



XXIX International Congress of Psychology

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Invited Symposium. Learning in context: Constructing knowledge through sociocultural mediated activity.

Collaboration in Virtual Learning Environments: Debate vs. Product Elaboration Tasks

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Aim

▶ **Studying some characteristics of collaboration processes in two different instructional activities –a debate forum and a collaborative writing task– in a text-based asynchronous learning environment, through the analysis of participants' *teaching presence* and *cognitive presence***

Questions

- ▶ Does the instructional activity/task influence on how distributed teaching presence is exerted?
- ▶ Does the instructional activity/task influence on how cognitive presence is achieved?

Socio-constructivist perspective of teaching and learning

► CACL as a mediated process:

- Learning in CACL as a process of co-construction of shared knowledge**
- Teaching in CACL as a mediated process of assistance in the ZPD**

Socio-constructivist perspective of teaching and learning

► Key elements to understand individual and social processes of knowledge construction in text-based asynchronous learning environments: *Cognitive presence* and *Teaching presence*

Garrison, Anderson & Archer, 2001; Garrison & Anderson, 2003; Kanuka, Randu & Garrison, 2004; Gunawardena, Lowe & Anderson, 1997; Järvela & Hakkinen, 2000, 2001; Veldhuis-Dihermanse, 2002; Schrire, 2006

► Other important elements: Learning objectives; Task – type; Content; Group size; Computer support

De Laat & Lally, 2003; Strijbos, Martens & Jochems, 2004; Schelles & Valcke, 2006; Strijbos, Martens, Jochems & Broers, 2007

Socio-constructivist perspective of teaching and learning

- ▶ **Cognitive presence:** *The extent to which learners are able to construct - and improve - (joint) meaning*
- ▶ **Teaching presence:** *The extent to which teacher and other learners support and assist (joint) meaning construction*

Garrison, Anderson & Archer, 2001, Garrison & Anderson, 2003; Gunawardena, Lowe & Anderson, 1997; Järvelä & Hakkinen, 2000, 2001; Veldhuis-Dihermanse, 2002; Schrire, 2006; Coll, Bustos, & Engel, 2007; Rochera, Mauri, Onrubia, & De Gispert, 2007;

Methodology

► **Qualitative approach** to the study of two different instructional activities – a debate forum and a collaborative writing task - in a text-based asynchronous learning environment with university students

► **Part of a more extense research** on teaching, social and cognitive presence in text-based asynchronous learning environments:

- **Multi-Method approach**

(Strijbos & Fischer 2007)

- **Combination of quantitative and qualitative approaches (Social Network Analysis and Content analysis)**

(Hmelo-Silver, 2003 Gunawardena, Lowe & Anderson, 1997; Schelles & Valcke, 2005; Strijbos, Martens, Prims & Jochems, 2006; Weinberger & Fischer, 2006)

- **Combination of individual and social level analysis**

(Arvaja, Salovaara, Häkkinen & Järvelä, 2007)

- **Relevance of temporal dimension**

(De Laat et al. 2007; Chiu and Khoo, 2005)

Context

- ▶ Two activities --a debate forum and a collaborative writing task-- on the same content:
 - A Higher Education course on “Educational Psychology”
 - A teaching module on “Special educational needs and inclusive school practices”
- ▶ The two activities were a mandatory part of this module
- ▶ Moodle as Virtual Learning Environment

Participants

- ▶ 17 students and the teacher
 - **Debate forum**: students randomly assigned by the teacher to one of the two discussion groups -in favour or against “ability grouping” in schools
 - **Collaborative writing task**: these students were organized in four groups (three - four members)
- ▶ These students participated for the first time in CSCL activities

Methodology

Activity/task: Debate forum
Duration: 3 weeks
Students had to submit at least two postings per week, providing arguments either in favour of or against ability grouping
The teacher set the participation rules, opened the debate and summarized it at the end, but she made no other contribution all along the process
The activity was developed using the standard forum tools afforded by Moodle

Activity/task: Collaborative writing in small group
Duration: 3 weeks
Students had to write collaboratively a text on “inclusive education” in small groups. The text had to be submitted to the teacher at the end of the module
Small groups were organized and managed by the students themselves
The activity was developed using the standard forum tools afforded by Moodle (separate groups)

