Ten+ Years of Research on Online and Blended Learning: Results and Reflections

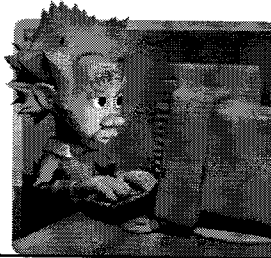Curt Bonk, Professor, Indiana University
President, SurveyShare, Inc.
cjbonk@indiana.edu
http://mypage.iu.edu/~cjbonk/
http://SurveyShare.com

Theoretical Perspectives and Principles

Learner-Centered Learning Principles

From American Psychological Association, 1993

Cognitive and Metacognitive Factors
1. Nature of the learning process
2. Goals of the learning process
3. Construction of knowledge
4. Strategic thinking
5. Thinking about thinking
6. Context of learning

Motivational and Affective Factors
7. Motivational and emotional influences
8. Intrinsic motivation to learn
9. Effects of motivation on effort

Developmental and Social Factors
10. Developmental influences on learning
11. Social influences on learning

Individual Differences
12. Individual differences in learning
13. Learning and diversity
14. Standards and assessment

Constructivistic Teaching Principles (Brooks, 1990)

1. Build on student prior knowledge.
2. Make learning relevant.
3. Give students choice in learning activity.
4. Student autonomy & active lrng encouraged
5. Use of raw data sources & interactive materials
6. Encourage student dialogue
7. Seek elaboration on responses and justification
8. Pose contradictions to original hypothesis
9. Ask open-ended questions & allow wait time
10. Encourage reflection on experiences

Sociocultural Ideas (Bonk & Cunningham, 1998)

1. Shared Space and Build Intersubjectivity
2. Social Dialogue on Authentic Problems (mind is in social interactions and extends beyond skin)
3. Mentoring and Teleapprenticeships
4. Scaffolding and Electronic Assistance in ZPD
5. Group Processing and Reflection
6. Collaboration and Negotiation in ZPD
7. Choice and Challenge
8. Community of Learning with Experts & Peers
9. Portfolio Assessment and Feedback
10. Assisted Learning (e.g., task structuring)
11. Reciprocal Teaching & Peer Collaboration

Premise #1:
Importance of Social Interaction (Vygotsky, Wertsch, etc.)

- **Social interaction develops new patterns of thought and strategic behaviors.**

Premise #2. Mind is Distributed in Society

- **Mind is in society— individual-in-social- action; mind extends beyond the skin** (Vygotsky, Wertsch, etc.).

Distributed Intelligence (in a learning community)

- Student higher-order mental functioning has its' roots in social relations. The mind, therefore, is distributed in society, and, extends beyond one's skin. Since knowledge is negotiated by members of a community of practice, the classroom should be organized to guide student learning toward membership in a learning community.

Distributed Intelligence (in a learning community)

- Participation in such a classroom is no longer didactic or transmissive, but a sophisticated instructional conversation.

Distributed Intelligence (in a learning community)

- While technology is vital here, it is but one resource of a learning community; other resources that should also be utilized include: experts, mentors, peers, curriculum/textbooks, teachers, self-reflection, assessment, parents, and the funds of capital within one's local community.

Premise #3. Learning Precedes Development

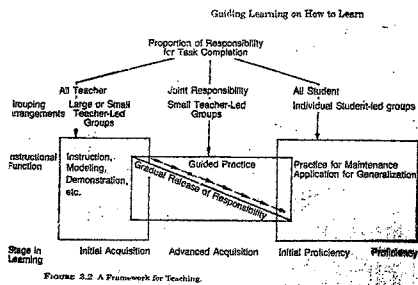- **Learning precedes development—so must nudge, prompt, provoke it, rouse it to life, etc.**

Premise #4: Cognitive Apprenticeship

- Learners should be acculturated into an established community of practice. This is done through guided participation, scaffolding, and a gradual transfer of responsibility for the learning from the more experienced partner to the learner.

2

Guided Learning Model (Rogoff, 1990)

Guiding Learning on How to Learn

Proportion of Responsibility for Task Completion

	All Teacher	Joint Responsibility	All Student
Grouping arrangements	Large or Small Teacher-Led Groups	Small Teacher-Led Groups	Individual Student-led groups
Instructional Function	Instruction, Modeling, Demonstration, etc.	Guided Practice	Practice for Maintenance Application for Generalization
Stage in Learning	Initial Acquisition	Advanced Acquisition	Initial Proficiency Proficiency

Figure 3.2 A Framework for Teaching.

