryStahl.net/pub/collabcognition.pdf</u>.

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Week	Dates	Readings	Group Review	Comments	Assignment
1	Sept 19-25	1, 2, 3, 4			
2	Sept 26- Oct 2	5, 6, 7, 8	1, 2, 3, 4		
3	Oct 3-9	9, 10, 11, 12	5, 6, 7, 8	1, 2, 3, 4	Group VMT exercise
4	Oct 10-16	13, 14, 15, 16	9, 10, 11, 12	5, 6, 7, 8	
5	Oct 17-23	17, 18, 19, 20	13, 14, 15, 16	9, 10, 11, 12	Abstract for paper
6	Oct 24-28	21, 22, 23, 24	17, 18, 19, 20	13, 14, 15, 16	
7	Oct 29-Nov 4	25, 26, 27, 28	21, 22, 23, 24	17, 18, 19, 20	Draft of paper
8	Nov 7-13	29, 30, 31, 32	25, 26, 27, 28	21, 22, 23, 24	Feedback on papers by group
9	Nov 14-20		29, 30, 31, 32	25, 26, 27, 28	
10	Nov 21-27			29, 30, 31, 32	Final version of paper
11	Nov 28-Dec 4				
12	Dec 5-9				No exam; for PhD students revised paper

Course Assignments

Due dates: All course assignments are due by midnight (East Coast time) on Sunday at the end of the week shown on the table of Course Assignments.

Course Requirements

INDIVIDUAL READINGS: Read the assigned chapters carefully by the end of the week—do not fall behind the schedule of readings above. Take notes. Think about the main purpose of each chapter and its central points. What question or problem is it trying to answer or solve? How does it make its argument to support its main points? What terms, concepts, ideas, techniques or arguments are unclear? Is the argument of the chapter supported by data and analysis of the data? What did you learn from the chapter?

GROUP REVIEWS: Meet with your group online to draft a review of the chapter assigned to your group. You might want to each post ideas for the review to your group chat room in advance of meeting; then meet synchronously for about an hour to chat about how to put the ideas together and to develop them further; then polish the review and agree on it as a group asynchronously; and finally post it to the wiki area for the chapter. Be concise and to the point: your reviews should be about 400-500 words long; they should state the main point or argument of the reading and should point out its value and its limitations; what would you want to research to follow up on the chapter? Do not simply state opinions; back up your claims or arguments with references to the data or to the detailed wording of the chapter. At the top of your reviews (and all group products in the course), list the names of the people who actively participated in writing the review.

INDIVIDUAL COMMENTS ON OTHER GROUPS' REVIEWS OF READINGS: Read the reviews of the chapters that your group did not review. Post a signed comment about 100-200 words long to the wiki below the review. Do not waste words by complimenting the authors or simply agreeing or disagreeing with the review; do not simply give your personal opinion or talk about your personal experiences. Be specific and reference the claims you are disputing. Try to deepen the discussion of the chapter by extending the argument of the chapter, the review and other people's comments. Try to build some knowledge on the topic of the chapter or at least raise questions or suggestions about ways of extending it.

GROUP VMT EXERCISE: Meet with your group online at an agreed upon time in your assigned VMT chat room. Discuss the mathematical Topic given in the chat room for about an hour.

ABSTRACT FOR PAPER: The course aims at producing a number of new research papers. Decide on a concept for your term paper, based on extending the research in one or more of the course readings. You may want to use data from a Group VMT Exercise or from the 2006 data that many of the readings analyze. What are your topic, claim, related literature, theory, data, method, and findings? Submit an abstract of about 200-300 words. This can be an individual or group assignment (if a group wants to write a paper collaboratively) and should be posted to the wiki.

FIRST DRAFT OF PAPER: Submit a draft of a research paper of about 5 single-spaced pages. Write this as a research paper that could be submitted to a CSCL conference or another information science research conference. How are you building on course readings? What are your topic, claim, related literature, theory, data, method, and findings? Ground your analysis in some VMT data. Follow the instructions and formatting in *term_paper_template.doc*. Save your draft in Word format, using your last name in the file name, e.g., *stahl-draft.doc*. This is an individual assignment and should be linked to from the wiki page for first draft papers by the due date.

FEEDBACK ON GROUP PAPERS: Read the first drafts by the members of your group. Post a review of each draft to the wiki page under the link to the draft. Your reviews should each be about 200-300 words long and should provide specific suggestions on how the author can improve the paper and strengthen its argument and findings.

FINAL VERSION OF PAPER: Submit a final version of a research paper of about 6 singlespaced pages. Take carefully into account the suggestions in the reviews by your classmates. Save your final paper in Word format, using your last name in the file name, e.g., *stahl-final.doc*. The paper must include an Acknowledgments section that includes the following individual (or group) certification: "I (We) individually certify that: To the best of my (our) knowledge, this assignment is entirely work produced by me (us). Any identification of our group work is accurate. I (We) have not quoted the

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words of any other person from a printed source or a website without indicating what has been quoted and providing an appropriate citation. I (We) have not submitted any of the material in this document to satisfy the requirements of any other course."

REVISED VERSION OF PAPER: PhD students should submit a revised version of their research paper of about 8 single-spaced pages. Take carefully into account the suggestions in the reviews by the instructor. Save your final paper in Word format, using your last name in the file name, e.g., *stahl-revised.doc*. This is an individual assignment and should be linked from the wiki by the due date.

Course Grading

Grading will be based partially on your individual participation in the course and in your group; partially on the work of your group; and partially on your final paper.

Because your class mates will be building on your ideas, it is essential that you post all your assignments on time and that you participate actively in all group activities (both asynchronous and synchronous). Grades will be reduced at least in half for assignments submitted after the deadline.

