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Community of Inquiry Framework: Instrument Development, Validation and Application

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Overview: Community of Inquiry Framework

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Community

... community means meaningful association, association based on *common interest* and endeavor. The essence of community is *communication*, ...

>> *John Dewey*



University

The word *university* is derived from the *Latin universitas magistrorum et scholarium*, roughly meaning "community of *masters* and *scholars*".



Inquiry

- Is problem or *question driven*
- Typically has a *small-group* feature
- Includes *critical discourse*
- Is frequently *multi-disciplinary*
- Incorporates *research methods* such as information gathering and synthesis of ideas"



Community of Inquiry

The importance of a community of inquiry is that, while the objective of critical reflection is *intellectual* autonomy, in reality, critical reflection is "thoroughly *social* and communal".
(Lipman, 1991)

Community of Inquiry Framework

Social Presence

The ability of participants to identify with the community (e.g., course of study), communicate purposefully in a trusting environment, and develop inter-personal relationships by way of projecting their individual personalities.



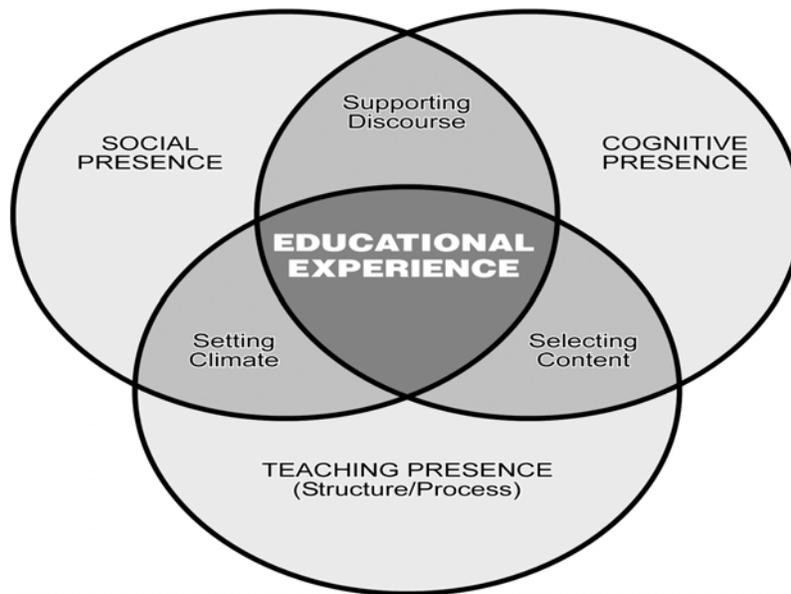
Cognitive Presence

The extent to which learners are able to construct and confirm meaning through sustained reflection and discourse in a critical community of inquiry.

Teaching Presence

The design, facilitation and direction of cognitive and social processes for the purpose of realizing personally meaningful and educationally worthwhile learning outcomes.

Community of Inquiry





Elements, Categories & Indicators

ELEMENTS	CATEGORIES	INDICATORS (examples only)
Social Presence	Open Communication Group Cohesion Personal/Affective	Learning climate/risk-free expression Group identity/collaboration Self projection/expressing emotions
Cognitive Presence	Triggering Event Exploration Integration Resolution	Sense of puzzlement Information exchange Connecting ideas Applying new ideas
Teaching Presence	Design & Organization Facilitating Discourse Direct Instruction	Setting curriculum & methods Shaping constructive exchange Focusing and resolving issues



Teaching Presence

Dr. Peter Shea

University at Albany
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Teaching Presence

The design, facilitation and direction of cognitive and social processes for the purpose of realizing personally meaningful and educationally worthwhile learning outcomes.

- Instructional Design and Organization
- Facilitation of Discourse
- Direct Instruction



Teaching Presence Research

- The nascent literature indicates that the construct coheres as an interpretable factor, i.e. we can operationalize and “measure” it (Shea et al. 2006; Arbaugh and Wang, 2006)
- instructor teaching presence is predictive of online learners’ sense of community (Shea et al., 2005; Wilson, Ludwig-Hardman, Thornam, Dunlap, 2004),
- and student satisfaction, and perceived learning (Shea et al. 2005; 2006).