Cognitive Apprenticeship

- **Collins, Brown, and Newman (1989) detail six teaching methods in an ideal cognitive apprenticeship; (1) modeling, (2) coaching, (3) scaffolding and fading, (4) articulation, (5) reflection, and (6) exploration.**

Tele-apprenticeship

- **As a result of advances in technology tools, there are myriad online learning environments that are mediated by experts, peers, mentors, teachers, etc. to help learners and teachers build and share knowledge through access to specialized expertise and information.**
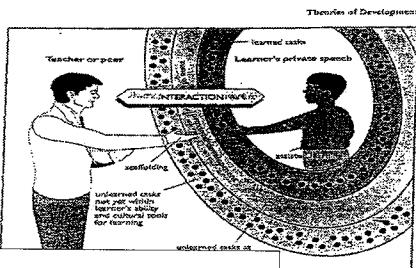

Premise #5:
Zone of Proximal Development

A range of tasks too difficult for child to manage alone, but which can be achieved through interaction with another person (adult or more capable peer)

Things that can be done with little support → Things that can be done with much support →

Things that can be done on own

Things that cannot be done even with support

Zone of Proximal Development
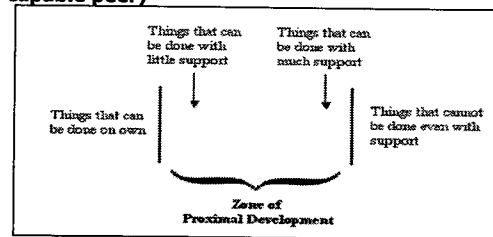
Premise #6:
Scaffolding in one's ZPD
(Robert Slavin, 1993)

Figure 2.5 Teaching Model Based on Vygotsky's Theory

Types of Scaffolding

- Social Acknowledgement
- Questioning
- Direct Instruction
- Modeling/Examples
- Feedback/Praise
- Cognitive Task Structurin
- Cognitive Elaborations/Explanations
- Push to Explore
- Fostering Reflections/Self Awareness
- Encouraging Articulation/Dialogue Prompting
- General Advise/Scaffolding/Suggestions
- Management
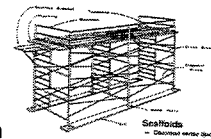
Premise #7:
Assisted Learning

- There are a range of techniques for teachers to assist in the learning process (e.g., modeling, coaching, scaffolding and fading, questioning, directly instructing, task structuring, management and feedback, and pushing students to explore, reflect, and articulate ideas).

Premise #8:
Learning Resources

- The cultural and intellectual capital within one's teaching and learning environment. Includes peers, textbooks and the curriculum, technology tools, teachers, expert guests, community leaders, tests, self-reflection, etc.

Resources in a Learning Environment

- Teachers
- Peers
- Curriculum/Textbooks
- Technology/Tools
- Experts/Community
- Assessment/Testing
- Self Reflection
- Parents

Premise #9:
Authentic Problems

- A learning experience or task which realistically mimics or approximates real world situations. They tend to be more engaging for learners.

Premise #10:
Unit of Analysis

- Unit of analysis is the activity or word meaning.
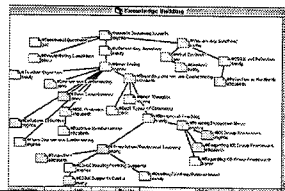
Premise #11:
Internalization

- Development moves from external to internal (appears twice).

Premise #12: Intersubjectivity

- Refers to a temporary shared collective reality among individuals. Conferencing and collaborative technologies can foster such shared space or situational understanding between learning participants which can help them negotiate meaning, design new knowledge, and perceive multiple problem solving perspectives.

## Frameworks and Models

Nature and Nurture: An Interactional Model

Technology | Pedagogy

People, Society, Culture, etc.
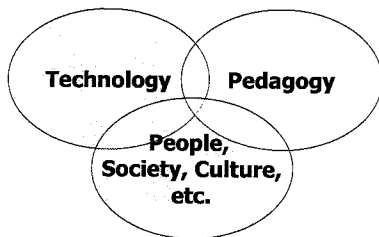
The Web Integration Continuum (Bonk et al., 2000)

