

Maximizing Community Learning in Online LIS Education

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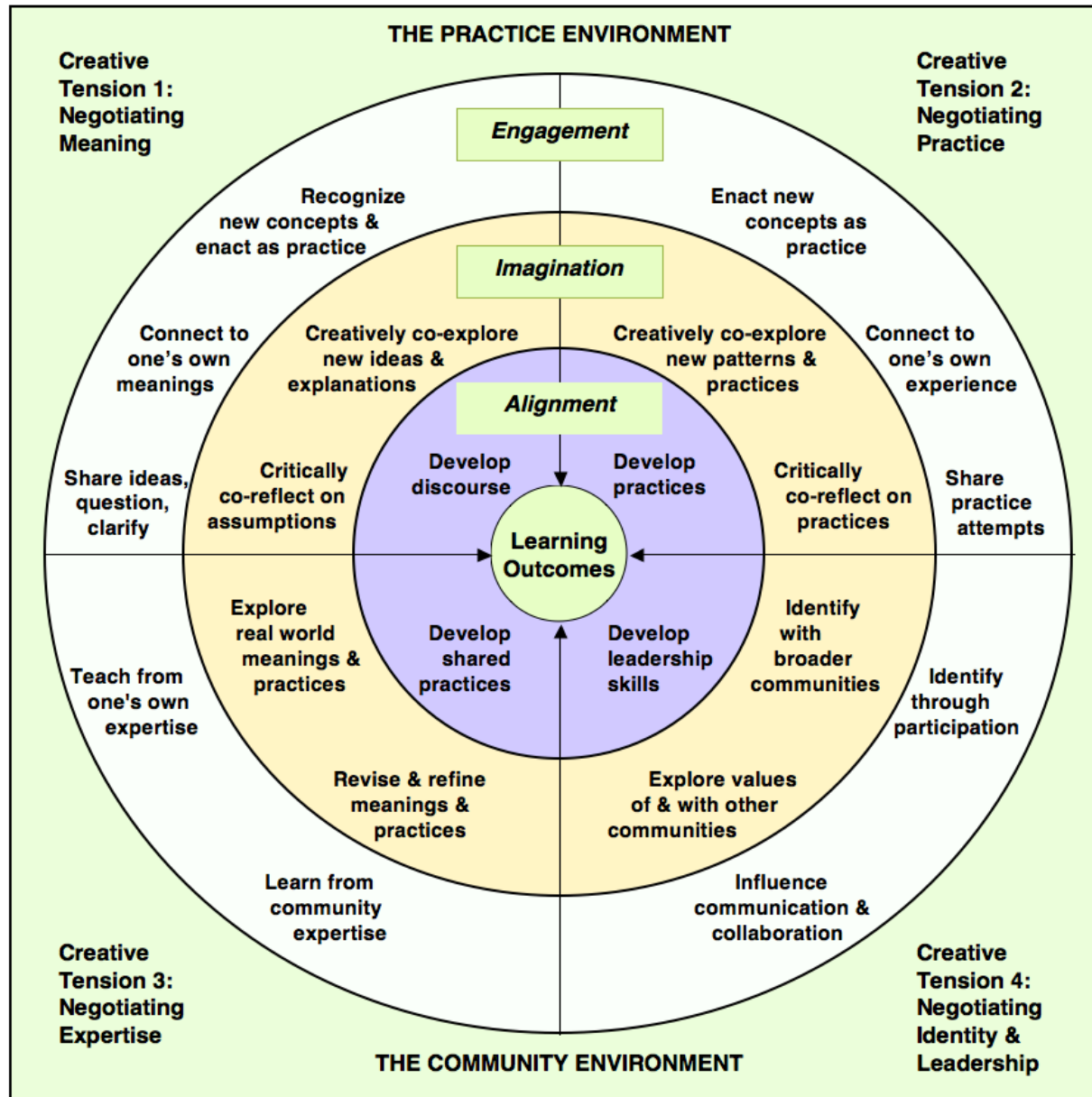
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The Learning Environment

Communities of Practice (CoP)

- CoP according to Etienne Wenger (1998):
 - Communities of practice are groups of people who share a concern or a passion for something they do and learn how to do it better as they interact regularly.
 - A CoP has an identity defined by a shared domain of interest.
 - Its members engage in joint activities and discussions, help each other, and share information to pursue their interest. They build relationships that enable them to learn from each other.
 - Members of a CoP are practitioners who develop a shared practice – a repertoire of experiences, stories, tools, ways of addressing recurring problems.
- CoP model adapted for professional education (Yukawa, 2010a, 2010b):
 - A CoP organizes learning around subject matter by students as practitioners who negotiate 4 creative tensions: meaning, practice, expertise, and identity/ leadership.
 - Negotiations take place in 3 stages: engagement, imagination & alignment.
 - From these negotiations, students individually and collaboratively develop the discourse, practices, shared standards, and leadership skills needed for their careers.
 - Learning is grounded in practice and community environments.