Teaching Presence Research

- but, student reports of satisfaction and learning are more highly correlated with the teaching presence skills and behaviors of faculty rather than classmates (Shea et al. 2004; 2005)
- and instructors who receive Teaching Presence Training score significantly higher on indicators of TP and on measures of student satisfaction and learning in general. (Shea, 2003)



Teaching Presence Research

- These results are important given appropriate levels of teaching presence supports cognitive presence, a multivariate indicator of learning evident in online discourse, regardless of whether the discourse was
 - text-based synchronous (Stein et al., 2007),
 - text-based asynchronous (Vaughan and Garrison, 2005)
 - asynchronous with audio feedback (Ice et al., 2007) .



Social Presence

Dr. Karen Swan

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"social presence"

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"On the Internet, nobody knows you're a dog."

"teacher immediacy"

LEARNING MODEL



MOTIVATION MODEL



AFFECTIVE LEARNING MODEL



social presence theory

social presence as media richness; ability of a medium to present individuals as individuals
(Short, Williams & Christie, 1976)

social presence in practice

two studies examining CMC participants' perceptions of social presence -- "participants create social presence by projecting their identities and building online communities"
(Gunawardena, 1995; Gunawardena & Zittle, 1997)



“social presence”

- the degree to which participants in computer mediated communication feel socially and emotionally connected
- the ability of participants in a community of inquiry to project themselves socially and emotionally -- as ‘real’ people;
- affective expression, open communication (*cohesiveness*), group cohesion (*interactivity*)



research findings

- social presence can be (strongly) felt by participants in computer-mediated communication (Walther, 1994; Gunawardena, 1995; Tu & Mclsaac, 2002; Richardson & Swan, 2003)
- and projected into text-based asynchronous discussion using verbal immediacy indicators alone (Rourke, Anderson, Garrison & Archer, 2001; Swan, 2002; 2003)



research findings

- perceptions of social presence are linked to student satisfaction in online courses (Gunawardena, Lowe & Anderson, 1997; Tu, 2002; Richardson & Swan, 2003)
- and to perceived & actual learning from them (Walther, 1994; Gunawardena, 1995; Picciano, 2002; Richardson & Swan, 2003)
- interesting differences among student perceptions (Swan & Shih, 2005)



research findings

- differences in effects of social presence of instructors & peers (Swan & Shih, 2005)
- and interesting differences among student perceptions (Swan & Shih, 2005)
- relationship of social presence to course design factors - social context, communication, interactivity (Tu, 2000; Tu & McIssac, 2002; Swan & Shih, 2005)



issues

- Is social presence mediated differently by new and emerging technologies? Is there a media richness effect?
- What is the relationship of social presence to the other presences? Is social presence a necessary precursor to cognitive presence? Is some part of teaching presence really the social presence of the teacher?
- Is “emotional presence” distinct from social presence?



Cognitive Presence

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Dr. Phil Ice
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Foundations

Cognitive presence is defined as the exploration, construction, resolution and confirmation of understanding through collaboration and reflection in a community of inquiry.

(Garrison, 2007)

Practical Inquiry Model



(Adapted from Garrison & Archer, 2000)



Theoretical Basis

- Reflective thinking
(Dewey, 1933)
- Transitioning to an authentic, problem-posing, post-modernist paradigm
(Freire, 1970)
- Knowledge is a product of:
 - Learners discovering the truth
 - Examination of facts related to the truth
 - Assimilation of the aforementioned through collaborative review
(Green, 1971)



Theoretical Basis

- Dependent upon a curriculum grounded in richness, recursion, relations and rigor
(Doll, 1993)
- Learners achieve resolution through iteration and conversation
(Doll, Fleener, Trueit & St. Julien, 2005)



Syntax

➤ Derivative of strategies within collaborative, cooperative and inductive learning models found the face-to-face classroom

(Slavin, 1994; Johnson & Johnson, 1998; Gagne, Wager, Golas & Keller, 2004; Joyce, Weil & Calhoun, 2004)

➤ Dependent upon the instructor being able to effectively initiate and contain a learning spiral (Palmer, 1993)



Difficulty for the Instructor

Allowing cognitive presence to fully develop can be frustrating:

➤ Unlike objectivist models of instruction it is not possible to prescribe a point at which learners will produce "answers"

➤ Requires "soft" scaffolding



Instrument Development and Recent Research

Dr. Phil Ice

University of North Carolina Charlotte



Instrument Development

December 2006 - Development of a unified Community of Inquiry Survey instrument

- Review of previous research and commonality of items
- Common survey items agreed upon where existing items were worded differently; New items developed where needed



Instrument Development

Spring 2007 - Beta testing of common instrument

- Factor analysis reviewed, select items revised and new items added

Summer 2007 - Data collected across spectrum of courses at 4 institutions in the USA and Canada

- Items randomized to reduce order-related biases



Confirmatory Factor Analysis

➤ $n = 287$

➤ Principal Component Procedure

➤ Oblique rotation utilized (which, in contrast to Orthogonal, does NOT assume factors are uncorrelated to one another).