Level 1: Course Marketing/Syllabi via the Web
Level 2: Web Resource for Student Exploration
Level 3: Publish Student-Gen Web Resources
Level 4: Course Resources on the Web
Level 5: Repurpose Web Resources for Others
================================
Level 6: Web Component is Substantive & Graded
Level 7: Graded Activities Extend Beyond Class
Level 8: Entire Web Course for Resident Students
Level 9: Entire Web Course for Offsite Students
Level 10: Course within Programmatic Initiative

Areas of Current Research

1. Wikibook creation and ownership
2. Open source movement in North America and China
3. Synchronous instruction with Breeze
4. Blended learning in corp trng in 5-6 countries
5. Development of online communities in online MBA program
6. Virtual teaming in online MBA program
7. Case learning in online MBA program
8. Teaching of educational psychology from a social constructivist framework
9. Motivation in online environments
10. Podcasting and communities of practice

10 Pieces of this Story
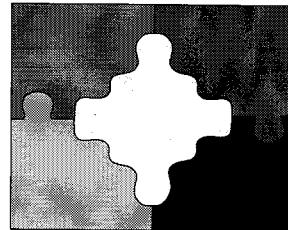
10+ Stories for 10+ Years

1. 1993-1994: Peace, dude, hop off the return key, save me some stress."
2. 1995: What if Vygotsky had lived to 100...
3. 1996: Do not ride your bike to work.
4. 1997: Look out for the Russians...
5. 1998: Do you believe in the power of sharing?
6. 1999-2000: Do you want to be target practice?
7. 2001: You were in, but you were never there.
8. 2002-2005: Who needs a TICKIT?
9. 2003-2006: Where is Disneyland?
10. 2004-2006: Data at your fingertips.
11. 2006-?: A synchronous life is a Breeze.
12. 2006-?: Where is a Wikibookian when you need one?

Story #1 (1994): "Peace, dude, hop off the return key, save me some stress."
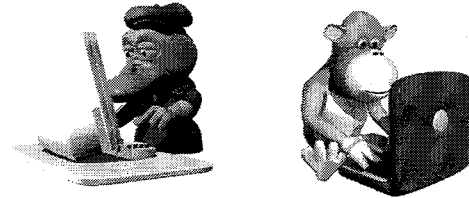
Taxonomy: Level of Collaborative Tool
(Bonk, Medury, & Reynolds, 1994)

Level 0: Stand Alone Tools
Level 1: E-mail and Delayed Messaging Tools
Level 2: Remote Access/Delayed Collab Tools
Level 3: RT Dialoguing and Idea Gen Tools
Level 4: RT Collaboration (text only)
Level 5: Cooperative Hypermedia
Level 6: Tools That Don't Fit Nicely

Web Conferencing Tools

- VaxNOTES
- NiceNet
- WebCrossing
- Sitescape Forum
- COW
- FirstClass
- WebCT, Blackboard, Virtual U, etc.

Research on Electronic Cases

1. RT vs. Delayed Collab
- Groups Preset by Major
- Tchr Generated Cases
- Local/Univ. Networks
- Limited Instructor Mentoring

2. Web-Based Conference
- Grps Formed on Interest
- Student Gen. Cases
- World Wide Web
- Extensive Instructor and Peer Mentoring

Study #1: 1993/1994
(Bonk, Hansen, Grabner, Lazar, and Mirabelli, 1998)

- Two Semester: VAXNotes vs. Connect
- Two Conditions: (1) Real-time vs. (2) Delayed
- Subjects = 65 secondary ed majors
  (5 grps: PE, Foreign Language, Social Studies, English, Math)
- Mentors = limited instructor commenting
- Procedures:
  - (1) Respond to 4 cases in small groups
 - (2) Respond to peer comments

Research Questions: Study #1

1. What social interactions occur in real-time & delayed?
2. How code electronic social interaction patterns?
3. How do case size & complexity affect grp processing?
4. Do RT or delayed foster > discuss depth & quality?
5. Do shared experiences stimulate grp intersubjectivity?

