出國報告（出國類別：參加國際研討會發表論文）

參加國際研討會發表論文報告書
(研討會名稱：International Conference of Learning Sciences)

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目次

摘要

本次出國的主要目的為發表論文於 International Conference of Learning Sciences 的國際研討會上。本次所發表論文被接受為長篇論文（論文全文請見附錄一）。除發表論文外，參與本次研討會也對於瞭解國際間對於「學習科學」（Learning Sciences）的未來發展趨勢有許多幫助。本論文後經進一步修改與增加內容後，目前已被 Instructional Science 期刊接受，預計於 2012 年出版。

本文

一、 **目的**

發表學術論文一篇(見附錄一)。

二、 **過程**

本次會議共五天，議程如附錄二。本篇論文發表日期為 6/30，發表場次為 Paper Session 5。同場次的其他發表人分別為 Joachim Kimmerle, Ulrike Cress, Christoph Held, 和 Johannes Moskaliuk (題目：Social Software and Knowledge Building: Supporting Co-Evolution of Individual and Collective Knowledge)，以及 Katerine Bielaczyc 和 John Ow (題目：Making Knowledge Building Moves: Toward Cultivating Knowledge Building Communities in Classrooms) ，還有 Jan van Aalst(題目：Gaining an Insider Perspective on Learning physics in Hong Kong)。該場次主題為「跨領域知識創新社群」（Knowledge-building communities across contexts and disciplines）除發表論文外，其餘時間則用於蒐集新資訊，以瞭解學習科學（Learning Sciences）和電腦支援合作學習（Computer Supported Collaborative Learning）在國際上的發展趨勢。

三、 **心得及建議**

參加本國際研討會最主要的收穫是能夠把本論文發表在學習科學（Learning Sciences）的主要學術社群中。並刊登在其論文集中。同時，透過與與會學者的互動與討論，可以得到許多有助於進一步修改本論文（研究）的回饋。

學習科學國際會議係由「學習科學國際研究協會」(International Society of Learning Sciences)所舉辦。學習科學國際研究協會所出版的二本期刊(包括 Journal of the Learning Sciences 和 International Journal of Computer Supported Collaborative Learning)者)都是 SSCI 中的重要期刊。學習科學國際研究協會所出版的論文集(Proceedings of International Conference of Learning Sciences 和 Proceedings of International Conference of Computer Supported Collaborative Learning)也都被收錄在 ISI 資料庫中(教育類)。學習科學國際研究協會對國際間的教育發展有極大的影響力。參加此一會議同時也使得本次發表的文章得以被收錄在其論文集中，以提昇本校研究在國際上的影響力。

附錄一（論文發表全文）

Teacher-education students' views about knowledge building theory and practice

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Abstract. This study investigated the effects of engaging students to collectively learn and work with knowledge in a computer-supported collaborative learning environment called Knowledge Forum on their views about knowledge building theory and practice. Participants were 24 teacher-education students who took a required course about theory and practice in teaching. Data mainly came from (1) student discourse recorded in a Knowledge Forum database, (2) a survey that examined students' views about knowledge building, and (3) interviews with regard to students' perceived barriers to implementing knowledge building theory in teaching. Findings suggest that with sustained discourse to construct their collective understanding of the relationships between theory and practice in teaching for a semester, the participants were able to attain more informed and practical views about knowledge building theory. In addition, students' perceived barriers to implementing knowledge building in teaching were identified and strategies to help overcome these barriers discussed.

Introduction

Teaching has been viewed as a craft (Bereiter, 2002). As commonly observed in the classroom, most teachers tend to pursue "best practices" by practicing their teaching according to some known theories, and they are less inclined to go beyond "best practices" and assume the role of theory-building for their practice (Hargreaves, 1999; Sawyer, 2004). Recent literature, however, emphasizes the importance of viewing teaching as a knowledge-building enterprise (Hargreaves, 1999; Zhang, Hong, Teo, Scardamalia & Morley, 2008; Scardamalia, 2002). Related concepts have been introduced to support this idea, for example, creative teaching (Sawyer, 2004), adventurous teaching (Cohen, 1989), and teaching as progressive problem solving (Bereiter & Scardamalia, 1993) or as a sustained design process (Hong, Zhang, Teo, & Scardamalia, 2009). Yet, the idea of education as a progressive science and teaching as knowledge building is still new to most teachers (Sawyer, 2006).

One way to help teachers to develop a deeper conceptual understanding of teaching as a process of knowledge-building may be to engage them in the actual "knowledge-building" practice (Hargreaves, 1999; Hong & Sullivan, 2009). Knowledge-building is a social process focused on the production and continual improvement of ideas of value to a community (Bereiter & Scardamalia, 2003). The epistemological position underlying the knowledge building pedagogy is Popper's (1972) construct of World 3. Other than World 1 (the physical world) and World 2 (the subjective world inside the mind), Popper postulates a World 3 that is constituted of conceptual artifacts. The ideas and theories created by knowledge workers such as scientists, engineers and architects are among the conceptual artifacts. These theories and ideas, once created, have a life of their own in that they can be improved and transformed by people who interact with them. They are treated as tentative theories that should be subjected to error elimination under Popper's schema for the search for truth. In other words, all created knowledge is open to further inquiry and improvement. This epistemological stance is translated directly into the practice of treating all knowledge as ideas and as improvable in a knowledge-building community (Scardamalia, 2002). Bereiter (1994) argues that school focused on changing students' mind (ie, World 2) and neglected the enculturation of students' competencies to work in World 3. Arguably, teachers are unaccustomed to the ways of building knowledge as professionals, much less developing such competencies among students (Hong, Scardamalia, & Zhang, 2007).

To facilitate the process of knowledge building, a set of 12 knowledge-building principles have been conceptualized (Scardamalia, 2002). These principles have evolved over the last two decades: from an earlier focus on transformative discourse (Bereiter & Scardamalia, 1987), intentional learning (Scardamalia & Bereiter, 1991), and creative expertise as progressive problem solving (Bereiter & Scardamalia, 1993), to the most recent 12 knowledge building principles (Scardamalia, 2002). These 12 principles represent some innovative, pedagogical know-how to help transform a traditional class into a knowledge building community. They include (1) *Real Ideas, Authentic Problems*; (2) *Idea Diversity;* (3) *Improvable Ideas*; (4) *Epistemic Agency*; (5) *Community Knowledge, Collective Responsibility;* (6) *Democratizing Knowledge*; (7) *Symmetric Knowledge*

Advance; (8) *Pervasive Knowledge Building*; (9) *Constructive Uses of Authoritative Sources*; (10) *Knowledge Building Discourse*; (11) *Concurrent, Embedded, Transformative Assessment*; and (12) *Rise Above* (see Scardamalia, 2002, for more details). Fundamentally, knowledge building principles are designed to reconceptualize the behaviors of and relationships between three essential knowledge-building entities: the idea, the agent, and the community. For example, the principle of *Real Ideas, Authentic Problems* highlights the importance of viewing student ideas as conceptual artifacts (Bereiter, 2002) that are as real as things touched and felt, and that knowledge problems arise from efforts to understand the world and the ideas of other collaborators in the community, leading to problems of understanding that are quite different from textbook problems and puzzles. The principle of *Epistemic Agency* underscores that participants deal with the full range of knowledge problems (goals, motivation, evaluation, long-range planning, etc.), including knowledge problems normally left to teachers or managers. And the principle of *Community Knowledge, Collective Responsibility* emphasizes that contributions to shared, top-level goals of the community are prized and rewarded as much as individual achievements; team members produce ideas of value to others and share responsibility for the overall advancement of knowledge in the community. These principles represent design ideals and challenges that set the stage for the community's work in sustained knowledge advancement (Bereiter & Scardamalia, 2003), which is very different from conventional classroom work defined by pre-specified procedures, clear scripts and rules, or any highly-structured, ritualistic learning activities that represent fixed rather than improvable classroom procedures (cf. Hong & Sullivan, 2009).

A growing body of evidence has suggested that it is important to consider teachers' epistemological views since such views will influence classroom performance (Chai, Hong, & Teo, 2009; Pajares, 1992; Richardson, Anders, Tidwell & Lloyd, 1991; Wilson, 1990). The aforementioned principles represent essential concepts underlying knowledge building as a theory of knowing and as a way to transform traditional teaching practice. In order to help prospective teachers develop a more informed view of knowledge building theory and practice, instead of employing traditional direct teaching, the present study engaged the participants in self-initiated and self-directed knowledge work in a knowledge building environment (Hargreaves, 1999; Hong, Zhang, Teo, & Scardamalia, 2009). In particular, we are interested to find out whether knowledge-building environment and technology affects students' learning processes and outcomes. In terms of processes, we looked into participants' online performance patterns, social interaction patterns, and patterns in relation to their reflective understanding of the relationships between theories and practices in teaching. In terms of outcomes, we looked into pre-post changes in students' views about the importance and feasibility of knowledge building, and their perceived barriers to implementing knowledge building in class.

Method

Participants and context

The present research was conducted in a university course titled "Integrating Theory and Practice in Teaching" in Taiwan. The course was offered by the university's Center of Teacher Education to teacher-education students as its last required course before they start their teaching practicum. The university is ranked as one of the best universities in the nation. As such, the students enrolled in the subject university are all academically high-achievers. Based on the test results of the national Basic Competence Test for Senior High School Students (BCTSHSS), in order to enroll in this university, a student's test scores in BCTSHSS need to be ranked above the 95th percentile nationwide. Participants in the present study were 24 teacher-education students (14 females) who were planning to teach at the high-school level in the near future. Their ages range from 21 to 29 (M=24; SD=2.3).

Instructional design and online knowledge building

environment

By engaging students in building knowledge in Knowledge Forum, the two main insructional goals were: (1) to help students better understand the complex relationships between theories and practices in teaching; and (2) to help students develop a more informed and practical view about knowledge building. To these ends, an invited

talk about knowledge building theory, pedagogy, and principles, and a tutorial workshop about how to use Knowledge Forum for knoweldge building were given in the beginning of the semester. The basic design features and functions of Knowledge Forum were demonstrated to students, for example, how to create a note or a "view" (i.e., virtual spaces for collaborative discourse among community members) and how to "build-on" to an existing note. Other major instructional activities included: (1) a weekly reading assignment in which students (a) reviewed literature related to various teaching theories, and (b) read teachers' interview transcripts in which in-service teachers share their successes and challenges encountered in their daily teaching practice; (2) an invited guest speaker (i.e., a veteran teacher) shared his personal teaching experiences; and, (3) most importantly, sustained online peer discussion about the relationships between theories and practices in teaching.

The technology platform used to support peer discourse is Knowledge Forum--a multimedia community knowledge space (Scardamalia, 2003), in which participants spend extensive time collectively constructing their knowledge. They contribute their ideas in the form of notes. The Knowledge Forum environment also enables participants to co-author notes, build-on, reference (i.e., citation excepted from other community members' notes), and annotate the work of others, set problem fields and add keywords, and create "rise-above" notes that bring greater coherence to the contents of the knowledge space. All these features are designed as different means to foster collaboration in depth. For example, the "rise-aboves" allow users to gather theories and ideas that have already been presented,   synthesize these old ideas and point out new challenges to understandings. Operations such as reading, referencing, editing, rise-above etc. are recorded automatically in the database, and can be summarized statistically by means of an Analytic Toolkit (Burtis, 2002). The Knowledge Forum technology designs—in line with the overarching commitment to continual knowledge improvement—allow students to exchange ideas and continuously improve them.

Study design and data sources

This research employed a mixed-method design. The rationale for using such a design is that "the quantitative data and results provide a general picture of the research problem; more analysis, specifically through qualitative data collection, is needed to refine, extend, or explain the general picture" (Creswell, 2005, p. 515). Data sources mainly came from: (1) students' online discourse which was recorded as notes in a Knowledge Forum database, (2) a survey, and (3) interviews. We describe each in detail below. First, a descriptive analysis and a social network analysis (SNA) were performed on the recorded dataset in the Knowledge Forum to describe in general the overall online knowledge building process. In addition, all notes in the Knowledge Forum database were content-analyzed to examine if students gained a deeper understanding of the relationships between theories and practices in teaching. To do so, an open-coding procedure (Strauss & Corbin, 1990), using the note as the unit of analysis, was adopted. A two-level coding scheme based on Anderson & Krathwohl's (2001) revision of Bloom's (1956) Taxonomy of Educational Objectives was adopted. The two levels are: (1) lower-level cognitive activity/responsibility (including remember, understand, apply teaching theories), and (2) higher-level cognitive activity/responsibility (including analyze, evaluate, and create teaching theories). Two researchers repeatedly read and re-read all students' notes and then categorized each note into a level. An inter-coder agreement was computed to be 0.89 (with all differences resolved by discussion). Table 1 shows the coding scheme. To determine whether there were any changes in terms of students' discoure levels, the whole semester was divided into two stages: an early and a later knowelge-building stage (using the midterm exam as a point of seperation). A Chi-square was computed to decide if there were any differences between the two stages in terms of the discoure levels.