Communities of Practice Model



Grounding in Practice & Community

Two important dimensions of the learning ecology for adult learners are *authentic problem solving* and *learning with others* (Ball & Cohen, 1999; Darling-Hammond et al., 2009; Garet et al., 2001; Lave & Wenger, 1991; Mezirow, 2000; Wei et al., 2010; Wenger, 1998). These dimensions are the central foci of two learning environments in the CoP classroom – a practice environment and a community environment.

| Practice Environment | Community Environment |
|---------------------------------------|---------------------------------------|
| 1. Professional reasoning & practice | 1. Support, trust |
| 2. Knowledge-laden artifacts & tools | 2. Open dialogue, critical reflection |
| 3. Interaction structures & practices | 3. Shared practice, problem solving |
| 4. Experimentation & creativity | 4. Building relationships, community |
| 5. Beliefs about teaching & learning | 5. Shared leadership |

Media for Interaction

Communication media offer different efficiencies and constraints that shape structures and practices of interaction. Clark's (Clark & Brennan, 1991) common ground theory illuminates the tradeoffs between face-to-face (F2F) and online communication. F2F communication derives efficiency from the ability to see, hear, and converse in turn, at the same time in the same place. Online media require more effort to formulate, process, and understand messages, carry on conversations, and correct mistakes. However, online media are more efficient for reviewing, revising, and reusing communication as artifacts.

| Communication Efficiencies | F2F | Online |
|---------------------------------------|-----|-----------------------------------|
| Copresence – contextual cues | ✓ | Simulated in virtual worlds |
| Visibility – nonverbal cues | ✓ | Video conferencing, podcasts |
| Audibility – intonation, phrasing | ✓ | Audio conferencing, podcasts |
| Contemporality – real-time exchanges | ✓ | Web conferencing, chat, IM |
| Simultaneity – simultaneous exchanges | ✓ | No |
| Sequentiality – exchanges in order | ✓ | Discussion boards, IM, chat |
| Reviewability – review messages | No | Review, report, reflect on, reuse |
| Revisability – revise messages | No | Revise, correct |

The Study

Online Learning in a CoP?

Research questions:

- (1) What conditions maximize collaborative knowledge construction in an online CoP?**
- (2) What conditions maximize the use of knowledge-laden artifacts for social constructivist learning in an online CoP?**

The study is part of ongoing research on the use of a CoP model in professional education.

Methodology: Mixed methods. Data sources include student survey responses, reflections, discussion forum postings, online chat transcripts, wiki pages & comments, and instructor reflections.

Subjects: Students in LIS master's courses at a small Midwestern U.S. university. The pilot study reported here included 31 students in two courses taught Fall 2011, using a highly technology-infused blended approach. Preliminary findings are based on the anonymous responses of 22 students to a post-course questionnaire (71% response rate).

Theoretical Background

While the relative importance of individual and social learning has been debated, both are considered essential to learning. Prominent views identify the social dimension in four possible roles: (1) social mediation of individual learning; (2) collaborative knowledge construction; (3) social mediation by artifacts infused with knowledge; and (4) the social entity as learner (Garrison, Anderson, & Archer, 2010; Hakkarainen, 2009; Salomon & Perkins, 1998; Scardamalia & Bereiter, 2006; Sfard, 1998; Stahl, 2006; Wenger, 1998).

Research shows the social dimension to be a most challenging aspect of online learning. In courses designed using the Communities of Inquiry model, students perceived deficiencies in: (1) the robustness of online dialogue, (2) spontaneity and improvisation, (3) perceiving and being perceived by others, and (4) getting to know others (Stodel, 2006). Arbaugh and Benbunan-Fich (2006) compared objectivist and social constructivist approaches in online learning and found that ***student satisfaction was greatest when objectivist teaching was supported by group interaction (social mediation of individual learning).***

