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Building geographical knowledge together: the case of a Geography teaching on line course

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Abstract

This contribution introduces the experience of a geography teaching on-line course offered by the University of Padua. The course was planned paying particular attention to the organization of a socio-constructivist learning environment, which was supposed to foster a more and more autonomous learning process and the students' ability to connect theory and practice. Special attention was given to interaction and knowledge construction, according to two models of analysis: the MDE TAT, elaborated by the Athabasca University research group, and France Henri's Computer Conferencing and Content Analysis. The practical application of the models was to check the coherence between the epistemological assumptions and the methodological approach of the course, and to consider the organizational, methodological and teaching presence aspects in a socio-constructivist environment. As the course was mainly addressed to experienced teachers, we have tried to verify if their way of interacting, building and sharing knowledge could be related to a "community of practice".

Keywords: Geography Teaching, E-Learning, Computer Mediated Conference, Community of Practice, Learning Environment Planning

1. Introduction

Geography is not only the "science of places", offering fixed and unalterable images of territories; it is also a dynamic discipline making the students mature a "glance at the future". This is the challenge we intended to take on in the course of "Geography Teaching", activated in the academic year 2010-2011 by the Faculty of Education Sciences (degree course "Education Sciences for Infancy and Pre-adolescence").

The common denominator of the various activities was the attention paid to make geography an interesting, motivating subject, in order to bring about a profitable transfer of skills from the university context to the professional one. In particular, a work methodology referred to the principles of the *Knowledge Building Community* (Scardamalia, 2002; Cacciamani and

Giannandrea, 2004) was adopted for the course planning; the educational context we defined was meant to support a "*blended learning community*" integrating distance and face-to-face activities.

The methodologies that were proposed were meaningful both as a means and a model of learning, and, most of all, as a "working style" aimed at promoting the capability to operate in a team, an essential skill for today's teachers. Moreover, the theoretical framework was connected to the teaching dimension so that the students were offered, as future teachers, new tools and methodologies to experience and understand territory, landscape, space, environment and places, seen as "five doors" offering different entrances and suggestions.

The analysis of the forum messages, with a parallel application of France Henri's model and of the MDE TAT (two CMC – Computer Mediated Conference – analysis tools: see second part of this paper), has given interesting results: on line collaboration can be usefully employed to develop convergent thinking, as regards some basic concepts of geography, as well as divergent thinking, for the personal application of a richer and more complex idea of the discipline from the teaching point of view

2. Organization of the geography teaching course

The educational itinerary proposed aims at having students reflect on geography, considered as a discipline which analyses the territorial forms of social action. It is not a geography which photographs static objects and offers performative visions of the world; it is a dynamic geography, following the traces of man on the Earth's surface. Keeping in mind this objective, the work team[1] planned a course aimed at promoting a different perspective of knowledge development (Scardamalia and Bereiter, 2003) oriented towards the elaboration of new ideas starting from problems, through the collaboration among the members of the community.

[1] The group work is composed by a teacher (L. Rocca), a course coordinator (F. Bussi) and a tutor each 25 students.

According to Wenger (Wenger, 1998), learning is conceived as the result of a "practice" within a community. As Midoro observes (Midoro, 2002), a community of practices is a group which forms in a spontaneous way and is generally represented as a group of mutually engaged individuals, sharing a repertoire and a joint enterprise (Figure 1). In the case of e-learning, the challenge is to recreate the learning conditions of a community of practices in a context so to say "artificial", a "Web territory" (Rocca, 2003) which, anchored to the real territory, could act as an amplifier for the development of skills addressed to the reading of the territory.

In the following paragraphs we are going to introduce the planning of the "Geography teaching" course, which was meant to create a "Community of Practice" (Midoro, 2002).

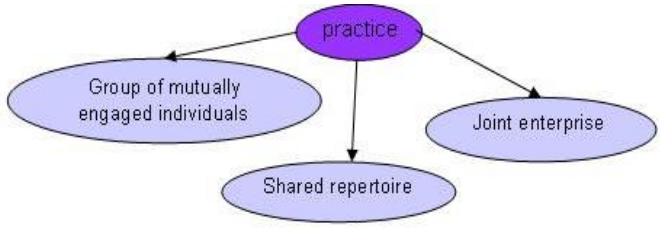

Figure 1. A Community of Practice.

2.1 Mutually engaged individuals

The students of the course belonged to a *learning community*[2] created *ad hoc* for this educational itinerary. The students were 76, selected among the teachers on duty in nursery and primary schools who still did not have a degree[3] and who were offered the possibility to

[2] "Reduced to its fundamental elements, [a learning community] could be articulated as follows**:** a group of students and at least one educator who, for a while and motivated by common vision and will, are engaged in the pursuit of acquiring knowledge, abilities and attitudes" http://www.tact.fse.ulaval.ca/fr/html/prj-7.1/communy2.html.