Second, a survey that measures students' views about the importance and feasibility of knowledge building was administered in the beginning and at the end of the semester as a pre-post assessment. This survey was designed by the authors to assess participants' mindset about the importance and feasibility of knowledge-building. There are 12 items in this survey, each is represented by a knowledge-building principle (see Scardamalia, 2002, for details). Using subjects (N=22) from another teacher education program of a comparable university, the Cronbach Alpha reliability estimates were calculated to be .87 (for the "importance" dimension) and .74 (for the "applicability" dimension). All items in both surveys employed a 5-point Likert scale (1=strongly disagree; 5=strongly agree). T-tests were conducted to see if there were pre-post changes in students' views.

Third, an approximately one-hour long interview was conducted as a follow-up investigation to further explore the perceived barriers and challenges among the teacher-education students who have expressed concerns about implementing knoweldge building in their future teaching. Six (out of total 24) participants who rated knowelge building as important but less feasible in their surveys were approached and they agreed to participate in the follow-up interviews. The interview data were transcribed verbatim and qualitatively used to help uncover some major barriers to implementing knowledge building.

Table 1. Coding scheme for analyzing relationships between theory and practice in teaching

Level	Focus	Description	Example (Translated from Chinese)
Lower-level cognitive activity/ responsibility	Remember/ understand	Teachers should know and understand theories;	Teacher should understand some basic theories, such as behavioral learning and collaborative Learning.
	Apply	Teachers should be able to apply theories in teaching	I think teachers need to apply different theories in different conditions.
Higher-level cognitive activity/ responsibility	Analyze/ Evaluate	Teachers should be able to analyze theories and practice	Experience and theory are like Na-Kon-Hsin-Fa [a type of Chinese Kung Fu]. After one masters some theories, they can help supplement and/or be integrated into one's own personal teaching experience.
	Create	Teachers should be able to improve and even create theories	Teacher's experiences and self-reflection can help with the development of new theories.

Results and Discussion

Knowledge building practices

Online contribution patterns

The overall online activity and performance in this community is shown in Table 2. Throughout the whole semester, the participants contributed a total number of 625 notes with a mean number of 26.04 (SD=6.69) notes being generated per person. In addition, Table 2 also shows other related online knowledge-building measures recorded in this community, including number of note revisions, number of keywords in notes, and number of build-on notes generated, and number of rise-above notes created. Overall, the online activities were substantive as compared with our previous study (see, Hong & Lin, accepted; Chai & Khine, 2006). Nevertheless, while these behavioral measures gave a general picture of how participants worked online in this database, they do not tell much about how participants actually interacted with one another. To better understand the social dynamics in the community, a social network analysis (SNA) focusing on network density was conducted.

Table 2. Descriptive analysis on individual online knowledge-building activities

Online activity	Mean	SD
No. of notes created	26.04	6.69
No. of note revisions	8.5	7.0
No. of keywords in notes	6.6	4.21
No. of build-on notes created	10.2	4.45
No. of Rise-above notes created	1.1	0.81

Online interaction patterns

SNA was conducted to investigate interaction patterns in the community by using the automatic assessment tools embedded in the Knowledge Forum. Table 3 shows the overall interactive and collaborative patterns in the community throughout the whole semester, using two indicators that are available in the Knowledge Forum: passive "note-reading" and active "note-linking" (including build-on notes, references, and annotations). It also shows detailed results of participants' interactions in two knowledge-building stages (using the mid-term exam as a point of seperation). In this particular analysis, density is defined as the proportion of connections in a

network relative to the total number possible. The higher the number of the density is, the stronger the social dynamics of a community is implied. An intention of adopting the knowledge-building practice in this course was to transform the traditional knowledge-transmission mode of learning into a knowledge-construction mode to engage these students in collective problem-solving and knowledge work. Therefore, it was expected that the students should collaborate more as they progress. As can be seen, there was an increasing trend of social interactions as reflected by the measures of density recorded online for this community from the early to the later knowledge building stages, especially in terms of note-linking (which inlcude build-on, reference, and annotation). Lipponen Rahikainen, Lallimo, and Hakkarainen (2003) regarded a social network density of .39 for students building-on each other online messages as adequate. In this study, the social network density for building-on at the end of course is 44.2%. The findings indicate a satisfactory level of social interaction in this community.

To further understand the quality of learning in this community, we content-analyzed students' notes. In so doing, we illustrate the processes of how they actually learn and deepen their understanding towards the pre-determined teaching goal, which was to better understand the relationships between theories and practices in teaching.

Table 3. Social network analysis (SNA) of interactivity in this community

Network density	Early KB stage	Later KB stage	Whole semester
Note reading	223 (80.79%)	223 (80.79%)	276 (100%)
Note linking	47 (17.02%)	130 (47.1%)	143 (51.81%)
Build-on	35 (12.68%)	109 (39.49%)	122 (44.2%)
Reference	16 (5.79%)	15 (5.43%)	30(10.86%)
Annotation	17 (6.15%)	57 (20.65%)	71(25.72%)

Reflective patterns

Table 4 shows how the focus of students' discourse with regard to teachers' cognitive activity/responsibility changed over time from the early to the later knowledge building stages. A Chi-Square test showed a significant difference between the two stages (χ^2 = 19.78, df = 1, p < .001). As it shows, at the early KB stage before the midterm, students' online discourse tended to focus more on lower-level cognitive responsibility of teachers, highlighting that teachers only need to understand and appreciate teaching theories, and apply them accordingly in practice. As an example (translated from Chinese), below is a student's online reflection after she read an article about corporal punishment; in her reflection, she basically views theories as authoritative sources for knowledge application:

> The teacher [in the reading materials] expressed her opinions on "education of love" and "corporal punishment". I have no teaching experience, in reality, and therefore am not able to judge which strategy works better. I, however, very much agree with her ideas. "Education of love" certainly could cultivate more independence and autonomy in students, but I also doubt its effectiveness. For those students who appreciate the teacher's encouragement, "education of love" might work well; however, for those who do not care about the teacher's encouragement, "corporal punishment" might not be a bad thing…Nevertheless, I believe that the approach of "education of love" has more benefits than drawbacks…If the teacher can apply the right strategy at the right situation, students will be able to trust him/her.

At the later KB stage, students' online discourse began to focus more on the higher-level cognitive responsibility of teachers, emphasizing that teachers need to improve and even generate their own teaching theories. For example, below is another excerpt from the same student drawn from a note composed at the later knowledge building stage:

> Thank you, those who replied to my note. I am glad to see that we are gradually linking our ideas together. I believe we all think that "a theory needs to be shaped again and again." This is a process and also a procedure of strengthening a theoretical statement. By referring to classmate Hsu's idea, I think theory itself is a conceptual sketch. No matter how it is challenged or shaped by the practice, the sketch will be modified and refined in a better way.

Table 4. Changes in students' understanding of the relationships between theories and practices in teaching

	Lower-level cognitive activity	Higher-level cognitive activity
Early knowledge-building stage	42	9
Later knowledge-building stage	25	36

The above findings suggest that engaging students in knowledge building practice is helpful to gradually promote more reflective discourse among participants and deepen their understanding of the relationship between theory and practice in teaching. Below we examine whether engaging students in knowledge building practice also has any effects on their views about knowledge building theory and practice.

Students' views about knowledge building

Changes in students' perceived importance and

feasibility of knowledge building

To further understand if engaging students in knowledge building practice also has impact on their views about the importance and feasbility of knoweldge building, t-tests were conducted. First, in terms of the pre-test, it was found that the teacher-education students tended to consider knowledge building to be both important (M=4.38, SD=0.41) and feasible (M=3.35, SD=0.49) as their means were both higher than the average mean value (M=3.0). To explore futher, however, a paired-sample t-test showed a significant difference between the importance and feasibility of knowledge building (M=1.03; SD=0.68; t=7.41, df=23, p <.01), suggesting a perceived discrepancy among the participants (see Table 5). In terms of the post-test, a paired-sample t-test continued to show that there was a significant perceived discrepancy (M=0.79; SD=0.49) between the importance (M=4.23, SD=0.54) and feasibility (M=3.44, SD=0.44) of knowledge building (t=7.88, df=23, p <.01) at the end of the semester. These findings, however, were quite expected as the participants were teacher-education students who had no prior teaching experience at the time of this study; thus it was natural that they inclined to rate the feasbility lower than the importance, both in terms of pre-test and post-test. Nevertheless, what is more important to know is whether the discrepancy was reduced after engaging students in knoweldge-building practice for a semester. Further t-test indicated there was a marginally significant difference (M=0.24, SD=0.57) between pre-post tests (t=2.02, df=23, p =.055), suggesting that engaging students in knoweldge-building practice did help reduce their perceived discrepancy to some extent.

Table 5. Students' perceived discrepancy between the importance and feasibility of knowledge building

	Difference		t-value	p-value
	M	SD		
Importance-feasibility discrepancy in pre-test	1.028	0.679	7.410	0.000**
Importance-feasibility discrepancy in post-test	0.792	0.492	7.881	0.000**
Reduced discrepancy between pre-post tests	0.236	0.573	2.017	0.055*

* < .10 ** <.01

Perceived barriers to knowledge building

As the above finding suggests, students' perceived feasibility was relatively low as compared with their perceived importance of knowledge building. With this in mind, a relevant question to ask is what might be the barriers to students perceiving knowledge building as feasible? Making these barriers explicit is an essential step

to addressing them. Our follow-up interviews indicated concerns regarding the aforementioned three knowledge building entitites (agency, ideas, and community).

Views on student agency. The interview data first revealed teacher-education students' distrust of children as epistemic agents capable of constructing their own knowledge. For exmaple, as one participant commented, "I think it [knowledge building] is less feasible because of age differences. Age differences must be considered. This is especially true for young students. I believe that if they plan their own learning, they will focus on playing." Apparently, this interviewee tends to believe that children are too young to plan and regulate their own learning as an independent knowledge agent. Such beliefs, however, are contrary to previous research findings that suggest knowledge building is possible even among young children such as grade five students (Hong, Scardamalia, Messina, & Teo, 2008; Zhang, Scardamalia, Lamon, Messina, & Reeve, 2007). Unfortunately, such disbelief in children's knowledge building capacity does align with conventionally held eudcational beliefs which hold that learning must always come first (e.g., during K-12 schooling), before one can really produce new knowledge (e.g., during graduate study) (cf. Hong & Sullivan, 2009). Under this view, maximizing one's individual knowledge (i.e., seeing knowledge as a psychological state confined within Popper's second World) seems an important criterion in judging whether instruction is effective or not, leaving little room for knowledge-building.

Views on idea-centered learning. The interviewed students were also less in favor of idea-centered learning that highlights the importance of sustained production and improvement of ideas. Instead, they tended to emphasize the importance of accumulating basic knowledge in order to pass exams. As an interviewee commented, "…it [knowledge building] is less feasible because what is taught in school in order to help students pass exams is often not related to the real ideas or authentic problems in life." As another commented, "It is not practical to teach more than one solution to a math problem. For example, in learning math, more than one solution [as opposed to idea diversity] may lead students to confusion, especially when the instructional goal is to help students pass the test." As mentioned above, conventional classroom work tends to be defined by pre-specified procedures, clear scripts and rules, and highly-structured learning activities in order to help learners acquire pre-specified knowledge efficiently and then pass exams. As such, establishing a broader knowledge base becomes much more important as an instructional goal than encouraging students to work innovatively with knowledge and engage in sustained idea production and improvement.

Views on community knowledge. The interview data also showed the future teachers' concern about group equity and social harmony in relation to building community knowledge. For example, a participant commented, "I think people can work together in a group but there will never be equal contribution in a group." As another commented, "You can not make sure everyone will have the same value and share the same responsibility, as each one has his or her own individual learning goal." In other words, they still tend to treat knowledge as individual, rather than public, property. They were also less inclined to accept the concept that to give knowledge is to get knowledge in a knowledge community. For example, one said, "some members never give/share knowledge, but just take from others. To maintain a good social relationship is a key factor that should be taken into consideration." Perhaps, this is because their past schooling and test-related experiences tend to emphasize individual learning rather than group knowledge work. Clearly, how to help transform these teacher-education students' individualistic learning view into a view that also appreciates the social aspects of learning remains an important challenge.

Summary and Conclusion

In this exploratory research study, we reported the process of knowledge building among a group of teacher-education students and investigated the effects of this knowledge building process on their views about knowledge building theory and practice. In summary, it was found that engaging students in knowledge building is helpful to (1) promote gradually more interactive and reflective online knowledge building activities; and (2) to somewhat reduce their perceived discrepancy between the importance and feasibility of knowledge building as a theory of knowing and as a way to transform conventional teaching practice. In addition, a major challenge of implementing knowledge building identified through in-depth interviews among participants who especially rated knowledge building as less feasible was that participants' prior schooling experience and socio-cultural expectations tended to strongly influence how they might interpret and value the feasibility of knowledge building. Overall, these participants' prior epistemic views are still largely confined within Popper's world 2 epistemology which sees knowledge as psychological entity (as opposed to the concept that sees ideas as public artifacts) and learning as individualistic activities (as opposed to the concept that sees learning as a communal acivity) and as accumulation of authorative knowledge (as opposed to the concept that values self-initiated and self-directed knowledge construction). To help students develop more informed and practical views of knowledge building theory and practice thus implies helping them to develop a world 3 knowledge view that sees knowledge as public conceptual artifacts and learning as a social process (Hong, Scardamalia, & Zhang, 2007).