Data Corpus

- ▶ **The virtual classroom with all the activities, contributions and documents**
- ▶ **Activity logs**
- ▶ **Interviews with the teacher**
- ▶ **Teacher's syllabus and course material**
- ▶ **Students' self-reports (throughout the activity)**

Methodology

Teaching presence_ Support and assist (joint) meaning construction

Management of social participation SPM	<ul style="list-style-type: none">• Formulation of participation rules• Request for precisions of participation rules• Formulation of precisions about participation rules• Evaluation of participation rules or participants' behavior• Evaluation of the degree of fulfillment of participation rules• Proposal to review participation rules
Management of academic task TSM	<ul style="list-style-type: none">• Establishing task characteristics• Request for precisions task characteristics• Formulation of precisions task characteristics• Evaluation of task characteristics• Evaluation of the degree of task fulfillment• Proposal to review the task characteristics
Management of (shared) meanings SMC	<ul style="list-style-type: none">• Contribution of personal meanings• Contribution of meaning from external sources• Reference of one or more meaning sources (books, articles, etc.)• Contribution of documents of external sources• Identification of topics or subjects• Reminder of meanings displayed previously by other participants• Favorable evaluation• Critical evaluation• Request for contribution of meaning from other participants• Response to a request• Request for precisions or explanations• Response to a request for precisions or explanations• Identification or correction of misconceptions or misunderstandings• Expressions or manifestations of doubts• Contribution or synthesis or summaries

Methodology

Cognitive presence – Cognitive complexity

<i>Categories - Codes</i>	<i>Description</i>
Identify – Define CC_id	An isolated element of the topic is presented
Classify - Organize CC_cl	Two or more elements of the topic are presented, with taxonomic relationships between them
Explain - Relate - Compare CC_ex	Two or more elements of the topic are presented with argumentation and/or reasoning
Reflect - Conclude – Theorize CC_re	Conclusions of the topic are established through explicit deductive arguments based on scientific principles

Methodology

Cognitive presence – Learning (functional use of content)

<i>Categories/codes</i>	<i>Description</i>
No content used CA-nc	The specific content of the module is not used.
Rote learning CA- rl	Some terms of the specific content are used by the student, but in an apparently non-functional, literal manner
Functional use of content - partial CA- ufp	Student contribution is based to some extent on the concepts and ideas of the specific content, that are correctly used and correctly understood
Functional use of content CA- uf	Student contribution is fully based on the concepts and ideas of the specific content, that are correctly used and correctly understood

Coding, reliability and validity

- ▶ Dimensions and units to analyse cognitive presence theoretically defined
- ▶ Codes for each dimension empirically tested and refined
- ▶ Reliability achieved through the development of coding rules
 - ▶ Initial coding by independent coders (10% of contributions)
 - ▶ Discussing disagreements. Decision rules. Codes re-definition.
 - ▶ New independent coding. Reliability index: Cohen's Kappa (K) [PRAM]
- ▶ Qualitative coding, sorting and reduction of data with Atlas-ti

Chi, 1997; Rourke, Anderson, 2004; Chiu & Khoo, 2005; Beers, Boshuizen, Kirschner, Gijssels, 2007; De Weber et al. , 2006; De Weber, Van Keer, Schellens, Valcke, 2007, Strijbos & Sthal, 2007

Results

Activity 1 — Debate

Main results:

TEACHING PRESENCE

- Social participation and academic task rules are scarcely discussed
- Construction of shared meanings through contribution of personal meanings, favourable evaluations and critical evaluations

- Low level of cognitive complexity of individual contributions
- Low level of functional use of learning content

COGNITIVE PRESENCE

Results

Activity 2 — Collaborative writing (Small Group 1)

Main results:

TEACHING PRESENCE

- High number of contributions devoted to discuss and establish academic task rules
- More diverse devices for construction of shared meanings (i.e. request/answer, expressing doubt...)