[3] Before the "Decreto del Presidente della Repubblica n. 471 del 31 luglio 1996" was issued, it was possible to teach in nursery and primary schools thanks to the high school diploma from "istituti magistrali" or "socio-pedagogical" secondary schools and to the teaching diploma through a state examination. Since the academic year 1998/1999 there are in Italy

attend the online course of Bachelor's Degree named "Education Sciences for Infancy and Pre-adolescence". The disciplines are the same as in the traditional four-year course but they focus on the enhancement of the teaching experience and on the reflection and meta-reflection on teaching practices.

The group involved in this course appeared to be heterogeneous as for their working experience: 20% had been teaching for more than 15 years, 40% from 5 to 10 years, 40% from 1 to 5 years. In spite of this heterogeneity, the individuals were mutually engaged, with members linked one another by functional relations to reach the fixed aims. These aims, shared from the very beginning, were meant to mature geographical skills of territorial reading and teaching skills, for the re-evaluation of a discipline too often perceived as limiting and little stimulating (Rocca, 2008).

2.2 Shared repertoire

A learning community employs a "shared repertoire" made up of objects and procedures. In the course of "Geography teaching" the "shared repertoire" was aimed at: a) getting the students to know some key concepts of geography; b) adopting and sharing a viewpoint for territorial reading; c) becoming familiar with the concepts, the tools and the languages of geography. More specifically, this repertoire consisted of:

a) a course guide proposed with a video as well as with an hypertext, with the purpose to orient the students and to introduce the activities and the materials available;

b) the book *Geoscoprire il mondo* (Rocca, 2007) written with the coordinator and some of the course tutors, and some working sheets drawn from Calandra (2007) and subsequently modified, useful to summarize the ideas about the theoretical framework (the geography of complexity, Turco, 1988) and functional to the teaching planning according to this perspective;

c) a glossary with the most important "concept words" of geography which were linked to all the texts proposed so that they could be easily found;

d) four learning itineraries proposed in a hypertextual form. The first one had the aim to clarify the key concepts of geography and to offer a look at the territory seen as a product of the social action (Turco, 1988). The second one considered the "territorialization actions" (Turco, 1988; Raffestin, 1981; Calandra, 2007), that is the actions that man accomplishes on the territory in order to control its complexity. The third one focused the attention on territorial processes teaching, that is on the methodologies to employ to "read" the territory while considering the variety of the involved actors. The fourth one aimed at clarifying the multiplicity of tools and methods potentially usable in the practices of territorial reading;

e) some examples of operational itineraries created for nursery and primary school which became useful models for inspiration, together with videos and examples of territorial reading (the Po Delta, Padua "town of waters");

f) the technology employed in the course, that is Moodle (acronym of *Modular Object-Oriented Dynamic Learning Environment*)[4], an *open source* platform (Figure 2) which is particularly fit for planning "learning environments" (Calvani and Rotta, 2000) as it provides a variety of possibilities for teacher-student interaction (Gaddi and Tonegato, 2006).

As regards *procedures*, these are related to: the modes of development of the course; the ways of communicating; the ways participants interact with each other; the adaptation to schedule; the modes of the personal performance self-evaluation in order to monitor one's learning process (Midoro, 2002).

specific university courses to prepare nursery and primary school teachers.

[4] http://moodle.org/?lang=en.

Figure 2. Moodle learning environment.

2.3 Joint enterprise

According to Midoro's views (Midoro, 2002), to realize the joint enterprise three types of activities were planned: reification, participation and negotiation of meanings.

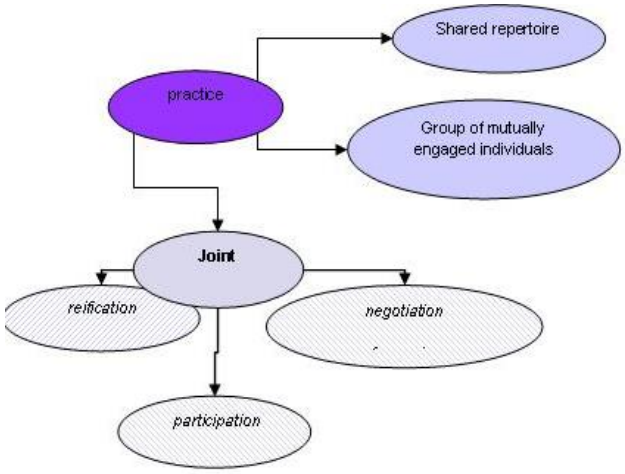

Figure 3. Structure of a Community of Practice.

2.3.1 Reification

The reification is realized by carrying out some "tasks" assigned to the learning community which constitute "formative experiences", that is operational ways to practice and not simple "drills" (Galliani, 2006).