The instructional goal of the present research was (1) to help better prepare teacher-education students to

attain a deeper understanding of the relationships between theory and practice in teaching, and (2) to help them develop more informed views about knowledge building. To further this end, we conjecture that a possible strategy is to make teacher-education students' own pedagogical, epistemological, and socio-cultural views about learning and knowledge-building more visible to themselves. Accordingly, an effective instructional design may be to engage them to discuss more explicitly in class their own views about knowledge-building, while at the same time engaging them in actual knowledge-building practices. It is posited that doing so would further help students clarify their conceptual discrepancies between theories and practices in teaching, and gradually achieve World-3 oriented views and thus be able to see knowledge building as more feasible in reality. It is futher conjectured that after being immersed as a knowledge builder in the teacher education program, it may be beneficial to engage teacher-education students in facilitating knowledge-building communities during their practicum experiences under the guidance of experienced knowledge building teachers (See Chai & Tan, 2009). Given the deeply rooted nature of beliefs highlighted above, it seems clear that a single stand-alone course on knowledge building is unlikely to counter the effects of existing beliefs and views on one's own teaching and learning. These claims, however, remains to be further examined by future research.

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ICLS 2010

Monday, June 28

9:00 AM - 5:30 PM

Doctoral Consortium	
Early Career Workshop	
Workshop 1: Productive multivocality in the analysis of collaborative learning	
Workshop 2: Three perspectives on technology support in inquiry learning: Personal inquiry, mobile collaboratories and emerging learning objects	Salon 2
Workshop 3: It's about time: Purpose, methods and challenges of temporal analyses of multiple data streams	Salon 6
Workshop 5: Engineering Learning	Salon 9
Workshop 6: Collaborative learning with interactive surfaces: An interdisciplinary agenda	Salon 7

Tuesday, June 29

9:00 AM - 12:30 PM

Doctoral Consortium	Salon 4
Early Career Workshop	Salon 3
Workshop 1: Productive multivocality in the analysis of collaborative learning	Salon 12
Workshop 7: Striking a Balance Between Free and Guided Exploration - Conceptualizing Support in Exploratory Environments (ISEE'10)	Salon 9
Workshop 8: Growing the Learning Sciences: Brand or Big Tent? Implications for graduate education	Salon 7
Workshop 9: Hands-on introduction to creating intelligent tutoring systems without programming using the Cognitive Tutor Authoring Tools	Salon 2

4:00 PM - 5:30 PM

Keynote 1	Red Lacquer Ballroom

Keynote: Weiman, Carl, University of Colorado and University of British Columbia; Reactor: Duschl, Richard, Vanderbilt

5:30 PM - 7:00 PM

Poster Session 1 and Reception	Salons 4-9

Children Learning Science through Engineering: An Investigation of Four Engineering-Design-Based Curriculum Modules

Kristen B. Wendell, Kathleen G. Connolly, Christopher G. Wright, Linda Jarvin, Chris Rogers

Expertise in Engineering Learning: Examining Engineering Students' Collaborative Inquiry of Computer Systems

Yuen-Yan Chan

Robot Diaries: Encouraging and Enabling Technological Creativity

Debra Bernstein

Incorporating Affect in an Engineering Studentís Epistemological Dynamics

Brian A. Danielak, Ayush Gupta, Andrew Elby

Reflection Tools in Modeling Activities

Nora Siewiorek, Mary Besterfield-Sacre, Eric Hamilton, Larry J. Shuman

Development of Engineering Design Modules for Middle School Students: Design principles and Some initial Results

James Van Haneghan, Susan Pruet, Rhonda Waltman

Learning in mathematics: Effects of procedural and conceptual instruction on the quality of student interaction

Dejana Diziol, Nikol Rummel, Hans Spada, Stephanie Haug

Mapping topological relationships between contexts

Jonathan Boxerman, Bruce Sherin

Math Anxiety in Middle School Math Teachers: Implications for Teacher Practice and Professional Development

Nicole Shechtman

Virtual Math Teams: An Online Tool for Collaborative Learning in the Mathematics Disciplines

Baba Kofi Weusijana, Jimmy Xiantong Ou, Gerry Stahl, Stephen Weimar

Student Understandings of Solutions

Stephanie Ryan, Donald Wink, Susan Goldman, James Pellegrino

Students' Plausibility Perceptions of Human-Induced Climate Change

Doug Lombardi, Gale M. Sinatra

Finding the "Learning" in Biology Students' Use of Learning Management Systems

Steven Lonn

Analyzing People's Views of Science Though Their Categorization of Television Science Programs

Pryce Davis

Coordination and contextuality: Revealing the nature of emergent mathematical understanding by means of a clinical interview

Mariana Levin, Rozy Brar

A Photograph-Based Measure of Studentsí Beliefs About Math

Lee Martin, Pamela Gourley-Delaney

The Role of Definition in Supporting Mathematical Activity

Marta Kobiela, Rich Lehrer

NetLogo HotLink Replay: A Tool for Exploring, Analyzing and Interpreting Mathematical Change in Complex Systems

Michelle Wilkerson-Jerde, Uri Wilensky

Units of length: A notational system for conceptual understanding of size and scale

Cesar Delgado

Mathematics at Play

Osvaldo Jimenez, Kristen Pilner Blair, Indigo Esmonde, Shelley Goldman, Lee Martin, Roy Pea

Studentsí Investigations with Physical Activity Data Devices

Victor Lee, Maneksha DuMont

Learning to Categorize Word Problems: Effects of Practice Schedules

Brian Gane, Richard Catrambone

Anomalous Graph Data and Claim Revision During Argumentation

Leema Berland, Victor Lee

Facilitation, Teaching, and Assistance at the Intersection of the Learning Sciences and Informal Science Education

Lisa Bouillion Diaz, Jean Creighton, Catherine Eberbach, Dean Grosshandler, Leslie Herrenkohl, Sandra Toro Martell

Reasoning about the Seasons: Middle School Studentsí Use of Evidence in Explanations

Julia Plummer, Lori Agan

Student Progress in Understanding Energy Concepts in Photosynthesis using Interactive Visualizations

Kihyun (Kelly) Ryoo, Marcia Linn

Using the Activity Model of Inquiry to develop undergraduate studentsí views of the scientific inquiry process

Sara Marchlewicz, Donald Wink

Argumentation at the table-talk level of middle school students participating in scientific cafÈs

Gerald P. Niccolai, Zeynab Badreddine, Christian Buty

The Use of Animations and Online Communication Tools to Support Mathematics Teachers in the Practice of Teaching

Chieu Vu Minh, Patricio Herbst, Michael Weiss

What makes a ìgoodî scientific question? Supporting independent student-driven inquiry

Julia Svoboda, Cynthia Passmore

The Effect of Curricular Elements on Student Interest in Science

Su Swarat

Using Design Personas to Inform Refinements to Software for Science Learning

Patrik Lundh, Britte Cheng, William R. Penuel, Aasha Joshi, Hannah Lesk

Wednesday, June 30

7:30 AM - 8:30 AM

JLS Board Meeting (closed)	Crystal Ballroom
Continental Breakfast	Red Lacquer Ballroom

8:30 AM - 10:00 AM

Symposium 1: Fostering the Acquisition and Application of Domain-Specific Knowledge through Concept Mapping	Salon 12

Fostering the Acquisition and Application of Domain-Specific Knowledge through Concept Mapping

Carmela Aprea, Hermann G. Ebner, Bert Slof, Gijsbert Erkens, Paul A. Kirschner, Baerbel Fuerstenau, Jeannine Ryssel, Janet Kunath

Concept Mapping versus Summary Writing as Instructional Devices for Understanding Complex Business Problems

Baerbel Fuerstenau, Jeannine Ryssel, Janet Kunath

Matching Representational Tools' Ontology to Part-task Demands to Foster Problem-solving in Business Economics

Bert Slof, Gijsbert Erkens, Paul A. Kirschner

Direct and Indirect Means of Scaffolding the Effective Use of Student- generated CMs in Economics Education

Carmela Aprea, Hermann G. Ebner

Paper Session 1: Dynamics of collaborative group interactions	Salon 2

Group Awareness of Social and Cognitive Behavior in a CSCL Environment

Chris Phielix, Frans Prins, Paul Kirschner

Coordinating Collaborative Problem-solving Processes by Providing Part-task Congruent Representations

Bert Slof, Gijsbert Erkens, Paul A. Kirschner

Fostering Online Search Competence and Domain-Specific Knowledge in Inquiry Classrooms: Effects of Continuous and Fading Collaboration Scripts

Christof Wecker, Ingo Kollar, Frank Fischer, Helmut Prechtl

Using collaborative activity as a means to explore student performance and understanding

Marcela Borge, John M. Carroll

Symposium 2: Developing Students' Disciplinary Historical Thinking: The Role of Textual and Instructional Resources	Salon 3

Developing Students' Disciplinary Historical Thinking: The Role of Textual and Instructional Resources

Darin Stockdill, Byeong-Young Cho, Avishag Reisman, Amy A. Wilson

The Teen Empowerment through Reading, Research, and Action (TERRA) Project

Darin Stockdill

Historical reasoning on the Internet: How do students read and learn about socially controversial issues in new literacy environments?

Byeong-Young Cho

Reading Like a Historian: A Document-Based History Curriculum Intervention with Adolescent Struggling Readers

Avishag Reisman

Constructing History in Middle Schools: A Social Semiotic Analysis of Texts Used in Three History Classrooms

Amy A. Wilson

Paper Session 2: Trajectories of early childhood science learning	Salon 4

Chair: Bell, Phillip, University of Washington

Dispositions, disciplines, and marble runs: A case study of resourcefulness

Margaret Carr, Jane McChesney, Bronwen Cowie, Robert Miles-Kingston, Lorraine Sands

Scaffolding Children's Understanding of the Fit Between Organisms and their Environment In the Context of the Practices of Science

Kathleen Metz, Stephanie Sisk-Hilton, Eric Berson, Uyen Ly

Kindergarten and First-Grade Students' Representational Practices While Creating Storyboards of Honeybees Collecting Nectar

Joshua Danish, David Phelps

Interactional Arrangements for Learning about Science in Early Childhood: A Case Study Across Preschool and Home Contexts

Siri Mehus, Reed Stevens, Linda Grigholm

Symposium 3: The Educative and Scalable Functions of Authoring Tools to Support Inquiry-based Science Learning Salon 6

The Educative and Scalable Functions of Authoring Tools to Support Inquiry-based Science Learning

Itay Asher, Iris Tabak, Vassilis Kollias, Eleni Kyza, Iolie Nicolaidou, Andreas Redfors, Lena Hansson, Sascha Schanze, Ulf Saballus

Knowledge of prior implementations leverages authoring tool efficacy: The case of the Cyprus University of Technology team (CUT)

Eleni Kyza, Iolie Nicolaidou, F. Terzian, A. Hadjichambis, D. Kafouris

Using STOCHASMOS to scaffold students in discussing key issues while retaining ownership of their learning processes: The case of the Kristianstad team (HKr)

Andreas Redfors, M. Rosberg, Lena Hansson, I. Lundh

Specialized authoring tool as boundary object: The case of the Ben Gurion team (BGU)

Iris Tabak, Itay Asher, S. Nasser, L. Gnaim, M. Fried, I. Katz, M. Weinstock

Design foreclosure and the proliferation of offline activities: The case of the Leibniz Universität Hannover team (LUH)

Sascha Schanze, Ulf Saballus, A. Neumann, M. Manske, B. Sieve, M. Söhlke, O. Janßen

The case of the University of Thessaly team (UTH)

Vassilis Kollias, A. Matos, A. Davaris, A. Karnavas, A. Daropoulos, K. Zaganas, V. Christodoulopoulos, Th. Tsaknia

Paper Session 3: Science teachers' learning: Multiple perspectives Salon 7

Chair: Krajcik, Joseph, University of Michigan

Transformative professional development: Cultivating concern with others' thinking as the root of teacher identity

Rachel E. Scherr, Hunter G. Close

Activity-Theoretical Research on Science Teachers' Expertise and Learning

Cory Forbes, Cheryl Madeira, James Slotta

Teacher Learning about Teacher-Parent Engagement: Shifting Narratives and a Proposed Trajectory

Corey Drake, Angela Calabrese Barton

Appropriating Conceptual Representations: A Case of Transfer in a Middle School Science Teacher

Suparna Sinha, Steven Gray, Cindy Hmelo- Silver, Rebecca Jordan, Sameer Honwad, Catherine Eberbach, Spencer Rugaber, Swaroop Vattam, Ashok Goel