From Social Mediation to Online CoP

| | Objectivist (Arbaugh & Benbunan-Fich, 2006) | Constructivist (Arbaugh & Benbunan-Fich, 2006) | CoP (Yukawa) |
|------------|--|--|--|
| Individual | <p>Individual mastery of material. Single objective reality. Knowledge is transmitted. Abstract instruction out of context. Emphasis on instructional sequences. Emphasis on <i>learner-instructor interaction</i>.</p> | <p>Individual construction of knowledge. Multiple realities. Knowledge is created individually. Engagement with the subject matter. Authentic tasks in meaningful contexts. Emphasis on <i>learner-content interaction</i>.</p> | <p>Negotiation of meaning & practice. Multiple realities. Individual construction of knowledge through <i>interaction (engagement, imagination, & alignment) with content, instructor, & other learners</i> to develop professional discourse & practice.</p> |
| Group | <p>Social mediation of individual learning. Single objective reality. Knowledge is transmitted. Instructional sequences & group activities. Work with peers reinforces learning & contextualizes concepts. Emphasis on <i>learner-instructor & learner-learner interaction</i>.</p> | <p>Collaborative construction of knowledge. Multiple realities. Knowledge is created collaboratively by interacting with peers. Authentic meaningful group tasks. Emphasis on <i>learner-content & learner-learner interaction</i>.</p> | <p>Negotiation of expertise & community. Multiple realities. Collaborative construction of knowledge & community building through <i>interaction (engagement, imagination, & alignment) with content & other learners</i> to develop shared standards, practices, values, & leadership.</p> |

Knowledge-Laden Artifacts

- Knowledge-laden artifacts are collaboratively developed products that support the creation of new knowledge and practices (Hakkarainen, 2009).
- The creation of artifacts supports better problem solving, reifies knowledge gained, and provides models and products that can be reflected upon, refined, and reused (Jonassen, 2003).
- Tool use is itself a type of collective competence acquired over time (Amhag & Jakobsson, 2009).

Pilot Study Findings

Summary of Findings

- Students successfully attained course learning outcomes in the highly technology-infused CoP classroom environment.
- What conditions maximize collaborative knowledge construction in an online CoP?
 - Elements of the blended CoP classroom environment were consistently and strongly rated as important for student learning.
 - Students perceived the course wiki and blogs to be far more helpful than the course management system because they were more conducive to collaboration and reflection. Information technology was most valued for its convenience but nearly as valued because it improves learning and encourages active involvement.
- What conditions maximize the use of knowledge-laden artifacts for social constructivist learning in an online CoP?
 - Learner-related conditions, such as learning style preference, level of motivation, degree of self-discipline, sense of responsibility toward others
 - Technology-related conditions, such as high functionality, high speed internet connection, use of a minimal number of tools, users with similar technology skill levels
 - Optimal structures and practices of interaction, such as small class size, authentic meaningful group tasks, teacher and peer facilitation and feedback

Student Attainment of Course Outcomes: Aggregate Means

Students' self perceptions of their pre- and post-course abilities indicate that they successfully attained the course learning outcomes.

| Self-Rating on Course Objectives Scale = 1 Very Low to 5 Very High | Pre-Mean | Post-Mean | Mean Diff. | SD | t | Sig. (2-tailed) |
|---|----------|-----------|------------|-----|-------|-----------------|
| LIS7050 six course objectives (combined) | 2.38 | 3.79 | +1.41 | .89 | 12.80 | >.001 |
| LIS7680 seven course objectives (combined) | 2.50 | 4.11 | +1.61 | .63 | 22.07 | >.001 |

LIS7050: N = 11 (response rate = 55%). LIS7680: N=11 (response rate = 100%).

Student Attainment of Course Outcomes: LIS7050 Research Methods

| Self-Rated Ability on LIS7050 Course Objectives Scale = 1 Very Low to 5 Very High | Pre-Mean | Post-Mean | Mean Diff. | SD | t | Sig. (2-tailed) |
|---|----------|-----------|------------|------|------|-----------------|
| Understand the elements of research design. | 2.18 | 3.73 | +1.55 | .82 | 6.25 | >.001 |
| Evaluate the research of others with a critical eye. | 2.36 | 3.64 | +1.27 | .79 | 5.37 | >.001 |
| Design and select appropriate research methods for exploring my own research inquiries. | 2.00 | 3.73 | +1.73 | 1.10 | 5.19 | >.001 |
| Conduct my own research. | 2.00 | 3.45 | +1.45 | .82 | 5.88 | >.001 |
| Understand the limitations and problems of doing research on human behaviors. | 2.82 | 4.09 | +1.27 | .90 | 4.67 | >.001 |
| Understand ethical issues involving human subjects | 2.91 | 4.09 | +1.18 | .98 | 3.99 | >.001 |

N = 11 (response rate = 55%).