While planning the course and thinking about reification, we fixed some cognitive objectives (outcomes), that is the educational aims that each student had to reach in progress and at the end of the course, as well as the detail of each requested outcome.

Specifically (see Figure 4) a type of outcomes was planned taking into account on the one hand the importance to "situate" learning – to create continuity with the previous experiences – and on the other hand to develop skills able to recognize the epistemological approaches to geography in one's teaching style, in the class materials and in the activities already carried out or simply planned. What is represented in figure 4 obviously illustrates the ideal organization and results of the course: actually, as we will see in the second part, the objectives were not fully achieved.

To make clear the centrality of the students as regards the educational itinerary, the first activity proposed was a questionnaire meant to shed light on the students' personal relationship with geography: the purpose was to start a reflection process on the personal beliefs and opinions about geography and, at the same time, on the potentialities of the discipline both at nursery and at primary school.

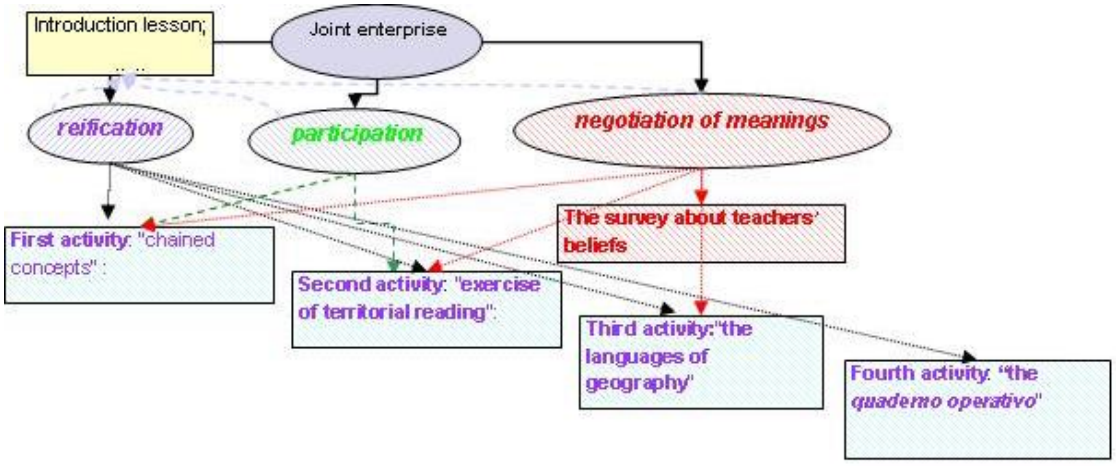

Figure 4. Outcomes of the course.

2.3.2 Participation

This aspect considers the continuity with which the course is attended. During planning, the moments of participation of the different members of the community were detailed, together with the relational objectives supposed to be fundamental also for reification. In the first face-to-face lesson there was the presentation of the project and its negotiation, not about objectives or evaluation, but as regards the schedule of activities and their organization.

It has to be observed that the participative approach is considered as an operational dimension searching for a new sociality through the action of influencing the other subjects and of taking decisions jointly (Branca and Colombo, 2003). In fact, we aimed at mutual influence through dialogue so that the students could come to a common decision especially in the first two activities, which had intentionally been placed at the beginning of the process.

The facilitator of such a process was the key figure of the tutor who was responsible of a virtual classroom made up of 25 to 30 students and had the role of *coach* and *mentor* with the task of fostering, encouraging and facilitating participation, writing a report of the most significant contributions and assigning the tasks. The team of tutors had both technological and content skills[5], which was an ideal condition to help students achieve both cognitive and relational aims.

2.3.3 The negotiation of meaning

It is the most delicate phase of the practice, as it concerns the moment of joint meta-reflection on the learning processes, on the developed knowledge and on their meaning within the contents of the course. In the course each phase was concluded with a moment of negotiation of the meanings, summarized and formalized by the tutors through a story board completed step by step.

2.4 Evaluation

According to the model of the "learning community which constructs knowledge" used for the course planning, evaluation was meant to be a *transformative* and *distributed* activity: *transformative* as it was oriented towards the continuous improvement of the knowledge produced by the community and of the work strategies adopted; *distributed* because each member of the community participated to such a process. Both the cognitive and the relational spheres were considered, with a particular focus on collaboration and socio-affectivity (Figure 5), which are indispensable skills in the teaching activity.

[5] The tutors were Francesco Bussi (disciplinary expert) as coordinator, Cristina Minelle (expert in on line learning processes and methodologies) and Michela Grotto (with a degree in Education Sciences – thesis on geography teaching – with previous experience of on line tutoring).