Paper Session 4: Home-school connections for math and science learning Salon 8

Chair: Bouillion Diaz, Lisa, University of Illinois Extension

The Impact of a Media-Rich Science Curriculum on Low-Income Preschoolers' Science Talk at Home

William R. Penuel, Lauren Bates, Shelley Pasnik, Eve Townsend, Lawrence P. Gallagher, Carlin Llorente, Naomi Hupert

Math Engaged Problem Solving in Families

Shelley Goldman, Roy Pea, Kristen Pilner Blair, Osvaldo Jimenez, Angela Booker, Lee Martin, Indigo Esmonde

Micros and Me: Leveraging home and community practices in formal science instruction

Carrie Tzou, Philip Bell

Playing with Food: Moving from Interests and Goals into Scientifically Meaningful Experiences

Tamara Clegg, Christina Gardner, Janet Kolodner

Symposium 4: Terra Nova Toward Terra Firma: Data On Games For Science Learning Salon 9

Discussant: Kafai, Yasmin, University of Pennsylvania

Terra Nova Toward Terra Firma: Data On Games For Science Learning

Douglas B. Clark, Noel Enyedy, Constance Steinkuhler, Daniel T. Hickey, Brian C. Nelson, Kurt Squire, Eric Klopfer, Jody Clarke-Midura, Diane J. Ketelhut, Mingfong Jan

The Role of Embodiment and Symbolization in Supporting Physics Learning with Games and Virtual Worlds for Young Children

Noel Enyedy

Model Based Reasoning & Use in Massively Multiplayer Online Games

Constance Steinkuhler

Current Evidence of Engagement, Understanding, and Achievement in the Taiga Curriculum in Quest Atlantis

Daniel T. Hickey, Eun Ju Kwon, Michael K. Filsecker

SURGE: Intended and Unintended Science Learning in Games

Douglas B. Clark, Mario Martinez-Garza, Brian C. Nelson, Cynthia M. D'Angelo, Kent Slack

Learning Argumentation through a Role-playing Game-based Curriculum

Mingfong Jan, Kurt Squire

Virtual Environment-based Assessments of Science Content and Inquiry: The SAVE Science Project

Brian C. Nelson, Younsu Kim, Cecile Foshee, Diane Jass Ketelhut, Catherine Schifter, Deepti Mudegowder, David Majerich, Melanie Wills, Angela Shelton, Patrick McCormack, Tera Kane, Zoe Freeman

GameBuilder: Does Reduced Software Complexity Allow More Time on Task?

Eric Klopfer, Chuan Zhang, Judy Perry, Josh Sheldon

MUVEs and Meta-Knowledge

Jody Clarke-Midura, Eugenia Garduno

10:00 AM - 10:20 AM

Morning Break

10:20 AM - 11:50 AM

Paper Session 5: Knowledge-building communities across contexts and disciplines Salon 6

Chair: Stevens, Reed, Northwestern University

Social Software and Knowledge Building: Supporting Co-Evolution of Individual and Collective Knowledge

Joachim Kimmerle, Ulrike Cress, Christoph Held, Johannes Moskaliuk

Teacher-education students' views about knowledge building theory and practice

Huang-Yao Hong, Fei-Ching Chen, Ching Sing Chai, Wen-Ching Chan

Making Knowledge Building Moves: Toward Cultivating Knowledge Building Communities in Classrooms

Katerine Bielaczyc, John Ow

Gaining an Insider Perspective on Learning physics in Hong Kong

Jan van Aalst

ISLS Presidential Session: Reflections from ISLS Presidents   Crystal Ballroom

Symposium 5: Using Visualization to Link Abstract Science and Everyday Experience   Salon 12

Discussant: Linn, Marcia, University of Califoria Berkeley

Using Visualization to Link Abstract Science and Everyday Experience

Ji Shen, Hsin-Yi Chang, Jennifer Chiu, Douglas Clark, Kevin McElhaney, Keisha Varma, Eric Wiebe, Helen Zhang, Marcia Linn

Investigating the Role of Physical and Virtual Experiments in Developing Integrated Understanding of Thermal Conductivity and Equilibrium

Hsin-Yi Chang, Kun-Chen Tsai

Promoting Links and Developing Students' Criteria for Visualizations by Prompting Judgments of Fidelity

Jennifer Chiu

SURGE: Intended and Unintended Learning in Digital Games

Douglas Clark, Brian C. Nelson, Cynthia M. D'Angelo, Kent Slack, Mario Martinez

How Do Interactive Graphing Tools Help Students Interpret Virtual Experiments about Car Collisions?

Kevin McElhaney

Transformative Modeling in Learning Current Electricity: A Case Study of Preservice Teachers

Ji Shen, Rutchelle Enriquez

Using Interactive Models to Support Content Learning through Scientific Reasoning

Keisha Varma

Abstraction and Re-representation in Visualizations: Understanding Where the Learning Occurs

Eric Wiebe, Mike Carter, James Minogue, Lauren Madden, John Bedward

Exploring Drawing and Critique to Enhance Learning from Visualizations

Helen Zhang

Symposium 6: Social construction of mathematical meaning through collaboration and argumentation   Salon 2

Social construction of mathematical meaning through collaboration and argumentation

Baruch Schwarz, Shirley Atzmon, Rina Hershkowitz, Chris Rasmussen, Gerry Stahl, Megan Wawro, Michelle Zandieh

Computer Mediation of Collaborative Mathematical Exploration

Gerry Stahl

Brokering as a Mechanism for the Social Production of Meaning

Chris Rasmussen, Michelle Zandieh, Megan Wawro

Distinctiveness of teachers' discourse patterns and their impact on students' emergent and subsequent argumentative activities

Rina Hershkowitz, Baruch Schwarz, Shirley Atzmon

Paper Session 6: Engineering education: What is this thing called Engineering?   Salon 3

Chair: Blikstein, Paulo, Stanford University

Disciplinary Knowledge, Identity, and Navigation: The Contributions of Portfolio Construction

Jennifer Turns, Brook Sattler, Deborah Kilgore

Contingent Identification in a Biomedical Engineering Classroom

Vanessa Svihla

Knowledge Transmission and Engineering Teaching

Amy Zhang, Monica Cardella

Cross-disciplinary practice in engineering contexts - a developmental phenomenographical perspective

Robin Adams, Tiago Forin, Saranya Srinivasan, Llewellyn Mann

Paper Session 7: Learning progressions: The state of the field   Salon 4

Chair: Duncan, Ravit, Yale University

Validation of a Learning Progression: Relating Empirical Data to Theory

Nicole Shea, Ravit Duncan

Designing Assessments to Track Student Progress

Namsoo Shin, Shawn Y. Stevens, Joseph Krajcik

Discourse as a lens for reframing consideration of learning progressions

Alicia C. Alonzo

A critique of how learning progressions research conceptualizes sophistication and progress

Tiffany-Rose Sikorski, David Hammer

Symposium 7: Integrating Philosophy into Learning Sciences Research on Epistemic Cognition   Salon 8

Discussant: Blachowicz, James, Loyola University Chicago

Integrating Philosophy into Learning Sciences Research on Epistemic Cognition

Clark Chinn, Luke Buckland, Ala Samarapungavan

Broadening the Scope of Research on Epistemic Cognition: Implications from Epistemology and Philosophy of Science

Clark Chinn

Implications of Philosophy for Assessing Epistemic Cognition

Luke Buckland

Underdetermination in Philosophy of Science and Science Education

Ala Samarapungavan

Symposium 8: Qualitative, Quantitative, and Data Mining Methods for Analyzing Log Data to Characterize Students' Learning Strategies and Behaviors	Salon 9

Discussant: vanJoolingen, Wouter, University of Twente

Qualitative, Quantitative, and Data Mining Methods for Analyzing Log Data to Characterize Students' Learning Strategies and Behaviors

Ryan Baker, Janice Gobert, Roger Azevedo, Ido Roll, Wouter van Joolingen

Studying the interaction between learner characteristics and inquiry skills in microworlds

Janice Gobert, Michael São Pedro, Juelaila Raziuddin, Nathan Krach

Educational Data Mining Methods For Studying Student Behaviors Minute by Minute Across an Entire School Year

Ryan Baker, Adriana M.J.B. de Carvalho, Jay Raspat, Vincent Aleven, Albert T. Corbett, Kenneth R. Koedinger, Mihaela Cocea, Arnon Hershkovitz

Deciphering the complex nature of log-file data collected during self-regulated learning with MetaTutor

Roger Azevedo, Amy Witherspoon, Amber Chauncey, Mihai Lintean, Zhiqiang Cai, Vasile Rus, Arthur Graesser

Analysis of students' actions during online invention activities - seeing the thinking through the numbers

Ido Roll, Vincent Aleven, Kenneth R. Koedinger

12:00 PM - 1:15 PM

ISLS Board Meeting (closed)	Crystal Ballroom
Field Trip to YouMedia	You Media
Lunch (on your own in downtown Chicago!)	

1:30 PM - 3:00 PM

Invited Session 1: Challenges in Professional Disciplinary Preparation	Crystal Ballroom

Presenter: Sheppard, Sherri, Stanford University; Presenter: Wink, Donald, UIC; Presenter: Gomez, Louis, University of Pittsburgh; Discussant: Pellegrino, James, UIC

Paper Session 8: Designed artifacts to support collaboration and learning	Salon 12

Chair: Rick, Jochen, Open University

Representational Technology For Learning Mathematics: An Investigation of Teaching Practices in Latino/a Classrooms

Phil Vahey, Teresa Lara-Meloy, Judit Moschkovich, Griselda Velazquez

A Tempest in a Teapot Is but a Drop in the Ocean: Action-Objects in Analogical Mathematical Reasoning

Dor Abrahamson

The Effects of Physical and Virtual Manipulatives on Students' Conceptual Learning About Pulleys

Elizabeth Gire, Adrian Carmichael, Jacquelyn J. Chini, Amy Rouinfar, Sanjay Rebello, Garrett Smith, Sadhana Puntambekar

Space And Time In Classroom Networks: Mapping Conceptual Domains In Mathematics Through Collective Activity Structures

Tobin White, Corey Brady

Paper Session 9: Classroom discourse processes: Roles, authority, and argumentation	Salon 2

Chair: Berland, Leema, University of Texas Austin

'I study features; believe me, I should know!': The mediational role of distributed expertise in the development of student authority

Jennifer Langer-Osuna, Randi Engle

Talking with your mouth full: The role of a mediating tool in shaping collective positioning

Kate Anderson, Melissa Gresalfi

Fostering meaningful scientific argumentation practices through ongoing classroom interactions

Xiaowei Tang, Janet Coffey

Listen to each other: How the building of norms in an elementary science classroom fosters participation and argumentation

Suna Ryu, William A. Sandoval

Symposium 9: The Learning Sciences as a Setting for Learning	Salon 3

Chair: Larreamendy, Jorge, UNIANDES; Discussant: Sawyer, Keith, University of Washington St. Louis

The Learning Sciences as a Setting for Learning

Michael Evans, Martin Packer, Reed Stevens, Cody Maddox, Keith Sawyer, Jorge Larreamendy

Mapping the Network of the Learning Sciences

Michael Evans

The History and Micro-Genesis of the Learning Sciences

Reed Stevens

The Constitution of a Learning Scientist

Martin Packer, Cody Maddox

Paper Session 10: Scaffolding argumentation and shared reasoning	Salon 4

Chair: Shapiro, R Benjamin, University of Pittsburgh

Assessing Change in Learner's Causal Understanding Using Sequential Analysis and Causal Maps

Allan Jeong

Effects of On-line Collaborative Argumentation Processes on Justifications

Jingyan Lu, Ming Ming Chiu, Nancy Law

Arguing with Peers: Examining Two Kinds of Discourse and Their Cognitive Benefits

David Shaenfield

When Students Speak, Who Listens? Constructing Audience in Classroom Argumentation

Leema Berland, Andrea Forte

Symposium 10: A Cognitive Apprenticeship for Science Literacy Based on Journalism	Salon 6

A Cognitive Apprenticeship for Science Literacy Based on Journalism

   Joseph L. Polman, E. Wendy Saul, Alan Newman, Cathy Farrar, Nancy Singer, Eric Turley, Laura Pearce, Jen Hope, Glenda McCarty, Cynthia Graville

Toward an Articulation of Standards for Science Literacy Based on Journalism

   Alan Newman, E. Wendy Saul, Nancy Singer, Eric Turley, Laura Pearce, Joseph L. Polman

Designing Transfer Tasks to Measure Science Literacy

   Cathy Farrar, Joseph L. Polman, E. Wendy Saul, Alan Newman

Reframing and Measuring Engagement with Science and Technology

   Jen Hope, Glenda McCarty, Joseph L. Polman

Building an Apprenticeship Community of Practice for Science Journalism

   Joseph L. Polman, E. Wendy Saul, Alan Newman, Laura Pearce, Cynthia Graville

Symposium 11: Wherever you go, there you are: Examining the development and integration of identity across multiple domains and contexts   Salon 8