Grading is *not* curved: it is possible for all groups and even all individuals to earn an A in this course. Most students who take an honest interest in the course and exert reasonable effort in *all* aspects of the course can receive an A. Failure to do your share in your group work, or to meet deadlines for postings and assignments will lower your grade. Assume that your grade will be an accurate measure of what your group and you have accomplished in this course.

#	points	max		
8	4	32	Group review	
24	1	24	Comments on reviews	
1	4	4	Group VMT exercise	
1	5	5	Paper abstract	
1	10	10	Paper draft	
3	4	12	Feedback on group papers	
1	10	10	Final version of paper	
		3	Extra credit	
		100	Total possible points	

A+	98	100
А	92	97
A-	90	91
B+	88	89
В	82	87
B-	80	81
C+	78	79
С	72	77
C-	70	71
D+	68	69
D	62	67
D-	60	61
F	0	59

Generic Information

Problems & Questions. Please raise questions in the class wiki if possible. This is the best place to raise questions because other students may have the same question and they can benefit from seeing

the answer; also, other students can respond with their views on the issue. If it is an urgent or personal problem, email the instructor. If you believe that your group assignment is not going to work out, discuss it with the instructor by email. Email with the instructor is the best medium for confidential concerns, such as concerns about other students in your group or personal events that will interfere with your course work.

No Excuses. No one is interested in excuses. If you need to miss any group activity, notify the instructor and the other members of your group as soon as possible and explain how you will contribute to the group. You are responsible for doing your share of the group work during the term; when you ask others to cover for you, let them know how you will make up for it. Everyone knows that things come up, sometimes unexpectedly, but that does not relieve you of your responsibilities. Your group is your support system in the course—let them know what is going on so they can help you.

Plagiarism. Obviously, plagiarism is not tolerated at Drexel and can result in failure. Plagiarism is passing off someone else's ideas, work or words as your own. Collaboration is encouraged, but always give credit to individuals or groups whose ideas, work or words you are reporting, quoting or summarizing.

Academic Honesty. Cheating, academic misconduct, plagiarism and fabrication are serious breaches of academic integrity and will be dealt with according to University Policy (Section 10 of the Student Handbook.) Students are responsible for their own finished work. Penalties for first offenses range from 0 on an assignment to an F in the course. All offenses are reported to the University Office of Judicial Affairs.

Late Policy. All assignments are due online by midnight (East Coast time) of the due date. Group work cannot be rescheduled. Individual written work is due in the wiki by midnight of the due date. Grades for late work will be lowered substantially.

Student Advisors and Resources. Take advantage of the academic advisors who are available on the third floor of Rush. Appointments with advisors can be scheduled by calling 215-895-2474. Appointments with co-op coordinators can be scheduled by calling 215-895-2185. The Drexel Learning Center is available at <u>http://www.dlc.drexel.edu</u>. The Writing Center is available at <u>http://www.drexel.edu/writingcenter</u>. The Hagerty Library is available at <u>http://www.library.drexel.edu</u>.

Special Needs Students. If you have any special need that must be accommodated, please let the instructor know the first week of class. Contact with the Office of Disability Services (215) 895-2506/7) is strictly confidential.

Privacy Notice

In general, all work and communication in this course should be treated as *public*:

- Your work in this course may be studied by other students in the course.
- Any communication on the Internet may end up being seen by people for whom it was not originally intended.
- The web spaces for this course can be viewed by anyone in the world through the Web.

- ISchool courses may be recorded and streamed for educational purposes. Presentations and other activities in class may be videotaped and made available in the future.
- The instructor and other Drexel faculty, students and staff may have access to anything in Blackboard or the web spaces.
- Future researchers may have access to these materials as data. Although they do not have permission to publish any data about you and although they should ensure anonymity and confidentiality of all personal data, you should assume that activities taking place in this course may be subject to viewing.
- Students in future courses may have access to your work.

Please let the instructor know if you have an objection to your work being made available to others.

Instructor's Background

Hi. My name is Gerry Stahl. I am always available by email at <u>Gerry.Stahl@drexel.edu</u>. Send me an email if you want to meet with me in person or to inquire about urgent or

personal questions.

My professional research area is the field of CSCL (Computer-Supported Collaborative Learning). I think that collaborative learning is an exciting and especially effective way to learn. I believe that there is great potential to design good computer support for it. I have been experimenting with a number of CSCL prototypes and have written many papers on the theory, design and evaluation of interactive systems to support collaborative learning. We will be taking advantage of what I have learned from my research in this course, and I hope you will benefit from this.



In 2006 I published a book on CSCL entitled *Group Cognition: Computer*

Support for Building Collaborative Knowledge and launched the International Journal of Computer-Supported Collaborative Learning. In 2009 I published a book on the VMT Project that I direct at the iSchool @ Drexel. I have published over 200 conference papers, journal articles, book chapters and essays. My background is in computer science and philosophy. At Drexel, I teach mainly HCI courses; before coming to Drexel, I worked at a large research organization in Germany; before that I was a Research Professor at the University of Colorado in Boulder. The 2002 international CSCL conference was at Boulder and I was the Program Chair for it; I have been in charge of workshops at CSCL 2003 in Norway, CSCL 2005 in Taiwan, ICCE 2006 in Beijing, CSCL 2007 in New Brunswick and CSCL 2009 in Greece; I was a Program co-Chair for CSCL 2011 in Hong Kong.

Let me know if you have any questions about my background or check out my home page, where you can see more details and read my papers: <u>http://GerryStahl.net</u>. You can download my reflections on "A Career in Informatics" at: <u>http://GerryStahl.net/personal/career.pdf</u>.