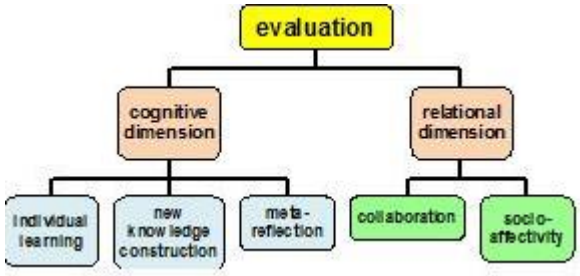

Figure 5. Evaluation.

Evaluation was carried out taking into consideration several elements:

a. *scaffolding* through the analysis of all the produced materials and the assessment of participation in the different activities; in this way, the student had an idea of the trend and of the evolution of his/her *performances*. The interaction in the forum, assessed also as regards the relational aspect, considered the collaboration in terms of organization efficacy and task-orientation, as well as the attention to create a positive climate in the work group. In particular, we took into account the *relevance* and the *clarity of the conceptual elaboration*; the *critical thinking and the ability to argue one's ideas*; the *significance* and *originality of the ideas* (cognitive aspect);

b. final assessment, through the assessment of the "quaderno operativo" proposed to the students with the objective to summarize the knowledge acquired through the realization of an operational itinerary, potentially immediately exploitable in a class;

c. content assessment through a semi-structured test. This concerned the comprehension of the course contents and the acquisition of the key concepts. The score was assigned automatically and constituted 30% of the overall mark.

3. Analysis of a forum section in order to reflect on the course organizational and methodological aspects and to improve them

An online context designed to be the environment where a learning community would work needed attention to several aspects, most of all as far as coherence with the chosen model was concerned.

On the other hand, *a posteriori*, the teaching group carried out a careful analysis of the results and of the products created by the students as well as of the levels of learning attained (*reification*). The results of the analysis were also interpreted through the students' positive feedback, which confirmed the process emerged from the analysis and their satisfaction with the course[6]. Three points of view[7] were considered in qualitative terms:

1. the teacher's point of view (mainly referred to the results);
2. the students' point of view (referred to the perception of the efficacy of the course and of the collaboration with the colleagues);
3. the tutors' point of view (referred to the perception of efficacy of their work, in terms of scaffolding of the learning process and of interaction with each student and with the virtual class as a whole).

Moreover, the teaching group thought it useful to study the interaction in the forums in detail – on a qualitative and quantitative basis – by applying two different models of analysis in order to verify the coherence between the aim to achieve (to build an online community of practice) and the result. The intention was not to carry out a complete analysis of all the aspects implied in the learning process – which goes beyond the scope of this paper, too –, rather to look for its improvement by intervening on the organization and the methodologies chosen for the next courses.

For this reason, it was necessary to choose a part of the discussion which could show the process that was taking place; the selected section

[6] As students attend the geography course during their third year at university, we considered that they were able to express a critical opinion about the fulfilment of their expectations.

[7] A lot of literature deal with the multiplicity of the points of view needed for evaluation; see, for example, Castoldi (2009).

was situated in the middle of the course, when the "community" was already formed but the students were not under the pressure of the final paper yet.

What we are going to propose is therefore the qualitative/quantitative part of a more complex and wide evaluation process realized by the teaching group.

3.1 Analysis of a forum section through two models: MDE TAT and France Henri's

The two models we employed have complementary features and partially super-posed functions. The first one, fruit of the research of a group operating at Athabasca University, is influenced by socio-constructivism while the second by cognitivism. Starting from the classification of the messages, the first model highlights the modes of communicative inter-action for the construction of shared meanings, while the second one uses the same analysis to focus on the "quality" of the cognitive processes at work (the meaning of this distinction will be more clear in the models introduction).

Their characteristic is to be congruent with the planning of the course. This emerges from the "pact" made with the students: if the achievement of an individual meaningful learning is quite implicit (this is tested especially with Henri's model), less expected is the way this result is proposed and the idea guiding the learning processes. Students were in fact not only invited to study the materials, but also to participate in discussion forums. The activities to be done in the forum were matter of assessment also in terms of the quality of the students' participation.

Therefore, through the choice of an essentially cognitivist analysis model, it was possible to understand if there had been some knowledge construction while the use of an assessment tool of socio-constructivist type tested if the relational climate of the forum activity was coherent with its assumptions and if it had achieved the expected results.

After the analysis, it was clear that even if the case study could be traced back to an actual collaborative learning situation[8], problem solving skills, group work skills and new knowledge construction skills[9] – by sharing one's own experience with the others' one (Trentin, 1999) – were only partially activated.

The use of the two models requested the division of the messages into meaningful units, the same for both models; we chose as "unit" (as the solutions proposed in literature are various) the phrase or the sentence or, in some cases, some closely related sentences. The analysis – with both models – was carried out through the computation and the classification of these units.

3.1.1 The MDE TAT

The model of Patrick J. Fahy, Gail Crawford, Mohamed Ally, Peter Cookson, Verna Keller and Frank Prosser (2000)[10], the MDE TAT, uses the following classification categories of messages or of meaningful parts of the message.