Some Findings From Study #1

- Delayed Collab > Elaboration
  - 1,287 words/interaction vs. 266 words/interaction
- RT Collab > Responses
  - 5.1 comments/person/case vs. 3.3 comments/person
- Low off-task behaviors (about 10%)
- Rich data, but hard to code
- Students excited to write & publish ideas
- Minimal q's and feedback
- Interaction inc. over time; common zones
- Some student domination

Study #1. 1993-94

Legend:
- Content
- Questions
- Peer Responses
- Off-Task

X-axis: Real Time, Delayed
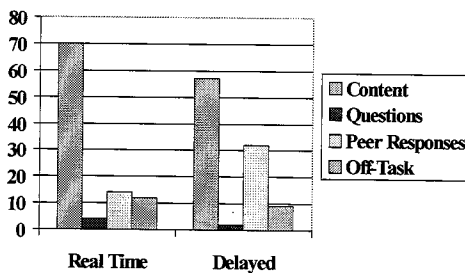
Example of real-time dialogue:

- Come on Jaime!! You're a slacker. Just take a guess. (October 26, 1993, Time: 11:08:57, Ellen Lister, Group 5).
- How might he deal with these students? Well, he might flunk them. He might make them sit in the corner until they can get the problem correct...I don't know. (Um...hello...Jaime where is your valuable insight to these problems?) (October 26, 1993, Time: 11:19:37, Ellen Lister, Grp 5).

Example of Delayed Dialogue:

Joyce's new system offers a wide variety of assessment forms. These different forms complement the diverse learning and test taking abilities of her students. Joyce seems to cover the two goals of classroom assessment with her final exam--to increase learning and increase motivation. Students will increase their learning because they will not just remember information to re[g]urgitate on an exam, but instead they will store these items in their long-term memory and later may be able to make a general transfer. Joyce will increase student motivation because she has deviated from the normal assessment method expected by her students.

Joyce's test will probably be both reliable and valid considering that she implemented three different forms of tests. Joyce's test also might reduce test anxiety. If her students know what to expect on the test (they even wrote the questions) they more than likely will be less anxious on exam day... (January 31, 1994, Time: 19:28, Sarah Fenway, Language Group.)

Larry

- Entertaining,
- Creative and controversial,
- Indirectly intimidating,
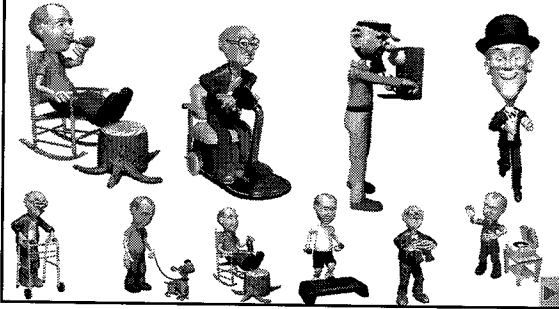- One who set own agenda,
- Very articulate and witty.

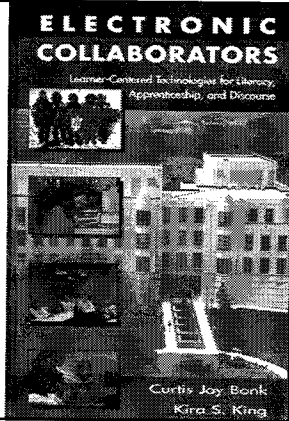## Sample of Larry's Comments....

- "Peace, dude, hop off the return key, save me some stress."
- "I am currently preparing my anti-groupwork support group."
- "I've noticed several people writing and saying that they would have done this or that brilliant or intuitive thing. I personally am brilliant or intuitive and I think other could use a little humility. This Karen's made some mistakes, but we all make mistakes, and when (dare I say), we are in her shoes, we should expect to make some of the same ones that confound her."

Story #2 (1995): What if Vygotsky had lived to 100...?

ELECTRONIC COLLABORATORS

1994-1996 Computer Conferencing and Collaborative Writing (CCCW) Group at Indiana

Learner-Centered Technologies for Literacy, Apprenticeship, and Discourse

TEAMWORK

Curtis Jay Bonk
Kira S. King

Sample Projects

1. Peer scaffolded support with technology.
2. Critical thinking with tech supports.
3. PBL situations and role play
4. Scaffolded learning from the Arctic.
5. Forms of online e-mail assistance.
6. Bring experts to teach at any time.
7. Online case learning and exam preparation.
8. Alternating class and online activities.
9. Roles in electronic discussions.
10. Structure electronic role play.