 Discussant: Nasir, Na'ilah Suad, University of California Berkeley

Wherever you go, there you are: Examining the development and integration of identity across multiple domains and contexts

   Cynthia Carter Ching, Emily Evans, Elizabeth Faber, Deborah Fields, Na'ilah Suad Nasir

Trail guide self-perception and domain-expert identity at an environmental reserve

   Emily Evans

Life maps and the multi-contextual development of undergraduate leadership identity

   Elizabeth Faber

Identity confusion among teachers as professional development participants and novice bloggers

   Cynthia Carter Ching

From Home to School and Back Again: Intersecting Trajectories of Identification in a Student's Development as a Writer

   Deborah Fields

Paper Session 11: Issues for teaching and learning   Salon 9

 Chair: Fischer, Frank, University of Munich

Spatial Intelligence and the Research - Practice Challenge

   Moshe Krakowski, Kristin Ratliff, Louis Gomez, Susan Levine

What counts as scientific practice? A taxonomy of scientists' ways of thinking and doing

   Lori Takeuchi

Students' Use of Multiple Strategies for Spatial Problem Solving

   Mike Stieff, Minjung Ryu, Bonnie Dixon

Spatial and Temporal Embedding for Science Inquiry: An Empirical Study of Student Learning

   Tom Moher, Jennifer Wiley, Allison Jaegar, Brenda LÛpez Silva, Francesco Novellis, Deborah Kilb

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3:10 PM - 4:40 PM

Paper Session 12: Learning to write and writing to learn   Salon 2

 Chair: Gomez, Kimberly, University of Pittsburgh

"Ideas First" in Collaborative Second Language (L2) Writing: An Exploratory Study

   Yun Wen, Wenli Chen, Chee-Kit Looi

Romantic beats "classic": New insights on the effects of self-regulation on learning by writing

   Isabel Braun, Susanne Philippi, Matthias N¸ckles

Children Learning Literate Practices in Spriting

   Tara Rosenberger Shankar

Getting Others' Perspectives: A Case Study of Creative Writing Environments and Mentorship

   Alecia Marie Magnifico

Symposium 12: Understanding a future with multiple pasts: Projects on metahistorical understanding   Salon 3

 Chair: O'Neill, D. Kevin, Simon Fraser University; Discussant: Goldman, Susan, UIC

Understanding a future with multiple pasts: Projects on metahistorical understanding

   Kevin O'Neill, Yifat Ben-David Kolikant, Joseph Polman, Josh Radinsky

"Compassionate Canada?"

   Kevin O'Neill

"Doing history together": A collaborative investigation by Israeli Jewish and Arab students of their shared past of conflict

   Yifat Ben-David Kolikant

Narrative metacognition and story diagrams as scaffolds for the critique and construction of history narratives

   Joseph Polman

Building nuanced historical narratives around geographic data

   Josh Radinsky

Symposium 13: Energy across the Curriculum: Cumulative Learning Using Embedded Assessment Results   Salon 4

Energy across the Curriculum: Cumulative Learning Using Embedded Assessment Results

   Vanessa Svihla, Libby Gerard, Kihyun (Kelly) Ryoo, Elissa Sato, Tammie Visintainer, Hillary Swanson, Marcia Linn, Hee-Sun Lee, Ou Lydia Liu, Chad Dorsey

Promoting Cumulative Learning

   Marcia Linn, Chad Dorsey

Teacher Perspectives on Cumulative Learning

   Libby Gerard

Eliciting Energy Ideas in Thermodynamics

   Hillary Swanson

Redesigning Plate Tectonics for Cumulative Learning

  Elissa Sato

Redesigning Global Climate Change for Cumulative Learning

  Tammie Visintainer, Vanessa Svihla

New Assessments of Cumulative Learning in Photosynthesis

  Kihyun Ryoo

Measuring Cumulative Understanding: Item Formats

  Hee-Sun Lee, Ou Lydia Liu

Measuring Cumulative Learning Across Disciplines

  Vanessa Svihla

Paper Session 13: Examining and evaluating the use of CSCL tools   Salon 6

Teachers Collaborating with Wiki: The Impact of Professional Status, Language, and Age

  Yael Poyas

Preparing for the Long Tail of Teaching and Learning Tools

  Charles Severance, Stephanie Teasley

An Overview of CSCL Methodologies

  Heisawn Jeong, Cindy Hmelo-Silver

A Visualization of Group Cognition: Semantic Network Analysis of A CSCL Community

  Li Sha, Christopher Teplovs, Jan van Aalst

Paper Session 14: Fostering classroom inquiry   Salon 7

Changes in Teachers' Ability to Design Inquiry-Based Lessons During a Two-Year Preparation Program

  Augusto Macalalag Jr, Ravit Golan Duncan

Eliciting and Developing Students' Ideas and Questions in a Learner-Centered Environmental Biology Unit

  Christopher J. Harris, Rachel S. Phillips, William R. Penuel

Implementing a Lesson Plan Vs. Attending to Student Inquiry: The Struggle of a Student-Teacher During Teaching Science

  Loucas T. Louca, Maria Santis, Dora Tzialli

Fostering Mathematical Inquiry: Focus on Teacher's Interventions

  Mara Martinez, Wenjuan Li

Paper Session 15: Instructional design in higher education   Salon 8

Stressed yet Motivated: Web-Based Peer Assessed Competition as an Instructional Approach in Higher Education

  Ronen Hammer, Miky Ronen, Dan Kohen-Vacs

Distributed Creativity Within a Community of Student Instructional Designers

  Richard West

The Role of Concretization in Acquiring Design Knowledge

  Tamar Ronen-Fuhrmann, Yael Kali

Sharing Educational Scenario Designs in Practitioner Communities

  Astrid Wichmann, Jan Engler, Ulrich Hoppe

Symposium 14: On the Process and Outcomes of Inquiry Learning: Changing Approaches to Assessment   Salon 9

On the Process and Outcomes of Inquiry Learning: Changing Approaches to Assessment

  Shaaron Ainsworth, Ton de Jong, Cindy Hmelo-Silver, Pascal Wilhelm, Daniel Hickey, Michael Filsecker, Eun Ju Kwon, Stamatina Anastopoulou, Mike Sharples, Charles Crook

Participatory Assessment: Supporting Engagement, Understanding, and Achievement in Scientific Inquiry

  Daniel Hickey, Michael Filsecker, Eun Ju Kwon

Engaging students with assessment: Inquiry cartoons

  Shaaron Ainsworth, Stamatina Anastopoulou, Mike Sharples, Charles Crook, Claire O'Malley

Measuring Inquiry: New Methods, Promises & Challenges

  Jody Clarke-Midura, Michael Mayrath, Chris Dede

Invited Session 2: Representational Practices and Disciplinary Learning   Crystal Ballroom

  Presenter: Lemke, Jay, University of Michigan; Presenter: Hall, Rogers, Vanderbilt University; Presenter: Nakleh, Mary, Purdue University; Discussant: DiSessa, Andrea, University of California Berkeley

4:40 PM - 5:00 PM

Afternoon Break

5:00 PM - 6:30 PM

Symposium 15: Games as 21st Century Curriculum   Salon 4

Transformative Play: Games as 21st Century Curriculum

  Sasha Barab, Melissa Gresalfi, Anna Arici, Adam Ingram-Goble, Patrick Pettyjohn

Paper Session 16: Scaffolding scientific reasoning and explanations   Salon 7

  Chair: Stieff, Michael, University of Maryland College Park

Explaining across contrasting cases for deep understanding in science: An example using interactive simulations

  Catherine C. Chase, Jonathan T. Shemwell, Daniel L. Schwartz

Scaffolding students in evaluating the credibility of evidence using a reflective web-based inquiry environment on Biotechnology

  Iolie Nicolaidou, Eleni A. Kyza, Frederiki Terzian, Andreas Hadjichambis, Dimitris Kafouris

Tracing knowledge re-organization - a fine grain analytical framework for looking at students' developing explanations

  Orit Parnafes

The impact of web-based collaborative inquiry for science learning in secondary education

Annelies Raes, Tammy Schellens, Bram De Wever

Symposium 16: Internationalizing the Learning Sciences from Formal to Informal Learning Environments   Salon 8

Chair: Rosé, Carolyn Penstein, Carnegie Mellon University; Chair: Kam, Matthew, Carnegie Mellon University; Discussant: Hoadley, Christopher, New York University

Symposium: Internationalizing the Learning Sciences from Formal to Informal Learning Environments

Carolyn RosÈ , Matthew Kam, Therese Laferriere, Nancy Law, Neema Moraveji, Ravi Vatrapu, Christopher Hoadley

LearnLab India: Towards "In Vivo" International Comparative Education Research

Carolyn Rosé , Matthew Kam

Knowledge Building International Project (KBIP): a Nested Network of Learning and Knowledge Creation

Therese Laferriere, Nancy Law

Supporting and Measuring Global Information Literacy Through Cross-cultural Studies of Web Search

Neema Moraveji

Comparative Informatics: Investigating Cultural and Linguistic Influences in Computer Supported Collaborative Learning

Ravi Vatrapu

Language and Literacy Learning in Developing Communities via Cellphones

Matthew Kam

IJCSCL Editorial Board Meeting (closed)   Crystal Ballroom

Paper Session 17: Embodied learning processes   Salon 12

Chair: Danish, Joshua, Indiana University

The use of a digital dance mat for training kindergarten children in a magnitude comparison task

Ulrike Cress, Ursula Fischer, Moeller Korbinian, Sauter Claudia, Nuerk Hans-Christoph

Using conceptual blending to describe emergent meaning in wave propagation

Michael Wittmann

Embodied Experiences within an Engineering Curriculum

Molly Bolger, Marta Kobiela, Paul Weinberg, Rich Lehrer

Made by Hand: Gestural Practices for the Building of Complex Concepts in Face-to-Face, One-on-One Learning Arrangements

stephanie scopelitis, Siri Mehus, Reed Stevens

Paper Session 18: Learning to read – and reading to learn from – informational texts   Salon 2

Chair: Gomez, Kimberly, University of Pittsburgh

The Influence of Presentation Format and Subject Complexity on Learning from Illustrated Texts in Biology

Mareike Florax, Rolf Ploetzner

Delinquent or criminal? - How to foster conceptual understanding of technical terms in computer-mediated collaborative learning.

Elisabeth Paus, Gisela M. Gerhards, Regina Jucks

A Web-based Reading Environment Designed to Fundamentally Extend Readers' Interaction with Informational Texts

Khusro Kidwai

The Effectiveness of Reading Comprehension Strategies in High School Science Classrooms

Phillip Herman, Kristen Perkins, Martha Hansen, Louis Gomez, Kimberley Gomez

Symposium 17: Increasing Rigor and Generativity in Learning: Connections Between the Disciplines, Children's Lived Experience and Everyday Knowledge   Salon 3

Chair: Bang, Megan, American Indian Center; Discussant: Warren, Beth, TERC

Increasing Rigor and Generativity in Learning: Connections Between the Disciplines, Children's Lived Experience and Everyday Knowledge

Megan Bang, Christopher Wright, Eli Tucker-Raymond, Folashade Solomon Cromwell

Learning to "see" sound: Meaning-making about sound through architectural diagrams among elementary school Black boys

Christopher Wright

History in Schools, Teachers, and Students: Identities and Meaning Making in Middle School Social Studies

Eli Tucker-Raymond, Maria Rosario

A Writer's Way: One Teacher's Experience Learning to See Her Students' Intellectual Strengths

Folashade Solomon Cromwell

Paper Session 19: Making students' thinking visible for reflection and learning   Salon 6

Chair: Alonzo, Alicia, Michigan State University

Measuring Transformative Modeling: A Framework of Formatively Assessing Students' Deep Conceptual Understanding in Physical Sciences

Ji Shen, Ou Lydia Liu, Hsin-Yi Chang

Student learning through journal writing in a natural science course for pre-elementary education majors

Michael Dianovsky, Donald Wink

Using Knowledge Space Theory to Analyze Concept Maps

Laura Cathcart, Mike Stieff, Gili Marbach-Ad, Ann Smith, Kenneth Frauwirth

Conceptual Change and Epistemic Growth Through Reflective Assessment in Computer-Supported Knowledge Building

Carol KK Chan, IvanCK Lam

Symposium 18: Content Analysis of Collaboratively Constructed Knowledge Artifacts: Issues and Opportunities for Research   Salon 9

Content Analysis of Collaboratively Constructed Knowledge Artifacts: Issues and Opportunities for Research

Bram De Wever, Hilde Van Keer, Vanessa Peters, Jim Slotta, Elizabeth Charles, Nathaniel Lasry, Chris Whittaker, Crina Damsa, Patrick Sins, Bert Reijnen

Development of a Content Analysis Approach for Collaboration in a Wiki Environment

Bram De Wever, Hilde Van Keer

Analyzing Student Collaborations in a Wiki-based Science Curriculum

Vanessa Peters, Jim Slotta

Does Scale Matter: Using Different Lenses to Understand Collaborative Knowledge Building