1. Vertical questioning: the focus is on the acquisition of data or information; the question is addressed to the person considered as most likely to have what is supposed to be the right answer.
2. Horizontal questioning: the aim is to start or invite a dialogue (see also Zhu, 1996). Horizontal questions ask for collaboration and discussion in order to find an

[8] "Collaborative learning" is now a very common expression in education but it is often wrongly employed. Pierre Dillenbourg explains why it is necessary not to take it for granted: "When a word becomes fashionable – as it is the case with 'collaboration' – it is often used abusively for more or less anything. The problem with such an over-general usage is two-fold. Firstly, it is nonsense to talk about the cognitive effects ('learning') of 'collaborative' situations if any situation can be labeled 'collaborative'. Secondly, it is difficult to articulate the contributions of various authors who use the same word very differently" (Dillenbourg, 1999).

[9] According to "Recommendation of the European Parliament and of the Council of 18 December 2006 on key competences for lifelong learning", especially as regards "Learning to learn" and "Social and civic competences".

[10] The model has been revised and integrated up to now (2003, 2005, 2008, 2010).

acceptable answer (or a "compromise solution") or to obtain consensus; participants do not think there is necessarily a "correct" answer.

3. Statement: it does not contain a "self-revelation" or invite dialogue. The speaker offers information to the other participants who are supposed to be "uninformed or in error". The speaker thinks he/she owns the right answer.
4. Reflection: the speaker "reveals his or her internal conflicts, values, beliefs, reasoning processes, misgivings, and doubts and provides other insights into his or her personal, individual, and usually invisible thinking processes" (Fahy et al., 2000). The speaker thinks that listeners are interested in what they say and that they will be empathetic, accepting and supporting.
5. Scaffolding: the speaker invites the other participants to comment. This kind of comments include those referring to others' views or to shared experiences[11].

In a following version, Fahy (2005) defines some support indicators to analyze in depth the nature of scaffolding: these indicators were partially adapted to the specific situation of analysis of this forum, especially with the unification of the various types of messages salutations, greetings, thanks and signatures, due to a simplification need.

3.1.2 France Henri's model

In the method proposed by France Henri in her contribution "Computer Conferencing and Content Analysis" (1992), emphasis is put on the content analysis, which on the one hand reveals cognitive and metacognitive dynamics and strategies (the written track permits to seize elements which are hardly isolable in an oral exchange) and, on the other hand, takes into account also the social and interactive aspects. The approach used is of a prevalently qualitative type and is based on a cognitivist idea of learning, which insists more on the process than on the product (learning is meaningful when the learner elaborates in an active way the information and succeeds in integrating it in his/her cognitive pre-existing structures). The framework establishes five dimensions – participative, social, interactive, cognitive and metacognitive – distributed on three levels: *what* is said (the "raw material" of the analysis), *how* (first three dimensions taken into account, divided into more detailed categories) and the *processes* and *strategies* which were used (last two dimensions, also divided into other categories[12]). Each dimension is characterized by a description and by some indicators which permit the application of the model of analysis; this takes place in a matrix where each message is cut up into units of meaning, which are afterwards studied as content in order to identify the presence of the five dimensions. France Henri's model has not been updated and revised as the MDE TAT and therefore it could seem obsolete: actually, the fruitful combination of the two models had already been tested[13], proving that the model was still valid especially if integrated in the parts which were considered to be weak in the later literature.

3.1.3 Features of the forum and of the participants

The activity we considered for analysis (the third one) lasted five weeks. It was not the first cooperative activity of the group, but it came after an individual study phase supported by a modest interaction in the forum, more centered on the dimension of individual expression of what was studied than on the interactive construction of new knowledge. It was, in short,

[11] Fahy clearly states the idea in his article of 2003: "Scaffolding and engaging comments (*TAT* 4) are specifically intended to initiate, continue or acknowledge interpersonal interaction, and to "warm" and personalize the discussion by greeting, welcoming and recognizing others" (Fahy, 2003). In 2005 he clarifies the so-called *Support Indicators*.

[12] In the following analysis we will introduce the other categories.

[13] An application of the two models was carried out by Francesco Bussi and Cristina Minelle as the final paper for the "Master in Metodologie della formazione in rete" (University of Venice – Ca' Foscari): as far as we know, it was the first time that the two models had been applied jointly to an online interaction for the construction of geographical knowledge.

the first fully structured interaction in the forum.

The group working with the tutor M.[14] was formed by 26 students. The forum discussion, which concerned the whole group, was about geography tools and languages. Those are usually two of the most interesting topics for teachers; as teachers usually have a lot of personal examples to share and discuss. The tutor, as we have seen, had to provide scaffolding and to guide the discussion: she explained the task indicated in the student's guide and in the introduction to the forum, supported the clarification of the concepts and summarized messages. The analysis of the messages, divided into units of meaning (Table 1), concerned a part of the forum, the first one, where it was possible to see the students' development of cooperative behaviors.