Student Attainment of Course Outcomes: LIS7680 Library 2.0

| Self-Rated Ability on LIS7680 Course Objectives Scale = 1 Very Low to 5 Very High | Pre-Mean | Post-Mean | Mean Diff. | SD | t | Sig. (2-tailed) |
|---|----------|-----------|------------|-----|-------|-----------------|
| Describe Web 2.0 and social software. | 2.82 | 4.36 | +1.55 | .69 | 7.45 | >.001 |
| Analyze the broader technological, social, and cultural issues. | 2.64 | 4.09 | +1.45 | .52 | 9.24 | >.001 |
| Discuss and debate the principles and ideas of participatory library service. | 2.18 | 4.27 | +2.09 | .54 | 12.86 | >.001 |
| Articulate and debate the role of social media and online communities in the library world. | 2.64 | 4.18 | +1.55 | .52 | 9.81 | >.001 |
| State a 2.0 philosophy for libraries and information centers. | 2.18 | 3.91 | +1.73 | .65 | 8.86 | >.001 |
| Critically evaluate 2.0 tools for use in libraries and information centers. | 2.10 | 3.80 | +1.70 | .67 | 7.96 | >.001 |
| Use various online 2.0 tools. | 2.91 | 4.09 | +1.18 | .60 | 6.50 | >.001 |

N = 11 (response rate = 100%).

Maximizing Collaborative Knowledge Construction: Classroom Environment

- When asked their opinion about the importance for their learning of elements of the blended CoP environment (shown in the next slide), 94% of the time, students answered “agree” or “strongly agree.” None answered “disagree” or “strongly disagree.”
- The question remains: How can these conditions be effectively enacted in a fully online environment?

Maximizing Collaborative Knowledge Construction: Classroom Environment

| Regarding the CLASSROOM ENVIRONMENT, these elements were important for my learning. Scale = 1 Strongly disagree to 5 Strongly agree | 7050 Mean | 7680 Mean | Grand Mean |
|--|-----------|-----------|------------|
| Open dialogue | 4.60 | 4.82 | 4.71 |
| Congenial, supportive environment | 4.80 | 4.64 | 4.71 |
| Teacher feedback | 4.80 | 4.55 | 4.67 |
| Practical knowledge, relevant skills | 4.70 | 4.64 | 4.67 |
| Sense of empowerment and accomplishment | 4.70 | 4.55 | 4.62 |
| Teacher facilitation | 4.60 | 4.64 | 4.62 |
| Challenging | 4.60 | 4.50 | 4.55 |
| Freedom to create and experiment | 4.60 | 4.45 | 4.52 |
| Student centered learning | 4.50 | 4.45 | 4.48 |
| Shared problem solving | 4.70 | 4.27 | 4.48 |
| Making connections to my personal and professional life | 4.20 | 4.64 | 4.43 |
| Peer feedback | 4.40 | 3.91 | 4.14 |
| Students were vested in each other's work | 4.20 | 4.09 | 4.14 |

LIS7050: N=11 (55% response rate). LIS7680: N=11 (100% response rate).

Maximizing Collaborative Knowledge Construction: Technology for Learning

Students perceived the course wiki and blogs to be far more helpful than the course management system (D2L) because they were more conducive to collaboration and reflection. Information technology was most valued for its convenience but almost equally as valued because it improves learning and encourages active involvement.

| Use of Technology & Interaction Media Scale = 1 Strongly disagree to 5 Strongly agree | N | Mean | SD |
|---|----|------|------|
| Using PBworks [wiki] was helpful to my learning. | 21 | 4.62 | .50 |
| Weekly learning blogs were helpful to my learning. | 21 | 4.29 | .90 |
| Using D2L was helpful to my learning. | 21 | 2.81 | 1.03 |
| Using a discussion board was helpful to my learning. | 15 | 3.40 | .99 |
| IT makes doing my course activities more convenient. | 21 | 4.62 | .59 |
| The use of IT in my courses improves my learning. | 20 | 4.40 | .50 |
| I get more actively involved in courses that use IT. | 21 | 4.33 | .66 |
| I have less incentive to attend class when materials from course lectures are available online. | 21 | 1.71 | .72 |

Maximizing the Use of Knowledge-Laden Artifacts: Technology

Technology-Related Conditions

- High functionality
- High speed internet connection
- Privacy protection
- Use of a minimal number of tools
- Users with similar technology skill levels

Maximizing the Use of Knowledge-Laden Artifacts: Learners

Learner-Related Conditions

- Beliefs about teaching & learning: single vs. multiple realities, knowledge transmission vs. individual/collaborative construction of knowledge
- Personality traits
- Learning style preferences
- Level of motivation
- Degree of self-discipline & self-direction
- Sense of responsibility toward others
- Overcoming fear of making mistakes online
- Overcoming feelings of isolation online that inhibit relationship & community building

Maximizing the Use of Knowledge-Laden Artifacts: Interaction

Optimal Structures & Practices of Interaction

- Small class sizes
- Authentic meaningful group tasks
- Teacher/peer facilitation & feedback
- Speedy responses
- Overcoming the disjointed nature of group chat threads & asynchronous discussion threads
- Sufficient time to read online posts
- Infusing written messages with affective cues

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