➤ SPSS version 15 utilized

TEACHING PRESENCE

	1	2	3
1. The instructor clearly communicated important course topics.	0.826	0.088	0.067
2. The instructor clearly communicated important course goals.	0.877	-0.021	0.046
3. The instructor provided clear instructions on how to participate in course learning activities.	0.592	0.246	-0.035
4. The instructor clearly communicated important due dates/time frames for learning activities.	0.611	0.078	0.040
5. The instructor was helpful in identifying areas of agreement and disagreement on course topics that helped me to learn.	0.579	0.162	-0.138
6. The instructor was helpful in guiding the class towards understanding course topics in a way that helped me clarify my thinking.	0.575	0.091	-0.281
7. The instructor helped to keep course participants engaged and participating in productive dialogue.	0.633	0.149	-0.160
8. The instructor helped keep the course participants on task in a way that helped me to learn.	0.579	0.042	-0.285
9. The instructor encouraged course participants to explore new concepts in this course.	0.523	0.099	-0.233
10. Instructor actions reinforced the development of a sense of community among course participants.	0.569	0.174	-0.176
11. The instructor helped to focus discussion on relevant issues in a way that helped me to learn.	0.425	0.146	-0.374
12. The instructor provided feedback that helped me understand my strengths and weaknesses relative to the course's goals and objectives.	0.649	-0.123	-0.201
13. The instructor provided feedback in a timely fashion.	0.513	-0.025	-0.103

SOCIAL PRESENCE

	1	2	3
14. Getting to know other course participants gave me a sense of belonging in the course.	0.050	0.619	-0.233
15. I was able to form distinct impressions of some course participants.	0.172	0.473	0.013
16. Online or web-based communication is an excellent medium for social interaction.	-0.181	0.674	-0.226
17. I felt comfortable conversing through the online medium.	-0.039	0.814	0.015
18. I felt comfortable participating in the course discussions.	0.109	0.788	0.005
19. I felt comfortable interacting with other course participants.	0.286	0.701	0.038
20. I felt comfortable disagreeing with other course participants while still maintaining a sense of trust.	0.103	0.620	-0.034
21. I felt that my point of view was acknowledged by other course participants.	0.319	0.556	0.025
22. Online discussions help me to develop a sense of collaboration.	0.047	0.561	-0.340

COGNITIVE PRESENCE

	1	2	3
23. Problems posed increased my interest in course issues.	-0.099	0.172	-0.785
24. Course activities piqued my curiosity.	0.064	0.070	-0.712
25. I felt motivated to explore content related questions.	0.082	-0.031	-0.770
26. I utilized a variety of information sources to explore problems posed in this course.	0.078	-0.158	-0.759
27. Brainstorming and finding relevant information helped me resolve content related questions.	-0.106	0.130	-0.794
28. Online discussions were valuable in helping me appreciate different perspectives.	-0.096	0.286	-0.699
29. Combining new information helped me answer questions raised in course activities.	0.101	0.043	-0.716
30. Learning activities helped me construct explanations/solutions.	0.128	0.030	-0.732
31. Reflection on course content and discussions helped me understand fundamental concepts in this class.	0.008	0.237	-0.640
32. I can describe ways to test and apply the knowledge created in this course.	0.239	-0.097	-0.619
33. I have developed solutions to course problems that can be applied in practice.	0.147	0.026	-0.653
34. I can apply the knowledge created in this course to my work or other non-class related activities.	0.171	-0.041	-0.687



Moving Forward

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Other New Col Research

- Col instrument coheres into factors
- Confirmed this with additional 2159 online students in SUNY
- Used TP & SP factors as predictors of CP
- Conducted Structural Equation Modeling to see relationships
- Conducted CHAID Analysis to highlight item level predictors of CP (and for instrument redevelopment)



Factor Analysis (n=2159)