Summary of forum participation	
Messages of the forum	83
Messages of the tutor	33
Students belonging to the group	26
Participants to the discussion	13
Messages analyzed	First part of the forum (43 messages, 18 of which are from the tutor)
Units of the analyzed messages	212
Units of the tutor's messages	76

Table 1. Forum participation.

13 students out of 26 participated to this first part of the activity (which was compulsory). As regards assessment, this forum was associated to another one which had to lead to the production of the "quaderno operativo". 6 out of 13 non-participants did not take the final exam, while only one of the other 7 was heavily damaged in the overall evaluation of the course.

In addition to the "visible" participation, the analysis of the logs (that is, the number of times the participants enter the learning environment) proved to be very significant: in fact, it was possible to discover that many of the students who did not actively participate to the forum actually followed frequently the specific discussion as "observers". It is difficult to understand if it depended on the type of cognitive style, on emotional difficulties to intervene in a public space (which should have been actually overcome on the third year of an online degree course), on students' typical "opportunism" or (at least partially) on wrong choice of the activity: the point is that this invisible participation limited the possibilities and the number of interactions but actually it did not necessarily undermine the results of the students involved in it[15].

3.1.4 The analysis with the MDE TAT

Here is a summary (Table 2) of the main data emerged from the analysis with the MDE TAT:

Type of unit of meaning	total	tutor	students
Horizontal question	3	3	0
Vertical question	8	8	0
Referential statement	28	1	27
Non-referential statement	16	7	9
Reflection	61	7	54
Scaffolding	74	43	31
Quotation and paraphrase	15	6	9
Citation	10	0	10

Table 2. MDE TAT Analysis.

The transformation of the data into graphs suggested some interesting reflections.

[14] The forum has been chosen for several reasons: 1) it did not involve directly F. Bussi and C. Minelle (tutor of the other two groups) but, as the structure of the activities was known, it could be analyzed exploiting a lot of details of its planning, of the activities, etc.; 2) as we aimed at obtaining an objective perspective, the choice of a "third" forum allowed to keep separated – even if not completely, as the course involved everybody – people who had to evaluate and the object of the evaluation; 3) the different skills of the two "observers" made it possible a more complete and varied analysis.

[15] Woo and Reeves consider that this situation is actually quite common: "Admitting and supporting the naturally occurring role of "lurker," i.e., someone who reads the messages of an interaction but does not contribute in online interactions [68], is a challenge not to be ignored" (Woo and Reeves, 2008).

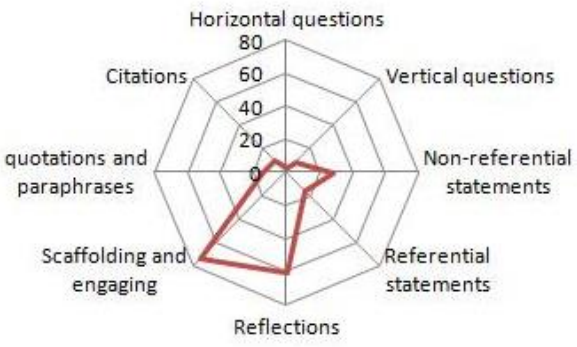

Figure 6. Types of messages.

Out of the overall number of the messages, "reflection" and "scaffolding" represent the prevailing types (Figure 6). Anyway, the lack of horizontal questioning indicates that peer interaction is modest: in fact, the following graphs, concerning the tutor and the students separately, show that the scaffolding was carried out mainly by the tutor (Figure 7)…

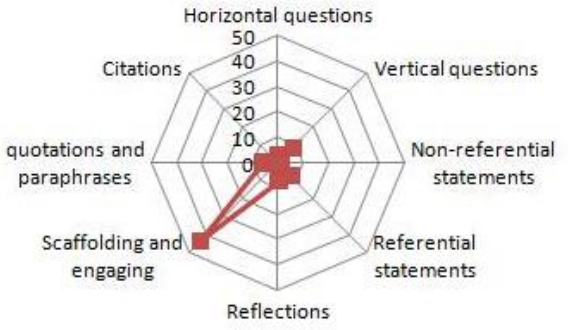

Figure 7. Tutor's messages.

...while the reflections answering the tutor's suggestions were mainly due to the students (Figure 8).