Patterns of Knowledge Construction in Electronic Discussion (Zhu, 1998)
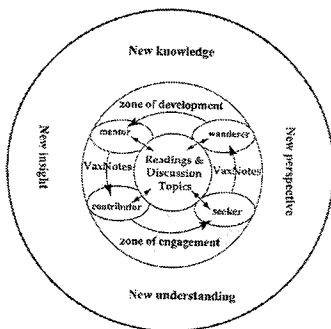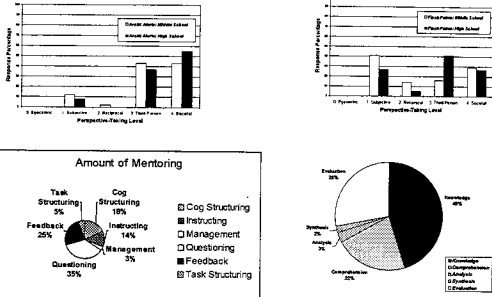

Adventure Learning
Purpose: engage in adventurous study of the global environment.
(e.g., Telepresence or virtual fieldtrips, ask an expert forums, cross-classroom collaboration, debate forums, online communities, MayaQuest, the Jason Project)
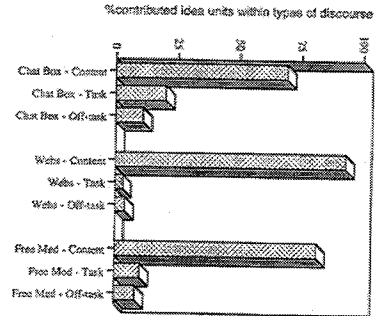
Adventure Learning Findings
(Bonk & Sugar, 1998)

Aspects within Aspects (Cooney, 1998)

Implications: Build Courses Based on Sociocultural Principles (Bonk, 1998)

Smartweb Activities
- Weekly Chapter Activ
- Starter-Wrapper Disc
- Personal Profiles
- Student Portfolios
- Feedback on Portfolios
- Links Prior Semesters
- Field Reflections
- Field Observ Case Disc
- Café Latte

Sociocultural Link
- Connect to Experience
- Recip Teach & Dialogue
- Build Intersubjectivity
- Dynamic Assessment
- Scaffolding within Zones
- Modeling and Legacy
- Apprentices Learning
- Scaffolded & Authentic
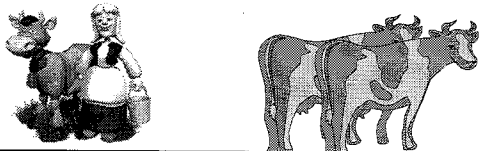- Shared Knowledge

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Story #3 (1996): Do not ride your bike to work.

Conferencing On Web (COW)
(1996-2000)
Three Basic Levels:
1. Conference (public or private)
2. Topic (e.g., special education)
3. Conversation (e.g., reading rewards)

HOLY COW!
It's good

Purpose of COW Project

- **Students in field experiences write cases**
- **Teachers and students from around the world provide electronic mentoring**
- **Authentic cases and mentoring transform learning environment**
- **Helps preservice teachers understand the role of technology in education**

The Center for Excellence in Education (CEE)

at Indiana University

thecityweb's

COW

CONFERENCING
ON THE WEB

Welcome to COW. This system was recently selected. We hope you enjoy it.

If you would like to tour COW, click the "Enter COW" button and use guest as the login name and cow as the password.

If you have questions or comments, please contact Steve Malikowski, smalikow@indiana.edu

About COW | Enter COW | Lobby

Finland_Cases_Fall98

You are the Instructor for this class
[Conference Manager] is available.

Oulun yliopisto

UNIVERSITY OF JYVÄSKYLÄ

(Click on the university logos above to visit their web site.)

Welcome to the Finland Conference! It has been created for you to exchange questions, answers, and ideas with other students, faculty and teachers during your field experience. You can also return to the conferences for Lakes, North Smith Carolina and the International Cafe.

Some of the topics listed below are RESTRICTED to either students, faculty or teachers. Other topics are PUBLIC and anyone may participate. But Dr. Curt Bonk and Steve Malikowski serve as "far webusers" to this conference, and they can read ALL messages.

[Note: A recipient tour has been created to help you become familiar with this online system and project.]