Table 1: Results from principal axis factoring with Oblimin rotations

Item	Cognitive Presence	Teaching Presence	Social Presence
1. The instructor clearly communicated important course topics.	-.07	-.88	-.01
2. The instructor clearly communicated important course goals.	-.07	-.84	.03
3. The instructor provided clear instructions on how to participate in course learning activities.	-.08	-.80	.06
4. The instructor clearly communicated important due dates/time frames for learning activities.	-.07	-.74	.05
5. The instructor was helpful in identifying areas of agreement and disagreement on course topics that helped me to learn.	.02	-.86	-.01
6. The instructor was helpful in guiding the class towards understanding course topics in a way that helped me clarify my thinking.	.09	-.87	-.09
7. The instructor helped to keep course participants engaged and participating in productive dialogue.	-.01	-.85	.03
8. The instructor helped keep the course participants on task in a way that helped me to learn.	.02	-.87	.01
9. The instructor encouraged course participants to explore new concepts in this course.	.12	-.77	-.02
10. Instructor actions reinforced the development of a sense of community among course participants.	.03	-.79	.08
11. The instructor helped to focus discussion on relevant issues in a way that helped me to learn.	.11	-.74	.03
12. The instructor provided feedback that helped me understand my strengths and weaknesses.	.09	-.75	-.05
13. The instructor provided feedback in a timely fashion.	.03	-.75	-.06
14. Getting to know other course participants gave me a sense of belonging in the course.	.25	-.05	.41
15. I was able to form distinct impressions of some course participants.	.28	-.01	.40
16. Online or web-based communication is an excellent medium for social interaction.	.18	-.01	.50
17. I felt comfortable conversing through the online medium.	-.03	-.05	.81
18. I felt comfortable participating in the course discussions.	-.06	-.04	.87
19. I felt comfortable interacting with other course participants.	-.08	-.02	.94
20. I felt comfortable disagreeing with other course participants while still maintaining a sense of trust.	-.01	.01	.78
21. I felt that my point of view was acknowledged by other course participants.	.03	.00	.78
22. Online discussions help me to develop a sense of collaboration	.08	-.01	.75
23. Problems posed increased my interest in course issues.	.67	.01	.09
24. Course activities piqued my curiosity.	.75	-.05	.03
25. I felt motivated to explore content related questions.	.79	-.02	.02

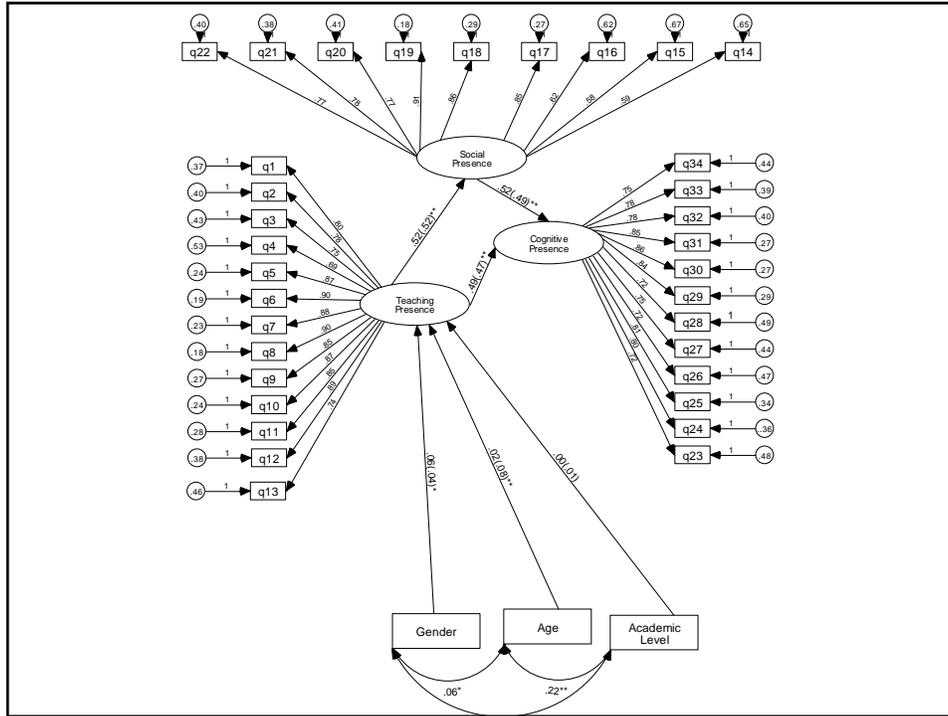


SEM and CHAID Analysis

- Do instructor skills in the area of teaching presence foster a sense of social presence?
- Do student experiences of teaching and social presence “predict” their experience of cognitive presence?
- What item level responses predict the most variance in cognitive presence?