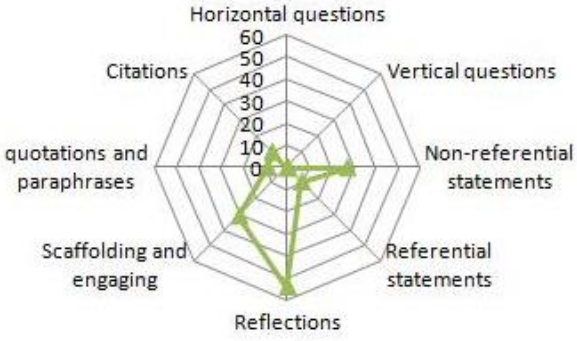

Figure 8. Students' messages.

If we pass to the analysis of the data concerning the Support Indicators (Table 3), some elements typical of interaction are reinforced.

	students	tutor	total
acknowledgements	4	6	10
agreements	0	6	6
apologies	1	1	2
Salutations, greetings and closings	10	19	29
emoticons	1	1	2
Horizontal questions	0	1	1
humour	0	0	0
Invitations		9	9
references	4	1	5
Rhetorical questions		1	1
thanks	2	4	6
signature	19	18	37

Table 3. Support indicators.

As it appears from Figure 9, the simple signature of the message and the opening and closing lines are the main part out of the total amount of the supporting elements[16].

[16] Because the analysis with France Henri's model will highlight similar results as regards social presence, it is necessary to take into account that it can take place through other channels and tools (students' community and instant messages from the platform as regards Moodle; mail, skype, messenger, telephone, etc. as regards communication "extra Moodle"), so it is not possible to state that social presence is totally absent: the organization of this degree course (not only of this specific course) offers the students several interaction and reciprocal help possibilities, so, in the forum analysis, we need not forget that a part of the social dimension, but also of the cognitive and metacognitive ones (it is sufficient to think about the exchange of reports, summaries, recordings, maps, etc. which normally takes place in the students' community, where there is a specific forum which teachers and tutors cannot enter), passes through vie we cannot know. To be aware of it permits to modulate the results of the analysis and to

Figure 9. Support indicators.

The graph concerning the tutor shows a variety of scaffolding actions (Figure 10), especially if we remove the simplest elements (signatures, opening and closing lines):

Figure 10. Support indicators without closing and signature.

The fundamental role of invitations is evident: we will see that these invitations constituted the guide for an in-depth investigation of concepts and knowledge.

On the contrary, the dimension of reciprocal scaffolding was really limited, as it was very often a sort of one-to-one dialogue with the tutor (Figure 11).

avoid too clear-cut hypotheses, which could turn out to be superficial and partial.

Figure 11. Support indicators – Students.

3.1.5 The analysis with France Henri's model

The analysis carried out with the method proposed by France Henri featured some elements which confirmed and integrated what had been pointed out with the MDE TAT.

As regards the participative dimension, as stated before, only by looking at the logs does the two-faced reality of this forum emerge: few students participated actively though almost all the group followed its development. The "manifest" dimension, in fact, highlights only the scanty participation to this first part of the activity.

Also the analysis of the social dimension confirmed the data already emerged with the MDE TAT: it was an extremely scant dimension[17], totally absent for some students, although it was very present in the tutor's messages; in some messages the unit of meaning which indicated the social presence coincided with the signature (some messages were in fact not signed and lacked any kind of greeting or introduction[18]).

The analysis of the interactive dimension was particularly interesting: except for two cases (the tutor suggesting a radio program and a student

[17] What has been explained in note 16 has to be taken into account also in this analysis.

[18] Even if Moodle forums clearly show the authors of the messages (also with a photo if the students have inserted it), the impersonal and automatic identification provided by the platform can hardly be compared to a signature).

wishing Merry Christmas), all the messages turned out to be answers and comments to what had previously been written; answers and comments (implicit or explicit[19]) were however always determined by what had been suggested, proposed or asked by the tutor. Therefore, although the communication implied several people, it appeared to be essentially bidirectional; only two messages, one of which is quoted below, explicitly mentioned a colleague's contribution:

> […] per riprendere la proposta di Lavinia, conoscere, ad esempio, il paesaggio nel quale è inserita la scuola – l'aula attraverso le percezioni […]". M.A.N. (referring to Lavinia's proposal, to know, for example, the landscape in which the school is located – the classroom through the perceptions).

Other references can be found in a sort of final recapitulation provided by a student; here are some excerpts:

> *Mappa mentale*: è la rappresentazione mentale che ognuno possiede di un determinato ambiente. Come dice Ilaria i bambini osservano e fanno esperienza di un territorio e solo dopo riescono ad organizzare mappe mentali […] (Elisabetta). (*Mind map*: it is the mental representation that everybody has of a certain environment. As Ilaria says, children observe and experience a territory, and only after that they succeed in organizing their mental maps […]).
>
> *Libri*: per i bambini della Scuola dell'Infanzia è utile avere libri che rappresentano immagini, disegni, foto, … (Elisa). (*Books*: for nursery school children it is helpful to have books with images, drawings, photos, ...).
>
> *Utilizzo di plastici*: introduce il concetto di tridimensionalità, quello di scala e permette osservazioni da punti di vista diversi. (Loredana). (*Use of plastic models*: it introduces the concepts of three-dimensionality and of scale, and it makes it possible to observe things from different points of view). S.B.