Elizabeth Charles, Nathaniel Lasry, Chris Whittaker

Learning Through Collaborative Creation of Shared Knowledge Objects: Technological Support and Analytic Challenges

Crina Damsa, Patrick Sins, Bert Reijnen

6:30 PM - 8:00 PM

Poster Session 2 and Reception

Red Lacquer
Ballroom

Aggregation in the blog-o-sphere

Richard Alterman, Johann Larusson

Oh god, please don't let me hurt them!: Assessing Self-Regulated Learning in Medical School Education

Ted Hanss, Stephanie Teasley

Cutting the Distance in Distance Learning: Perspectives on Effective Online Learning Environments

Erica Boling, Mary Hough, Hindi Krinsky, Hafiz Saleem, Maggie Stevens

Understanding Formative Instruction By Design

R. Benjamin Shapiro, Peter Wardrip

Community knowledge advancement and individual learning

Nancy Law, Johnny Yuen, Jing Leng, Wing O W Wong

Facilitation of reform based teacher identity development in pre-service teachers using post-activity reflection debriefs

Michael Occhino, April Lynn Luehmann

Structural validation of a feedback perceptions questionnaire

Jan-Willem Strijbos, Ron J. Pat-El, Susanne Narciss

Designing Environments to Encourage Collaborative Creativity: Two Case Studies in Higher Education

Richard West, Geoff Wright, Isaku Tateishi, Dan Randall

Robotics and environmental sensing for low-income populations: design principles, impact, technology, and results

Arnan Sipitakiat, Paulo Blikstein

Model-Evidence Link Diagrams: A Scaffold for Model-Based Reasoning

Luke Buckland, Clark Chinn

Predicting Social Influence and Project Influence in Online Communities of Creators

Elisabeth Sylvan

Effects of Case-Based Professional Development on Teacher Technological Pedagogical Content Knowledge

Chrystalla Mouza

Beyond epistemological deficits: Incorporating flexible epistemological views into fine-grained cognitive dynamics

Ayush Gupta, Andrew Elby

Investigating teacher growth in the context of content innovation

Sao-Ee Goh, Susan A. Yoon

Impasses to innovation in the development and design of new media curriculum

Kimberly Richards, Kimberely Gomez

From Visualization to Logical Necessity Through Argumentative Design

Naomi Prusak, Rina Hershkowitz, Baruch Schwarz

Improvising in music: A learning biography study to reveal skill acquisition

Iwan Wopereis, Jeroen Van MerriÎnboer, Paul Kirschner

The Video Mosaic: Design and Preliminary Research

Cindy Hmelo-Silver, Carolyn Maher, Grace Agnew, Marjory Palius, Sharon Derry

From Gettysburg to the Cuban Missile Crisis: Designing for historical reenactments with Twitter

Tom Caswell, Marion Jensen, Victor Lee, Brett Shelton

The CORDTRA Analysis Tool in Action: Experiences and Suggestions

Andri Ioannou-Nicolaou, Agni Stylianou-Georgiou

Using Video-Based Examples of Peersí Performance on a Task to Support Prospective Educatorsí Interpersonal Skill Development

Joan Walker, Benjamin Dotger

The Role of Explanations in Learning

Lauren Barth-Cohen, Cristine Legare, Tania Lombrozo, Joseph Williams, Katherine McNeill, Amanda Knight, Carla Zembal-Saul, William Sandoval, Jarod Kawasaki, Barbara White

Connecting Brain and Learning Sciences: An Optical Brain Imaging Approach to Monitoring Development of Expertise in UAV Piloting

Murat Cakir, Hasan Ayaz, Justin Menda, Kurtulus Izzetoglu, Banu Onaral

Activating childhood expertise to engage with disciplinary concepts

Sasha Palmquist

Knowledge eCommons: Merging Computer Conferencing and Wikis

Jim Hewitt, Earl Woodruff

21st Century Assessment: Redesigning to Optimize Learning

Vanessa Svihla, Drue Gawel, Nancy Vye, Megan Brown, Allison Moore, John Bransford

Unpacking the Design Process in Design-based Research

Mingfong Jan, Yam San Chee, Ek Ming Tan

The elusive link between emotion and self-regulated learning: How does emotion affect metacognition, study-time, and performance during multimedia learning?

Amber Chauncey, Roger Azevedo

Validity Evidence for Games as Assessment Environments

Girlie C. Delacruz, Gregory K.W.K. Chung, Eva L. Baker

Learning inter-related concepts in mathematics from videogames

Hee Seung Lee, Belinda Thompson, Keith Holyoak, James Stigler

Rhythm Games and Learning

Matthew Gaydos

Neighborhood Investigations and Game Design Using Mobile Media

James Mathews, Mark Wagler

Sources of Evidence for Embedded Assessment in Immersive Games

Brian Nelson, Benjamin Erlandson, Andre Denham

Improving the Language Ability of Deaf Signing Children through an Interactive American Sign Language-Based Video Game

Kimberly A. Weaver, Harley Hamilton, Zahoor Zafrulla, Helene Brashear, Thad Starner, Peter Presti, Amy Bruckman

Building Creativity: Collaborative Learning and Creativity in a Virtual Gaming Environment

Kylie Peppler, Maria Solomou

Identity Supportive Games as a Tool to Learn about Asian-American Stereotypes and Self-Concept

Joey Lee

Small Groups, Big Mistakes: The Emergence of Faulty Rules During a Collaborative Board Game

Matthew Berland, Victor R. Lee, Maneksha DuMont

Student Conceptions of Number in Solutions Chemistry

Stephanie Ryan, Donald Wink

Thursday, July 1

7:30 AM - 8:30 AM

CSCL 2011 Program Committee Meeting	Crystal Ballroom
Continental Breakfast	Red Lacquer Ballroom

8:30 AM - 10:00 AM

Keynote 2	Red Lacquer Ballroom

Keynote: Gravemeijer, Koeno, Eindhoven University of Technology; Reactor: Martin, Danny, UIC

10:00 AM - 10:15 AM

Morning Break

10:15 AM - 11:45 AM

Paper Session 20: Scripts, prompts, and feedback as scaffolds for learning	Salon 4

Known Knowns and Unknown Knowns: Multiple Memory Routes to Improved Numerical Estimation

Dav Clark, Michael Ranney

Representational Scripting to Support Students' Online Problem-solving Performance

Bert Slof, Gijsbert Erkens, Paul A. Kirschner

Fading Instructional Scripts: Preventing Relapses into Novice Strategies by Distributed Monitoring

Christof Wecker, Frank Fischer

Promoting Learning in Complex Systems: Effect of Question Prompts versus System Dynamics Model Progressions as a Cognitive-Regulation Scaffold in a Simulation-Based Inquiry-Learning Environment

Deniz Eseryel, Victor Law

Paper Session 21: Knowledge construction and online inquiry	Salon 6

Chair: Alonzo, Alicia, Michigan State University

Group Micro-creativity in Online Discussions: Effects of New Ideas and Social Metacognition

Gaowei Chen, Ming Ming Chiu, Zhan Wang

Analyzing Collaborative Knowledge Construction in Secondary School Biology

Vanessa L. Peters, James D. Slotta

Analyzing Equality of Participation in Collaborative Inquiry: Toward a Knowledge Community

Hedieh Najafi, Jim Slotta

Paper Session 22: Learning to attend to students' thinking	Salon 7

Chair: Duncan, Ravit, Yale University

Exploring how novice teachers learn to attend to students in analyzing case studies of classroom teaching and learning

Daniel Levin, Jennifer Richards

Using changes in framing to account for differences in a teacher's classroom behavior

Jennifer Lineback, Fred Goldberg

Examining Preservice Teachers' Ability to Attend and Respond to Student Thinking

Vicky Pilitsis, Ravit Golan Duncan

Dynamics of disciplinary understandings and practices of attending to student thinking in elementary teacher education

Janet Coffey, Ann Edwards, Carla Finkelstein

Paper Session 23: Methodological issues and challenges for the Learning Sciences	Salon 8

Chair: Penuel, William, SRI International

Where to Find the Mind: Identifying the Scale of Cognitive Dynamics

Luke Conlin, Ayush Gupta, David Hammer

Adapting Workflow Technology to Design-Based Research: Development of a Method for Organizing the "Messiness" of Research in Technology-Rich Online Learning Environments

Alan J. Hackbarth, Sharon J. Derry, Brendan R. Eagan, Julia Gressick

Finding Transactive Contributions in Whole Group Classroom Discussions

Hua Ai, Marietta Sionti, Yi-Chia Wang, Carolyn Rose

Arts and Learning: A Review of the Impact of Arts and Aesthetics on Learning and Opportunities for Further Research

Kylie Peppler, Heidi Davis

Symposium 19: Scaling Practices of Spatial Analysis and Modeling   Salon 9

Chair: Hall, Rogers, Vanderbilt University; Discussant: Stevens, Reed, Northwestern University

Scaling Practices of Spatial Analysis and Modeling

Rogers Hall, Jasmine Ma, Kevin Leander, Katie Taylor, Nathan Phillips

Shifting Between Person, Structure and Settlement Scales in Anthropological Field Work

Jasmine Ma, Rogers Hall, Kevin Leander

Changing the Structure of Planning Participation by Moving Across Scales

Katie Taylor, Rogers Hall, Kevin Leander

Modality and Scale at AirMed

Nathan Phillips, Kevin Leander

Invited Session 3: Identity as a Lens on Learning in the Disciplines   Crystal Ballroom

Presenter: Nasir, Na'ilah, University of California Berkeley; Presenter: Stevens, Reed, Northwestern University; Presenter: Kaplan, Avi, Temple University; Discussant: Wortham, Stanton, University of Pennsylvania

Symposium 20: A New Age in Tangible Computational Interfaces for Learning   Salon 12

A New Age in Tangible Computational Interfaces for Learning

Paulo Blikstein, Leah Buechley, Michael Horn, Hayes Raffle

Topobo: programming by example to create complex behaviors

Hayes Raffle

LilyPad Arduino: rethinking the materials and cultures of educational technology

Leah Buechley

Connecting the science classroom and tangible interfaces: the Bifocal Modeling framework

Paulo Blikstein

Tangible Programming in Formal and Informal Educational Environments

Michael Horn

Symposium 21: Are We Managing Learning with Learning Management Systems?   Salon 3

Chair: Teasley, Stephanie, University of Michigan; Discussant: Laffey, James, University of Missouri

Are We Managing Learning with Learning Management Systems?

Stephanie D. Teasley, Tanya Cleveland Solomon, Andrew E. Krumm, Steven Lonn, Kara Makara, Diana Perpich, James Laffey

A Multi-Institutional Analysis of Interactions Supported by a LMS

Andrew E. Krumm, Steven Lonn

Commuter vs. Residential: LMS Perceptions & Use on Two Campuses

Steven Lonn, Andrew E. Krumm

How Does LMS Use Affect Instructional Time?

Tanya Cleveland Solomon, Kara Makara

The Gifts We Give Ourselves: Embedding Disciplinary Tools in LMS

Diana Perpich

11:45 AM - 1:00 PM

ISLS Education Committee Meeting (closed)   Crystal Ballroom

ISLS Conference Committee Meeting (closed)   Salon 3

ISLS Membership Committee Meeting (closed)   Salon 6

Lunch (on your own in downtown Chicago!)