Structural Equation Modeling



Effects

Table 2: Unstandardized Path Coefficient and Total Effects

Path	Unstandardized Coefficient	Standardized Coefficient
<i>Direct Effects</i>		
Gender to Teaching Presence	.06*	.04*
Age to Teaching Presence	.02**	.08**
Academic Level to Teaching Presence	.00	.01
Teaching Presence to Social Presence	.52**	.52**
Teaching Presence to Cognitive Presence	.49**	.47**
Social Presence to Cognitive Presence	.52**	.49**
<i>Total Effects</i>		
Gender to Social Presence	.03	.00
Gender to Cognitive Presence	.05	.00
Age to Social Presence	.01	.00
Age to Cognitive Presence	.02	.00
Academic Level to Social Presence	.00	.01
Academic Level to Cognitive Presence	.00	.01
Teaching Presence to Cognitive Presence	.77**	.72**

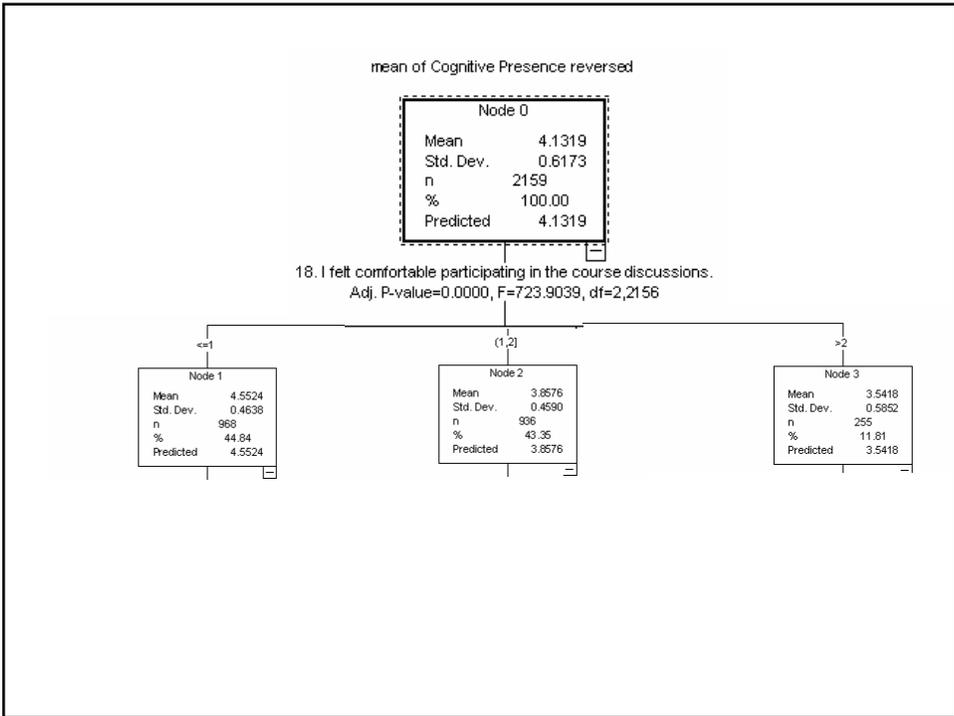
Note. *p<.05, **p<.001

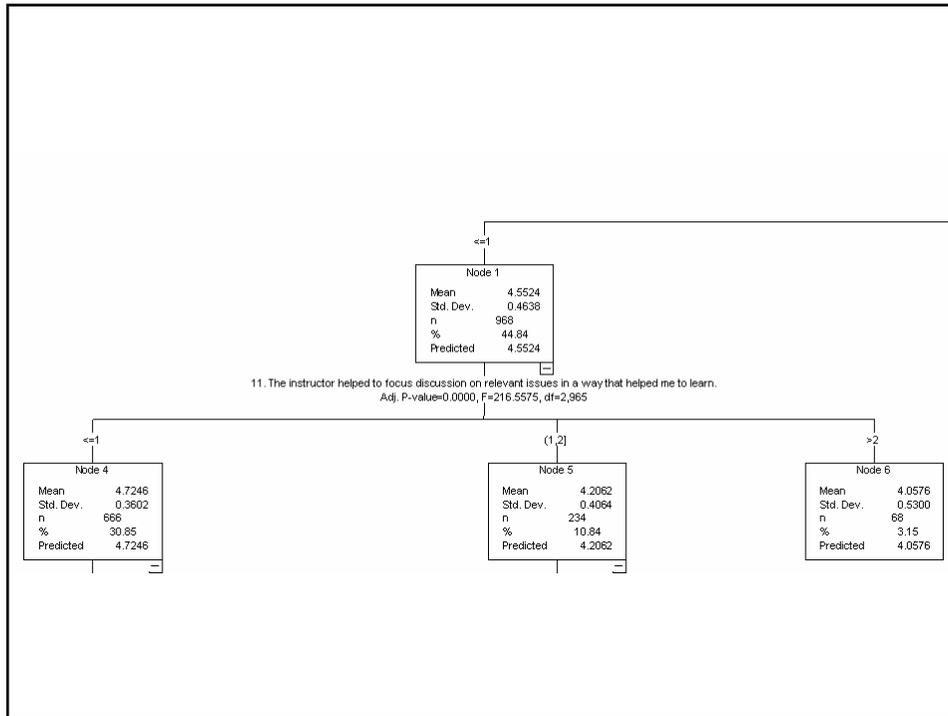


CHAID Analysis

Questions:

What item level responses predict the most variance in cognitive presence?





Social Presence and Learning

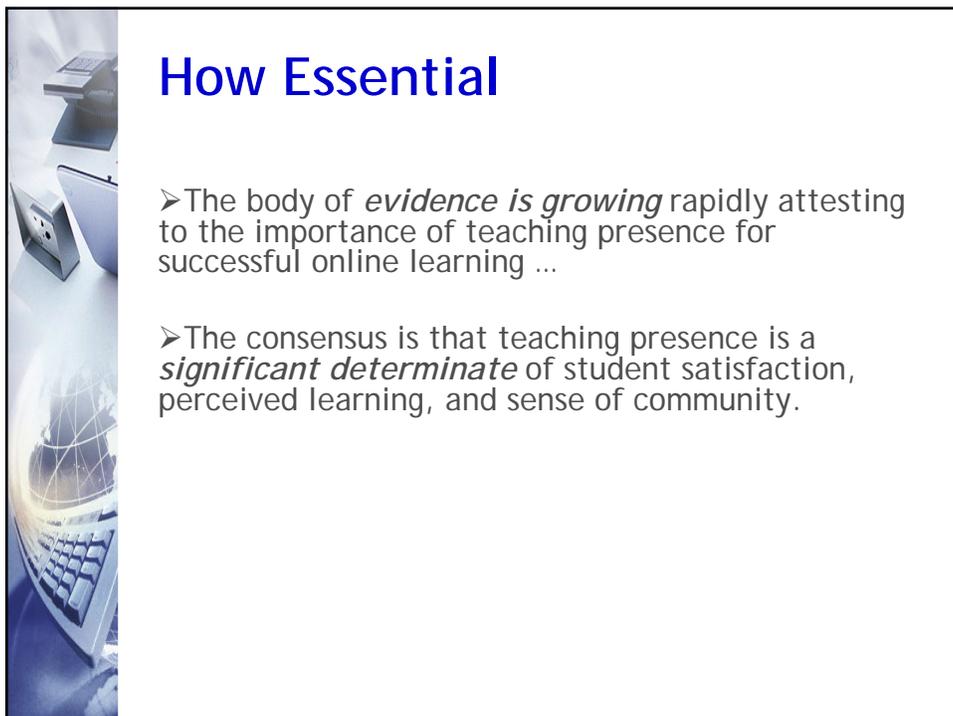
- Acquisition metaphor
- Participation metaphor
- Dialogic metaphor
- Social presence is crucial if learning is conceived as dialogic and as participation in practice
- Learners need to be inducted into dialogue and practice to appropriate new knowledge through interaction



Conclusion and Directions for Further Research

Dr. Marti Cleveland-Innes

Athabasca University



How Essential

- The body of *evidence is growing* rapidly attesting to the importance of teaching presence for successful online learning ...
- The consensus is that teaching presence is a *significant determinate* of student satisfaction, perceived learning, and sense of community.



Next Steps

- How does online learning *community* develop through the three presences? (i.e. community if necessary, but not necessarily community?)
- How do the relationships between presences support online and blended communities of inquiry?
- How do we move CP past the exploration phase?
- Which aspects of TP are most critical?
- Is SP a required precursor to cognitive presence?

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