Students' competences for online collaboration in Higher Education: some proposals from two case studies

Mauri, T.; Onrubia, J.; Clarà, M.; Colomina, R.; Naranjo, M.
University of Barcelona
GRINTIE (http://www.ub.edu/grintie)

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Aim

- To explore the competence of collaboration on-line and to provide conceptual and analytical tools in order to make it operational

- To apply these tools for understanding how this competence is carried out spontaneously in two different instructional activities

- Starting from this analysis, to discuss some proposals about the competences for online collaboration that should be promoted in Higher Education

Theoretical approach: Concept of competence

Competence:

- **Instructional construct: a way to concrete educational goals in the curriculum**
- **Educational goals as:**
  - Situated and contextualized goals
  - Merge of different kinds of contents and cognitive and meta-cognitive processes

A possible definition (from OECD DeSeCo):

"A competence is defined as the ability to meet complex demands successfully through the mobilization of mental prerequisites. Each competence is structured around a demand and corresponds to a combination of interrelated cognitive and practical skills, knowledge, motivation, values and ethics, attitudes, emotions, and other social and behavioural components that together can be mobilized for effective action in a particular context"

(Rychen & Salganik, 2003)

Theoretical approach: Online collaboration learning

- **The "Interaction paradigm"** (Dillenbourg *et al*., 1996)

- **Focus on:**

  - **Interaction processes among the participants** (Stahl, Koschmann & Suthers, 2006)

  - **Interpsychological mechanisms of knowledge construction through interaction:**
    - Presenting and formulating one own's ideas and points of view
    - Giving and asking for assistance
    - Co-constructing shared knowledge -- intersubjectivity as key element

(Baker *et al.*, 1999; Bereiter & Scardamalia, 2003; Crook, 1998; Mäkitalo *et al.*,2002; Roschelle & Teasley, 1995; Stahl, 2005; Weinberger & Fischer, 2006)

Theoretical approach: Online collaboration learning

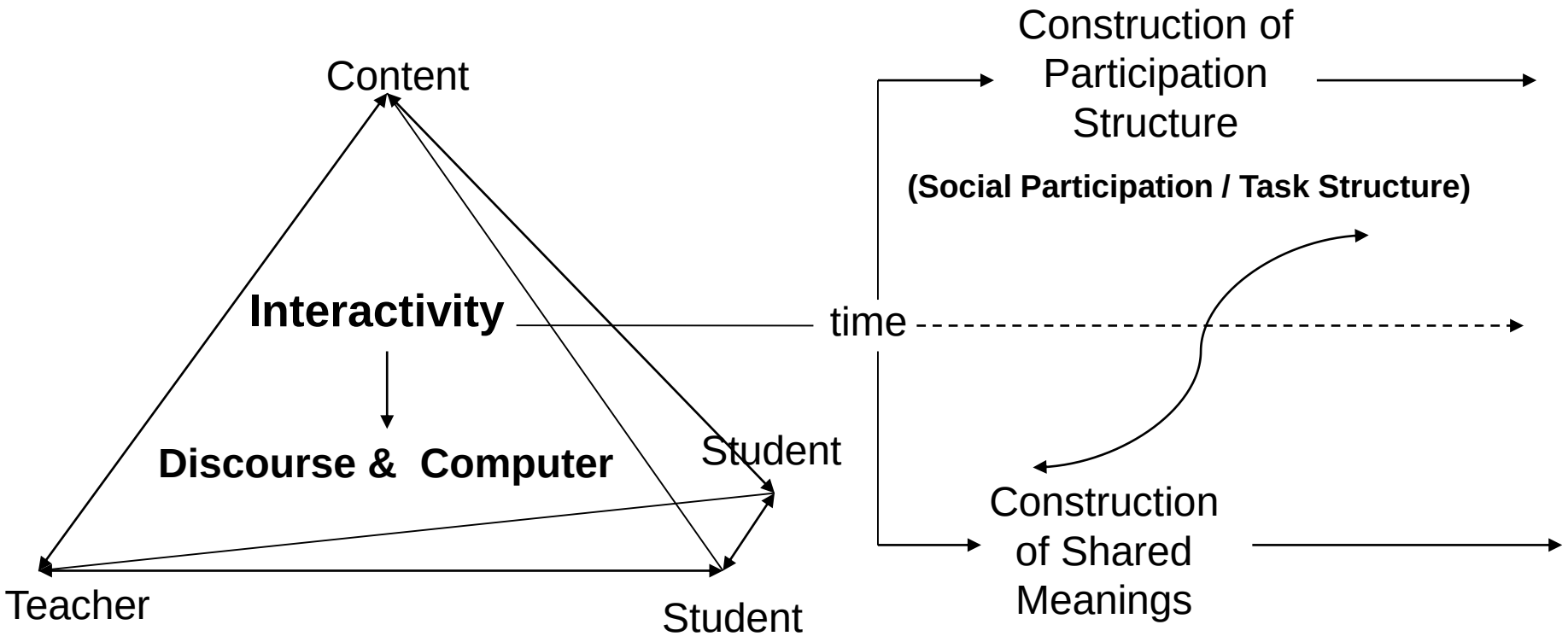
- **A socio-cultural, constructivist, situated, distributed view of learning and cognition**