1:10 PM - 2:40 PM

Invited Session 4: Geography, Place and Space: A Cinderella Story in the Making?   Crystal Ballroom

Chair: Edelson, Daniel, National Geographic Society; Presenter: Uttal, David, Northwestern University; Presenter: Radinsky, Josh, UIC; Presenter: Rutherford, David, University of Mississippi; Discussant: Brooks, Clare, University of London

Paper Session 24: Learning in video game authoring, design, training, and play   Salon 12

Chair: Abrahamson, Dor, University of California Berkeley

"Let the Players Play!" and Other Earnest Remarks about Videogame Authorship

Paul Teske, Teale Fristoe

Leading to Win: The Influence of Leadership Styles on Team Performance during a Computer Game Training

Anna Siewiorek, Andreas Gegenfurtner

First-Year Engineering Students' Environmental Awareness and Conceptual Understanding with Participatory Game Design as Knowledge Elicitation

Melissa Dyehouse, Nicole Weber, Jun Fang, Constance Harris, Annette Tomory, Johannes Strobel

Reading in the Context of Online Games

Constance Steinkuehler, Catherine Compton-Lilly, Elizabeth King

Paper Session 25: Processes of co-construction in groups   Salon 2

Chair: Uttal, David, Northwestern University

Exploring Convergence of Science Ideas through Collaborative Concept Mapping

Dana Gnesdilow, Anushree Bopardikar, Sarah Sullivan, Sadhana Puntambekar

What Are They Talking About? Findings from an Analysis of the Discourse in Peer-Led Team Learning In General Chemistry

Patrick Brown, R. Keith Sawyer, Regina Frey, Daniel Gealy, Sarah Luesse

Multiple Conceptual Coherences in the Speed Tutorial: Micro-processes of Local Stability

Brian Frank

Science Learning as the Objectification of Discourse

Valerie Otero

Paper Session 26: Disciplinary lenses and epistemologies shaping conceptual learning   Salon 3

Chair: Herman, Phillip, University of Pittsburgh

Conceptual Confusion in the History Classroom

Chava Shane-Sagiv

Perceptions of the relationship between evolutionary theory and biblical explanations of the origins of life and their effects on the learning of evolution among high school students

Pratchayapong Yasri, Rebecca Mancy

Which science disciplines are pertinent? -Impact of epistemological beliefs on students' choices

Torsten Porsch, Rainer Bromme

Discipline-specific Socialization: A Comparative Study

Iris Tabak, Michael Weinstock, Hilla Zviling-Beiser

Symposium 22: Understanding Families' Educational Decision-Making Along Extended Learning Pathways   Salon 4

Discussant: Barron, Brigid, Stanford University

Understanding Families' Educational Decision-Making Along Extended Learning Pathways

Leah A. Bricker, Heather Toomey Zimmerman, Suzanne Reeve, Philip Bell

Negotiating Identity and Expertise in a Vietnamese Immigrant Family

Leah A. Bricker, Heather Toomey Zimmerman, Suzanne Reeve, Philip Bell

Orienting Children Towards Science: Influences of Parental Values and Family History on How Parents Arrange Children's Educational Experiences

Leah A. Bricker, Heather Toomey Zimmerman, Suzanne Reeve, Philip Bell

Examining the Complex Ecologies Associated with Immigrant Youth and Family Educational Decision Making

Leah A. Bricker, Heather Toomey Zimmerman, Suzanne Reeve, Philip Bell

Symposium 23: Adaptive human guidance of computer-mediated group work   Salon 6

Chair: Schwarz, Baruch, Hebrew University of Jerusalem; Discussant: Palincsar, Annemarie, University of Michigan

Adaptive human guidance of computer-mediated group work

Baruch Schwarz, Christine Wang, Ming Ming Chiu, Cynthia Ching, Kenneth Koedinger, Erin Walker, Nikol Rummel, Baruch Schwarz, Christa Asterhan, Michael Baker

Statistical Discourse Analysis of Young Children's Peer Tutoring at Computers

Christine Wang, Ming Ming Chiu, Cynthia Ching

Automated Adaptive Support for Peer Tutoring in High-School Mathematics

Erin Walker, Nikol Rummel, Kenneth Koedinger

Human guidance of synchronous discussions: A nascent school practice

Baruch Schwarz, Christa Asterhan

Buds, flowers and fruit: potentialities for guidance in collaborative argumentation-based learning

Michael Baker

Paper Session 27: Exploring learning possibilities with handheld technologies   Salon 7

Facilitating Group Learning in Science Laboratory Courses Using Handheld Devices

Chen-Wei Chung, Wang-Hsin Kuo, Chen-Chung Liu

Students' Meaning Making in a Mobile Assisted Chinese Idiom Learning Environment

Lung-Hsiang Wong, Chee-Kuen Chin, Chee-Lay Tan, May Liu, Cheng Gong

Extending Students' learning Spaces: Technology-Supported Seamless Learning

Wenli Chen, Peter Sen Kee Seow, Hyo-Jeong So, Yancy Toh, Chee-Kit Looi

Quiet Captures: A Tool for Capturing the Evidence of Seamless Learning with Mobile Devices

Ivica Boticki, Hyo-Jeong So

Symposium 24: Learning about Dynamic Systems by Drawing   Salon 9

Learning about Dynamic Systems by Drawing

Shaaron Ainsworth, Mitchell Nathan, Peggy van Meter, Helen Zhang, Marcia Linn, Arzoo Buksh, Chelsea Johnson, Wouter Van Joolingen, Lars Bollen, Frank Leenaars

How can selection and drawing support learning from dynamic visualizations?

Helen Zhang, Marcia Linn

Can self-explanation help learners draw to learn?

Shaaron Ainsworth, Arzoo Buksh

Drawing Inferences about Students' Mental Models of Dynamic Processes Depicted in Scientific Drawings: The Role of Gestures and Speech

Mitchell Nathan, Chelsea Johnson

Interactive drawing tools to support modeling of dynamic systems

Wouter Van Joolingen, Lars Bollen, Frank Leenaars

2:40 PM - 3:00 PM

Afternoon Break

3:00 PM - 4:30 PM

Symposium 25: The Design Framework: An Organizing Artifact for Enhancing the Fidelity of Educational Research, Implementation, and Assessment   Salon 12

Discussant: Gomez, Louis, University of Pittsburgh

The Design Framework: An Organizing Artifact for Enhancing the Fidelity of Educational Research, Implementation, and Assessment

Richard Halverson, Erica Rosenfeld Halverson, Dana Gnesdilow, Jen Scott Curwood, Michelle Bass, Anne Karch

A Modest Proposal: A Design Framework to Unify Educational Discourse

Richard Halverson, Erica Rosenfeld Halverson

Using the Design Framework as a Metarepresentation to Facilitate Teacher-Researcher Collaboration

Dana Gnesdilow, Jen Scott Curwood

Artifact Families: An Affordance of the Design Framework

Michelle Bass

Branching Up, Out or Off: How Features Become Affordances

Anne Karch

Paper Session 28: Knowledge-building communities and collaborative discourse Salon 2

Chair: Schaenfield, David, Teachers College Columbia University

An invisible preference for intrinsic motivation in Computer-Mediated Communication

Bart Rienties, Dirk Tempelaar, Bas Giesbers, Mien Segers, Wim Gijselaers

Collaborative Productivity as Self-Sustaining Processes in a Grade 4 Knowledge Building Community

Jianwei Zhang, Richard Messina

Examining the Role of Verbal Interaction in Team Success on a Design Challenge

Xornam S. Apedoe, Kristina V. Mattis, Bianca Rowden-Quince, Christian D. Schunn

Software-Based Scaffolding: Supporting the Development of Knowledge Building Discourse in Online Courses

Nobuko Fujita, Christopher Teplovs

Paper Session 29: Professional vision as a lens on learning in the disciplines Salon 3

Chair: Herman, Phillip, University of Pittsburgh

Assessing the Development of Expertise in an Historical-Based Science: The Case of Integrative Archeology

Inbal Flash Gvili, Jeff Dodick

Tension resolution as pattern for practice transformation in interdisciplinary teamwork in professional development

Patrick Sins

The Many Dimensions of Having a Good Eye: A Methodological Reflection of Metaphors in Visual Cognition Analysis

Andreas Gegenfurtner, Anna Siewiorek

The Epistemography of Journalism 335: Complexity in developing journalistic expertise

David Hatfield, David Williamson Shaffer

Paper Session 30: Trajectories of math and science learning Salon 4

Chair: Halverson, Richard, University of Wisconsin Madison

Centering a Professional Learning Community on a Learning Progression for Natural Selection: Transforming Community, Language, and Instructional Practice

Erin Marie Furtak, Deborah Morrison, Kathleen Henson, Sarah A. Roberts

A Longitudinal Approach to Appropriation of Science Ideas: A Study of Students' Trajectories in Thermodynamics

Olivia Levrini, Paola Fantini, Barbara Pecori, Marta Gagliardi, Mariateresa Scarongella, Giulia Tasquier

The Construction, Refinement, and Early Validation of the Equipartitioning Learning Trajectory

Alan Maloney, Jere Confrey

Magnetism as a Size Dependent Property: A Cognitive Sequence for Learning about Magnetism as an Introduction to Nanoscale Science for Middle and High School Students

David Sederberg, Lynn Bryan

Symposium 26: Technologies and Tools to Support Informal Science Learning Salon 6

Chair: Zimmerman, Heather Toomey, Pennsylvania State University; Discussant: His, Sherry, Lawrence Hall of Science; Discussant: Smith, Brian K, Rhode Island School of Design

Technologies and Tools to Support Informal Science Learning

Heather Toomey Zimmerman, David E. Kanter, Kirsten Ellenbogen, Leilah Lyons, Steven J. Zuiker, Tom Satwicz, Sandra Toro Martell, Sherry Hsi, Brian K. Smith, Matthew Brown

Using the demand for data in a project-based science curriculum to bridge high school biology classrooms and an informal science center

David E. Kanter

Rain Table: Visualization technology using complex datasets that allows learners to control and follow water flow across the Earth's surface

Kirsten Ellenbogen, Molly Phipps

Mobile devices transforming the museum experience: Opportunistic user interfaces to exhibits

Leilah Lyons

Cyber-stretching: The Taiga biome around kids' worlds

Steven J. Zuiker

Understanding the pieces of knowledge in informal learning environments

Tom Satwicz

Using digital photography on an Internet portal to extend and enrich outdoors learning experiences

Heather Toomey Zimmerman, Robert Jordan, Jennifer Weible, Chris Gamrat

Innovative Tools and Student Perceptions of Technology: Owl Tracking and GIS Mapping with Fifth and Sixth Graders

Sandra Toro Martell

Take a Stand: Creating an immersive social experience with people tracking, 3D game technology, and interactive storytelling

Matthew Brown, Ben Loh

Symposium 27: Using Digital Video to Investigate Teachers' In-the-Moment Noticing Salon 7

Discussant: Hall, Rogers, Vanderbilt University

Using Digital Video to Investigate Teachers' In-the-Moment Noticing

Bruce Sherin, Miriam Sherin, Adam Colestock, Rosemary Russ, Melissa Luna, Martha Mulligan, Janet Walkoe, Rogers Hall

Freezing Time: What Mathematics and Science Teachers "See" While Teaching

Bruce Sherin, Miriam Sherin

Science and Mathematics Teachers' In-The-Moment Noticing: Attending to Student Thinking Within a Lesson and Beyond

Adam Colestock, Rosemary Russ

Supporting Video Club Conversations Using Teacher-Selected Video Clips

Melissa Luna, Martha Mulligan, Miriam Sherin, Janet Walkoe

Symposium 28: Learning about Complexity and Beyond: Theoretical and Methodological Implications for the Learning Sciences   Salon 8

Organizer: Jacobson, Michael, University of Sydney; Chair: Wilensky, Uri, Northwestern University; Discussant: Reimann, Peter, University of Sydney

Learning about Complexity and Beyond: Theoretical and Methodological Implications for the Learning Sciences

Michael J. Jacobson, Uri Wilensky, Peter Reimann, Pratim Sengupta, Michelle Wilkerson-Jerde, Manu Kapur

The Role of Perceptual Signatures and Agent-Level Mechanisms in Understanding Emergence: An Example in Learning Electricity

Pratim Sengupta, Uri Wilensky

Seeing Change in the World from Different Levels: Understanding the Mathematics of Complex Systems

Michelle Wilkerson-Jerde, Uri Wilensky

Learning as an Emergent Phenomenon: Methodological Implications

Manu Kapur, Michael J. Jacobson

Ontologies as Scale Free Networks: Implications for Theories of Conceptual Change

Michael J. Jacobson, Manu Kapur

Symposium 29: Understanding the Role of Place in Environmental Education across Settings   Salon 9

Understanding the Role of Place in Environmental Education across Settings

Giovanna Scalone, Philip Bell, Shari Rose, Angela Calabrese Barton, Carrie Tzou

Ideological dimensions of place: (re)creating an urban area

Giovanna Scalone, Philip Bell

"The Coal Plant Could Give People Jobs, But at the Same Time, It could Pollute the Air": Science learning as participation with and in a place

Shari Rose, Angela Calabrese Barton

"My Place in Puget Sound": Leveraging youths' sense of place in ocean sciences education

Carrie Tzou

4:45 PM - 6:00 PM

Paper Session 31: Representational practices of learners   Salon 12

Chair: Shapiro, R Benjamin, University of Pittsburgh

Representational practices in the activity of student-generated representations (SGR) for promoting conceptual understanding

Orit Parnafes

Learning physics as coherently packaging multiple sets of signs

Kristine Lund, Karine Bècu-Robinault

Digital art-making as a representational process

Erica Halverson

Paper Session 32: Multi-media resources for learning environments   Salon 3

Chair: Pinkard, Nichole, University of Chicago

Pictorial illustrations in intelligent tutoring systems: Do they distract or elicit interest and engagement?