- Low level of cognitive complexity of individual contributions
- High level of “Learning content is not **used**” as well as “Functional use of learning content”

COGNITIVE PRESENCE

Conclusions

- ▶ The kind of instructional activity/task (debate in large group vs. collaborative writing in small groups) influences both *teaching* and *cognitive presence*:
 - ▶ *Teaching presence*:
 - ▶ Strong difference in the amount of contributions devoted to discuss and establish academic task rules
 - ▶ Different range of devices for constructing shared meanings
 - ▶ *Cognitive presence*:
 - ▶ Different patterns of typical cognitive level
 - ▶ Higher level of “functional use of content” in the collaborative writing activity/task

Conclusions

- ▶ In activity 1, the teaching presence is fundamentally addressed to a shared meaning construction (90%). Nevertheless, this continues generating :
 - ▶ Low level of cognitive complexity in students' contributions in the activity
 - ▶ Low or middle-low levels of learning (functional use of learning content) in the activity

The new hypothesis :

- ▶ Distributed teaching presence exerted by non-expert peers does not assure high levels of cognitive presence, even if the students' participation throughout the task is high
- ▶ In futures studies: To explain the quality of distributed teaching presence.



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Thank you very much!

The results presented here were obtained by the GRINTIE research group from the University of Barcelona. Project Title: Supporting learning in text – based asynchronous learning networks teacher presence and teacher functions in knowledge building processes. Principal researcher: Cesar Coll Salvador.



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Results

Activity 1 — Debate

Teaching presence — General

	SPM	TSM	SMC	Total
Freq.	28	7	319	354
Percent.	7,91	1,98	90,11	

SMC: Shared meaning construction

TSM: Management of academic task rules

SPM: Management of social participation rules

Results

Activity 1 — Debate

Teaching presence — Shared meanings construction

	S_sp	S_rf	S_re	S_vf	S_vc	Other	Total
Freq.	111	19	28	76	63	22	319
Percent.	34,8	5,96	8,78	23,82	19,75	6,9	

S_sp: Presentation of personal meanings

S_vf: Favourable evaluation of the contributions of others

S_vc: Critical evaluation of the contributions of others

S_re: Reminder of meanings previously presented

S_rf: Reference of meanings from external sources

Results

Activity 1 — Debate

Cognitive presence — Cognitive level

	CC_id	CC_cl	CC_ex	CC_re	Total
Freq.	67	3	37	5	112
Percent.	59,82	2,68	33,04	4,46	

CC_id: Identify – Define

CC_ex: Explain

CC_cl: Classify – Organize

CC_re: Reflect - Conclude

Results

Activity 1 — Debate

Cognitive presence — Learning

	CA_nc	CA_up	CA_ufp	CA_uf	Total
Freq.	33	43	31	5	112
Percent.	29,46	38,39	27,68	4,46	

CA_up: Learning content is periferically used (rote learning)

CA_nc: Learning content is not used

CA_ufp: Learning content is functionally used (partially)

CC_uf: Learning content is functionally used

Results

Activity 2 — Collaborative writing (Small Group 1)

Teaching presence — General

	TSM	PSM	SMC	Total
Freq.	123	25	53	201
Percent.	61,19	12,44	26,37	

TSM: Management of academic task rules

SMC: Shared meaning construction

SPM: Management of social participation rules

Results

Activity 2 — Collaborative writing (Small Group 1)

Teaching presence — Shared meanings construction

	S_sp	S_doc	S_re	S_vf	S_vc	S_rq	S_rrq	S_ed	Other	Total
Freq.	6	6	7	6	10	6	4	4	4	53
Percent.	11,32	11,32	13,21	11,32	18,87	11,32	7,55	7,55	7,55	

S_vc: Critical evaluation of contributions of others

S_re: Reminder of meanings previously presented

S_sp: Presentation of personal meanings

S_vf: Favourable evaluation of contributions of others

S_doc: Contribution of documents or external sources

S_rq: Request for contribution or meanings from other participants

S_rrq: Answer to a request

S_ed: Expression or manifestation of doubts

Results

Activity 2 — Collaborative writing (Small Group 1)

Cognitive presence — Cognitive level

	CC_id	CC_cl	CC_ex	CC_re	Total
Freq.	9	22	6	1	38
Percent.	23,68	57,89	15,79	2,63	

CC_cl: Classify – Organize

CC_id: Identify – Define

CC_ex: Explain

CC_re: Reflect - Conclude

Results

Activity 2 — Collaborative writing (Small Group 1)

Cognitive presence — Learning

	CA_nc	CA_up	CA_ufp	CA_uf	Total
Freq.	13	9	3	13	38
Percent.	34,21	23,68	7,89	34,21	

CA_nc: Learning content is not used

CA_uf: Learning content is functionally used

CA_up: Learning content is periferically used (rote learning)

CA_ufp: Learning content is functionally used (partially)