  (Lave & Wenger, 1991; Mercer, 2000; Salomon, 1993; Tharp *et al.,* 2000; Vygotsky, 1979; Wertsch, 1988)

  - **Knowledge as a:**
    - distributed process between individual and contexts where they are involved
    - social practice are a result of collaboration ship
  - **Language as a key element to negotiate and construct:**
    - social and academic task participation structures
    - shared meanings
  - **Learning in CSCL as a:**
    - mediated process of co-construction of shared knowledge
    - situated process in the relationships or networks of distributed activities

  (Arvaja *et al.,* 2007; Garrison & Anderson, 2003; Hakarainnen, 2003; Scardamalia & Bereiter, 1994; Stahl, 2005)

Theoretical approach: Online collaboration learning as interactivity



Coll et al. (1992); Mercer (2001); Erickson (1982)

Methodology : Dimensions of online collaboration

Management of Social Participation -- SPM

Presentation of ideas	Formulation of participation rules
	Evaluation of participation rules or participants' behavior
	Evaluation of the degree of fulfillment of participation rules
	Proposal to review participation rules
Ask	Request for precisions of participation rules
Offer/ Elaboration	Formulation of precisions about participation rules (answering a request)

Methodology : Dimensions of online collaboration

Management of Academic Task -- TSM

Presentation of ideas	Establishing task characteristics
	Evaluation of task characteristics
	Evaluation of the degree of task fulfillment
	Proposal to review the task characteristics
Ask	Request for precisions task characteristics
Offer/ Elaboration	Formulation of precisions task characteristics (answering a request)

Methodology : Dimensions of online collaboration

Construction of (Shared) Meanings -- SMC

Presentation of ideas	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
	Favorable evaluation
	Critical evaluation
Ask	Request for contribution of meaning from other participants
	Request for precisions or explanations
	Expressions or manifestations of doubts
Offer/ Elaboration	Identification of topics or subjects
	Reminder of meanings displayed previously by other participants
	Response to a request
	Response to a request for precisions or explanations
	Identification or correction of misconceptions or misunderstandings
	Contribution or synthesis or summaries

Methodology

Dimensions for quality of learning

Cognitive quality – Cognitive complexity_ CC

Categories - Codes	*Description*
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
Dimensions for quality of learning

Cognitive quality – Learning (functional use of content) _ CA

Categories/codes	*Description*
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**

Methodology: Context & Activity /Task

- 17 students
- A Higher Education course on “Educational Psychology”
- A teaching module on “Special educational needs and inclusive school practices”
- Duration of every task: 3 weeks
- Asynchronous written communication

Activity/task: Debate forum	Activity/task: Collaborative writing in small group
Students had to submit at least two postings per week, providing arguments either in favour of or against ability grouping.	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
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	Small groups were organized and managed by the students themselves
The activity was developed using the standard forum tools afforded by Moodle	The activity was developed using the standard forum tools afforded by Moodle (separate groups)

Methodology: Data corpus

►**Register of complete online interaction all along the two activities -- contributions and documents**