Ulrike Magner, Rolf Schwonke, Alexander Renkl, Vincent Aleven, Octav Popescu

Digital Video Tools in the Classroom: Empirical Studies on Constructivist Learning with Audio-visual Media in the Domain of History

Carmen Zahn, Karsten Krauskopf, Roy Pea, Friedrich W. Hesse

From Show, To Room, To World: A Cross-Context Investigation of How Children Learn from Media Programming

Therese E. Dugan, Reed Stevens, Siri Mehus

Paper Session 33: Mathematics instruction: Innovations and challenges   Salon 4

Interactional Achievement of Shared Mathematical Understanding in a Virtual Math Team

Murat Cakir, Gerry Stahl, Alan Zemel

Free, open, online, mathematics help forums: The good, the bad, and the ugly

Carla van de Sande

Effects of Instructional Design Integrated With Ethnomathematics: Attitudes And Achievement

Melike Kara, Aysenur Yontar Togrol

Paper Session 34: Teachers' epistemologies and science   Salon 7

Chair: Polman, Joseph, University of Missouri St. Louis

Investigating pre-service elementary teachers' epistemologies when talking about science, enacting science and reflecting on their enactment

Loucas T. Louca, Dora Tzialli, Zacharias C. Zacharia

Interpreting Elementary Science Teacher Responsiveness Through Epistemological Framing

April Cordero Maskiewicz, Victoria Winters

Personal beliefs about learning and teaching: Comparison of student teachers in the sciences and humanities at different stages of their studies

Natalia Schlichter, Rainer Watermann, Matthias Nueckles

Paper Session 35: Learning sciences research at scale   Salon 8

Chair: Gomez, Louis, University of Pittsburgh

Equity in Scaling Up SimCalc: Investigating Differences in Student Learning and Classroom Implementation

Jeremy Roschelle, Jessica Pierson, Susan Empson, Nicole Shechtman, Margie Dunn, Deborah Tatar

Large Scale Analysis of Student Workbooks: What Can We Learn About Learning?

Nicole Shechtman, Jeremy Roschelle

Complexity, Robustness, and Trade-Offs in Evaluating Large Scale STEM Education Programs

Susan Yoon, Lei Liu

6:00 PM - 7:30 PM

Poster Session 3 and Reception

<div align="right">Red Lacquer
Ballroom</div>

The identity formation of youth with disabilities across academic disciplines and social contexts

AnnMarie Baines, Philip Bell

Designing an online environment for all teachers: Supporting teachers in learning to learn online

Rebecca Schneider

SURGE: Integrating Vygotskyís Spontaneous and Instructed Concepts in a Digital Game?

Douglas B. Clark, Brian C. Nelson, Cynthia M. D'Angelo, Kent Slack, Mario Martinez-Garza

Multi-Touch Tabletop Computing for Early Childhood Mathematics: 3D Interaction with Tangible User Interfaces

Eric Woods, Michael Evans, Guoqiang Cui

Impact of the distribution of social skills within learning groups in a CSCL- setting: An empirical pilot study

Michele Notari, Adrian Baumgartner

Pre-Implementation Technology Acceptance Modeliª In the Case of a University-Based Electronic Portfolio System

Jeng-Yi Tzeng

Investigating youthís identity trajectories through positioning within the dialectic interstices of online and offline worlds

Azilawati Jamaludin

Broadening Participation through Scaffolding

Shelley Stromholt, Andrew Shouse, Philip Bell

An Analysis of the Interactional Patterns in One-to-One and One -to- Many Collaborative Concept Mapping Activities

Chiu-Pin Lin, Lung-Hsiang Wong, Tzu-Chien Liu, Yin-Juan Shao

Finding Essential Complexity for Learning in Virtual Worlds

Benjamin Erlandson, Brian Nelson, Andre Denham

Overherd: Designing Information Visualizations to Make Sense of Student's Online Discussions

Libby Hemphill, Stephanie Teasley

Out-of-School Virtual Worlds Based Programs: A Cross-Case Analysis

Constance Steinkuehler, Esra Alagoz

Formative Feedback Handheld Tools for Teachers

Suzanne Rhodes

Moving Towards Learning with One-to-One Laptop: A Longitudinal Case Study on Tools, People, and Institutions

arnan sipitakiat

The Design and Evaluation of Educative Just-In-Time Teacher Supports in a Web-Based Environment

Hebbah El-Moslimany, Ravit Duncan, Janice McDonnell, Sage Lichtenwalner

Reviving Deweyís Reflective Thinking Framework for the Design of Problems in Virtual Learning Environment based Assessments of Content and Inquiry

David Majerich, Diane Jass Ketelhut, Brian Nelson, Catherine Schifter, Younsu Kim

Using a designed, online games based affinity space as a quasi-natur

Constance Steinkuehler, Elizabeth King, Esra Alagoz, Yoonsin Oh, Sarah Chu, Bei Zhang, Aysegul Bakar, Crystle Martin

A dual-level approach for investigating design in online affinity spaces

Sean Duncan

Identity in Informal Game-based Learning Environments

Benjamin DeVane

Exploring Intersections Between Online and Offline Affinity Space Participation

Elizabeth King

FormulaT Racing: Combining Gaming Culture and Intuitive Sense of Mechanism for Video Game Design

Nathan Holbert, Uri Wilensky

DevInfo GameWorks: Supporting inquiry-based game design

Jeff Kupperman, Beth Robertson, Shawn Baglin

Learning as mediated by a nodal ecology: Findings from studies of Gamestar Mechanic and Quest to Learn

Robert J Torres, Valerie Shute

The Impact of Video Games and Virtual Environments iin Pre-Service Elementary Teacher Science Education

Janice Anderson

Designing for an Informal Learning Environment: Towards a Participatory Simulation Design Process for Public Policy Planning

Chandan Dasgupta, Leilah Lyons, Moira Zellner, Andrew Greenlee

Social Network Environments as Third Spaces for Merging Everyday and Formalized Practices

Priya Sharma, Susan Land, Robert Jordan, Jeff Swain, Brian Smith

Using Social Network Analysis to Understand Homeschool Network Interactions

Christopher Steinmeier, Susan Yoon

The ìOtherî curriculum: Constructing success and failure in a game-based learning environment

Asmalina Saleh, Steven Zuiker

Teachersë concepts of spatial scale. An intercultural comparison between Austrian, Taiwanese, and US-American teachers.

M. Gail Jones, Manuela Paechter, Grant Gardner, Iris Yen, Amy Taylor, Thomas Tretter

Developing and validating a web-based learning environment for helping 6th grade students appreciate subjectivity and uncertainty in science

Georgia Michael, Nicos Papadouris, Eleni Kyza, Constantinos Constantinou

The Effect of Teachersí Beliefs and Curricular Enactments on Student Learning in High School Science

Katherine McNeill, Diane Pimentel, Eric Strauss

Leveraging Multiple Representations to Support Knowledge Integration in Plate Tectonics

Elissa Sato, Marcia Linn

Investigating the Nature of Evidence 6th Grade Students Use When Constructing Scientific Explanations in Biodiversity

Hayat Hokayem, Amelia Gotwals

An Investigation into Studentsí Interpretations of Submicroscopic Representations

Shawn Stevens, Namsoo Shin

Knowledge Building for Historical Reasoning in Grade Four

Monica Resendes, Maria Chuy

How does the use of analogical mapping as a scaffold for science learnersí argumentation support their learning and talking about science?

Brandon Emig, Scott McDonald

Teachersí Understanding of Partitioning When Modeling Fraction Arithmetic

Chandra Orrill, Andrew Izsak, Erik Jacobson, Zandra de Araujo

Putting the pieces together: The challenge and value of synthesizing disparate graphs in inquiry-based science learning

Itay Asher, Samira Nasser, Lina Ganaim, Iris Tabak

Online Science Classroom Collaborations: A Comparison of Domestic and International Learning Communities

Steven Kerlin, Elizabeth Goehring, William Carlsen

The Role of Student Agency and Sustained Inquiry on Collaboration and Learning of Science Practices

Kari Shutt, Nancy Vye, John Bransford

Developing an iMVT Pedagogy for Science Learning

Baohui Zhang, Xiaoxuan Ye, Seekit Foong, Peichun Chia

I Donít Do Science: Urban Minority Girls' Science Identity Development in an Informal Authentic Science Context

April Luehmann, Rachel Chaffee, Liz Tinelli, Kimberly Fluet

The Function of Mathematical Terminology: The Case of 'Slope'

Darrell Earnest

8:00 PM - 10:30 PM

Social Event at the Cultural Center	Chicago Cultural Center

Friday, July 2

7:30 AM - 8:30 AM

Continental Breakfast	Red Lacquer Ballroom

8:30 AM - 10:00 AM

Keynote 3	Red Lacquer Ballroom

Keynote: Grossman, Pamela, Stanford University; Reactor: Lee, Carol D, Northwestern University

10:15 AM - 11:45 AM

Invited Session 5: Learning in Computer Science	Crystal Ballroom

Presenter: Guzdial, Mark, Georgia Insitute of Technology; Presenter: Hoppe, Ulrich, University of Duisburg-Essen; Presenter: Kafai, Yasmin, University of Pennsylvania; Discussant: Fincher, Sally, University of Kent at Canterbury

Paper Session 36: Control of variables: Learning scientific inquiry skills	Salon 12

Helping Students Make Controlled Experiments More Informative

Kevin McElhaney, Marcia Linn

Sequential Effects of High and Low Guidance on Children's Early Science Learning

Bryan Matlen, David Klahr

Comparing Pedagogical Approaches for the Acquisition and Long-Term Robustness of the Control of Variables Strategy

Michael Sao Pedro, Janice Gobert, Juelaila Raziuddin

Paper Session 37: Apprenticeship to professional practices as a model for learning environment design	Salon 2

Chair: van Es, Beth, University of California Irvine

The Epistemography of Urban and Regional Planning 912: Appropriation in the face of resistance

Elizabeth Bagley, David Williamson Shaffer

Motivation To Transfer Revisited

Andreas Gegenfurtner, Marja Vauras, Hans Gruber, Dagmar Festner

Writing and commenting on professional procedures: In search of learning designs promoting articulation between school and workplace learning.

Monica Gavota, Mireille Betrancourt, Daniel Schneider

Mentor Modeling: The internalization of modeled professional thinking in an epistemic game

Padraig Nash, David Williamson Shaffer

Symposium 30: Supporting Young New Media Producers Across Learning Spaces: A Longitudinal Study of the Digital Youth Network	Salon 4

Supporting Young New Media Producers Across Learning Spaces: A Longitudinal Study of the Digital Youth Network

Brigid Barron, Amber Levinson, Caitlin Martin, Veronique Mertl, Daniel Stringer, Maryanna Rogers, Kimberly Austin, Nichole Pinkard, Kimberly Richards, Kimberly Gomez

The Digital Youth Network Model

Nichole Pinkard, Kimberly Gomez

Theoretical Framework and Research Methods

ICLS 2010

Brigid Barron, Caitlin Martin

Positioning learners as creative and critical producers

Amber Levinson, Veronique Mertl, Daniel Stringer, Maryanna Rogers

Artists as Mentors and Teachers

Kimberly Richards, Kimberly Austin

Paper Session 38: Problem representations and strategies in computer-based instruction   Salon 6

Extending the Self-Explanation Effect to Second Language Grammar Learning

Ruth Wylie, Kenneth Koedinger, Teruko Mitamura

A Closer Look at the Split Attention Effect: Integrated Presentation Formats for Troubleshooting Tasks

Markus Huff, Vera Bauhoff, Stephan Schwan

Concrete vs. Abstract Problem Formats: A Disadvantage of Prior Knowledge

Andrew Heckler

Paper Session 39: What does it mean to think mathematically?   Salon 7

Chair: Abrahamson, Dor, University of California Berkeley

Design-based knowledge building practices in mathematics teaching

Huang-Yao Hong, Yu-Han Chang

Reconceptualizing Mathematical Learning Disabilities: A Diagnostic Case Study

Katherine Lewis

"I don't knowóI'm just genius!": Distinguishing Between the Process and the Product of Student Algebraic Reasoning

Jose Gutierrez

Seeing Algebraic Thinking in the Classroom: A Study of Teachers' Conceptualizations of Algebra

Janet Walkoe

Symposium 31: Motivation and affect in peer argumentation and socio-cognitive conflict   Salon 8

Discussant: Sinatra, Gale, University of Nevada Las Vegas

Motivation and affect in peer argumentation and socio-cognitive conflict

Christa Asterhan, Baruch Schwarz, Ruth Butler, Fabrizio Butera, Celine Darnon, Timothy Nokes, John Levine, Dan Belenky, Soniya Gadgil, Gale Sinatra

Socio-cognitive conflict and learning: past and present

Fabrizio Butera, Celine Darnon

On competitive and co-constructive dialectical argumentation

Christa Asterhan, Baruch Schwarz, Ruth Butler

Investigating the Impact of Dialectical Interaction on Engagement, Affect, and Robust Learning

Timothy Nokes, John Levine, Dan Belenky, Soniya Gadgil

Symposium 32: Learning to Understand the Tree of Life   Salon 9

Learning to Understand the Tree of Life

Shaaron Ainsworth, Camillia Matuk, David Uttal, Karl Rosengren, Brenda Phillips, Laura Novick, Kefyn Catley, Jessica Saffer, Kristy Halverson

How high school students reason about the tree of life: A developmental perspective

Brenda Phillips, Laura Novick

Inventing a representation of relatedness

Camillia Matuk, David Uttal

Can children read trees?

Shaaron Ainsworth, Jessica Saffer

Improving undergraduates' approaches to understanding tree thinking

Kristy Halverson

12:00 PM - 1:00 PM

Closing Ceremony and Open Business Meeting   Red Lacquer Ballroom