Topics:

Number   New   Topic Name

---

opics::

Number	New	Topic Name
100	1	Big Global Problems
102	76	Classroom Management--General
103	65	Classroom Engagement--Discipline and Behavior Problems
104	8	Elementary Cases, Math--Science
106	13	Elementary Cases, Reading Writing
108	5	Elementary Cases, Social Studies--Other
110	34	Individual Differences (SES, IQ, Gender, Religion, etc.)
111	25	Adapting To Students Different from You
112	7	Teacher-Conferences and Communication
113	74	Poor Teacher Behavior (Unfair, Bias, Favoritism, etc.)
114	19	Learning Problems
116	10	Learning Styles & Intelligences
118	31	Moral Problems
120	76	Motivation
122	33	Multicultural Education--Diversity
123	3	Music, Art, and Theater (Any Grade Level)
124	16	Physical Education and Health (Any Grade Level)
125	23	Grading and Assessment (e.g., standardized testing)
126	2	Other Assessment Issues (e.g., peer grading)
128	11	Secondary Cases--Language, English & Lit
130	0	Secondary Cases--Math & Science
132	2	Secondary Cases--Social Studies & Other
134	95	Technology (Computers and Learning)

[Topic Manager] is available.

by Maarit Saarenkunnas (msaarenk)
Date: Sep. 10 11:58 PM 1998

To read a case, click on one the "conversations" listed below
To add a case, click on the Start New button.

Recent Conversations for Finland_Cases_Fall98, Topic 202: [COWSearch]

Number	Total	New	Conversation
5	23	5	Kamschlik discouragement - only a teacher trainee's nightmare?
2	32	0	Gender and Classroom
6	47	40	Discipline in the elementary school
9	88	4	Homework - love us or leave it?
8	8	4	Influence of calmness on the society
3	43	11	The students are always positive and enthusiastic????
7	17	14	Problems of differentiation
1	19	9	What do we really teach in school - the concept of hidden curriculum
4	13	11	Teacher autonomy

[Read] conversation number: [   ] Since: [   ] days ago.

<<< Return to Practice Topic <<<   .. next new post >>

Conference: Secondary_Ed_Cases
Topic: 170. Your Own Cases--Secondary
Conversation 13

My student and Cocaine

All posts and replies

1 Author: Name Removed (Username)
Date: Oct. 22 7:05 PM 1997

The first day of my observing I commenced with a female. She felt comfortable talking to me and frequently asked during the two class periods I was observing. She is the girl I have in any of my classes. She is helpful, considerate, and extremely bright.

I have been back to observe twice since then. Today 10-22-97, when I went to observe today, she was not in class. I asked the teacher if she had been absent the day before, and I asked him if

Problems Solved By COW

- Student isolation in field experiences
- Lack of community/dialogue among teacher education participants
- Disconnectedness between class and field experience
- Limited reflective practices of novice teachers
- Need for appreciation of multiple perspectives

Quantitative Methods

Average results for prior to TITLE (TITLE):
- Participants per semester: 130 (>300)
- Cases per semester: 230 (624)
- Cases per student: 1.75 (same 1.80)
- Average responses per case: 4.5 (3.9)
- Average words per case: 100-140 (198)

Frequent Case Topics

Topic	Number of Cases
Management	312
Motivation	185
Instructional Approaches	178
Individual Differences (special education and gifted)	152
Hot Topics (e.g., teacher burnout, violence in school, corporal punishment, and drugs and alcohol)	83
Development (physical, cognitive, and social/emotional)	70
Behaviorism and Social Learning Theory	57
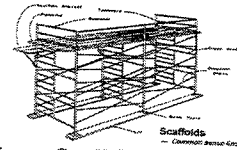
Types of Heavy Scaffolding:
1. Social Acknowledgement
2. Questioning
3. Direct Instruction
4. Modeling/Examples
5. Feedback/Praise
6. Cognitive Task Structuring
7. Cognitive Elaborations/Explanations
8. Push to Explore
9. Fostering Reflection/Self Awareness
10. Encouraging Articulation/Dialogue Prompting
11. General Advice/Scaffolding/Suggestions
12. Management

Bonk, Angeli, Malikowski, & Supplee, 2001)

Transcript Results

A. Peer Content Talk
   31% Social Acknowledgments
   60% Unsupported Claims and Opinions
   7% Justified Claims
   2% Dialogue Extension Q's and Stmts
B. Mentor Scaffolding
   24% Feedback, Praise, and Social
   24% General Advice and Suggestions
   20% Scaffolding and Socratic Questioning
   16% Providing Examples and Models
   8% Low Level Questioning
   8% Direct Instruction & Explanations/Elab

Study #3. Fall, 1997

- Unsupported
- Social
- Justified
- Extension
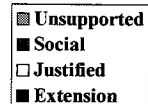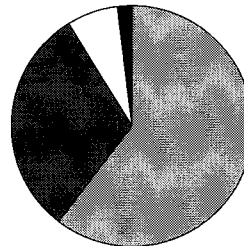
Bonk, Malikowski, Supplee, & Angeli, 1998