►**Complementary data: activity logs, interviews with the teacher, teacher's syllabus and course material, students' self-reports (throughout the activity)**

Results

Activity 1 — Debate

Main results:

COLLABORATION PATTERNS

- **Social participation and academic task rules are scarcely discussed, mainly through *presentation* (*SPM _ TSM*)**
- **Construction of shared meanings mainly through *presentation* (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**

QUALITY OF LEARNING

Results

Activity 2 — Collaborative writing (Small Group)

Main results:

COLLABORATION PATTERNS

High number of contributions devoted to discuss and establish academic task rules, mainly through *presentation (SPM, MTS)*

- **Construction of shared meanings mainly through *presentation* --but more diverse devices (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"**

QUALITY OF LEARNING

Conclusions/ Discussion:
On the characteristics of the competence

1. **The conceptualization of the competence of online collaboration for learning**

   - **The competence can be successfully analyzed by means of the two proposed dimensions:**

     - **Social and Task Management**

     - **Construction of Shared Meanings**

Conclusions/Discussion:

On the characteristics of the competence

2. **On the spontaneous performance of the competence of online collaboration for learning:**

- **Relevance of the kind of collaborative task (i.e. debate vs. elaboration of writing products)**
  - **Differences on the amount and quality of the Management of Social Participation**
  - **Differences on the quality and distribution of the Management of the Construction of Shared Meanings**
- **Spontaneous patterns of 'collaboration' leading to summative patterns of interaction and low level learning**

Conclusions/Discussion: On the teaching of the competence of online collaboration

1. **Authenticity of the task and learning context:**

   - **Even if specific and deliberated instructional activities are used, if the task is not meaningful the competence is not successfully achieved**

   - **Some socio-institutional characteristics of higher education contexts (i.e. individual grades, competition, superficial approach …) may negatively affect the possibility of collaborating online**

Conclusion/Discussion: On the teaching of the competence of online collaboration

- A wide sample of ecologically relevant situations and tasks should be identified and used in online collaboration teaching
- The different dimensions of online collaboration should be taught on an interrelated manner, in the context of authentic, sense-making tasks

Conclusion/Discussion: On the teaching of the competence to teaching students

- Teaching students need to be taught:
  - to collaborate online
  - to collaborate online for learning
  - to teach how to learn through online collaboration
- Teaching metacognitive knowledge and conscious regulation strategies for online collaboration for learning is particularly relevant for teaching students to learn to collaborate online

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Thank you very much!

The results presented here were obtains 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

Dimensions of online collaboration

	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

Management of Social Participation Rules

	Present.	Ask	Offer/Elab.	Total
Freq.	28	0	0	28
Percent.	100	0	0	100

Results

Activity 1 — Debate

Management of Academic Task Rules

	Present.	Ask	Offer/Elab.	Total
Freq.	7	0	0	7
Percent.	100	0	0	100

Results

Activity 1 — Debate

Shared Meaning Construction

	Present.	Ask	Offer/Elab.	Total
Freq.	273	7	39	319
Percent.	85,58	2,2	12,22	100

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)

Dimensions of online collaboration

	TSM	PSM	SMC	Total
Freq.	123	25	52	200
Percent.	61,19	12,44	25,87	

TSM: Management of academic task rules
SMC: Shared meaning construction
SPM: Management of social participation rules

Results

Activity 2 — Collaborative writing (Small Group)

Management of Social Participation Rules

	Present	Ask	Offer/Elab.	Total
Freq.	19	4	2	25
Percent.	76	16	8	100

Results

Activity 2 — Collaborative writing (Small Group)

Management of Academic Task Rules

	Present	Ask	Offer/Elab.	Total
Freq.	86	25	12	123
Percent.	69,92	20,32	9,76	100

Results

Activity 2 — Collaborative writing (Small Group)

Shared Meaning Construction

	Present	Ask	Offer/Elab.	Total
Freq.	28	10	14	52
Percent.	53,85	19,23	26,92	100

Results

Activity 2 — Collaborative writing (Small Group)

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
CC_uf: Learning content is functionally used
CA_up: Learning content is periferically used (rote learning)
CA_ufp: Learning content is functionally used (partially)