Actually, Henri's model does not allow to understand precisely the direction of the interactions (this is in fact one of the most frequently noticed weaknesses[20]); moreover, if we separate the units of meaning that compose the messages, it is more difficult to notice that also statements which could seem "independent statements" can be traced back, at a "macro" level (namely the message), to answers, comments, etc. This difficulty can be solved looking at the first units of the messages, where generally the aspect of "answer" is more evident; as regards "bidirectionality" (communication tutor-student and, most of all, student-tutor), it can be seized from the association of this continuous interaction with the lack of references to the other students: the favorite interlocutor is definitely the tutor.

3.1.6 The results of the analyses

If we join the results of the analysis of the interactive dimension with those concerning the cognitive dimension, we notice that not only did the tutor stimulate the discussion, but she also made it advance from the point of view of the contents and of knowledge construction. As previously explained, the course was addressed to teachers already working in schools: the enhancement of their professional experience and the reflections on their teaching practices had a major function; that is why one of the objectives of the forum discussion was the shift from the reflection on theory to the mastering of the concepts, and from this to their use in order to interpret experiences and activities already carried out, or as basis for future planning. In this part of the forum, this shift (theory --> exemplifications, but not about personal teaching activity --> personal experience and examples) was started in each stage by a precise incentive from the tutor, who invited the students to take a step forward. This shift will be considered also in the analysis of the geographical aspects and illustrated by some examples.

[19] The interactive dimension is divided into "explicit interaction", "direct answer", "direct comment", "implicit interaction", "indirect answer", "indirect comment", "independent statement".

[20] Henri dealt with issues connected with interaction also in other articles. See Henri, 1992b; 2007.

The units of meaning of the messages can be assigned mostly to the skill that France Henri defines as "elementary clarification"[21] (also the tutor's incentive questions can often be described with the indicator "asking a relevant question", belonging to this skill); this wording must not deceive into thinking about trivial reflections[22], as a further division proposed in the model allowed us to distinguish a "surface processing" and an "in-depth processing". Thanks to the analysis of the communicative exchange carried out in this way, it was possible to grasp the complexity of many contributions belonging to the category "elementary clarification", as in the following example, which is a good illustration of the indicator "identifying relevant elements" with in-depth processing like "offering new elements of information" and "providing proof or supporting examples".

> Ciao, cerco di inserirmi nell'intervento di Marco con delle esemplificazioni. *Cos'è una mappa mentale?* La tecnica delle mappe mentali sviluppata da Tony Buzan negli anni '60 si basa sulla prerogativa fondamentale della mente umana di associare idee e pensieri in maniera non lineare […]. Ecco un esempio: […] M.R. (Hello, I try to integrate Marco's contribution with some examples. *What is a mind map?* The mind map technique, developed by Tony Buzan in the 1960s, is based on the essential prerogative of the human mind to associate ideas and thoughts in a non-linear way […]. Here is an example: […]).

Finally, if we consider the metacognitive dimension, this is not very visible; only a few "traces" indicate some processes in the knowledge construction, as in the following example:

> Riflettendo sugli strumenti della geografia nella scuola dell'infanzia, credo che i bambini dimostrino, se ben sostenuti dall'insegnante, un grande interesse per i libri. E.B. (Thinking about the tools of geography in nursery school, I believe that children show, if well supported by the teacher, great interest for books).

Another example of metacognition is the final summary (partially already presented), which can be seen as a strategy to organize knowledge:

> Provo a fare una sintesi degli strumenti da utilizzare in geografia ognuno dei quali prevede […] un linguaggio particolare, funzionale alla didattica disciplinare […]. S.B. (I try to summarize the tools to be used while teaching geography, each of them implying […] a special language, meant to support geography teaching […]).

A last remark: also in the second part of the forum (conclusion of the activity and of the course) there is no "explicit declaration" about the activities and the results supposed to be achieved; anyway, messages of this type can be found in the common forum (with the teacher's participation). Here are two examples (both messages were written by students of this group):

> Sono partita che mi sembrava di essere in un enorme labirinto […] ma la tutor era sempre presente e mi ha accompagnato e incoraggiato. Sbirciare e partecipare ai forum non era un peso... anzi... era un momento piacevole e gratificante... i commenti precisi e puntuali della tutor lanciavano ogni volta delle piccole sfide cognitive. S.B. (At the beginning I felt as if I was in an enormous labyrinth […] but the tutor was always there, she accompanied and supported me. To participate in the forums was not a burden, on the contrary it was a pleasant and gratifying moment… the tutor's accurate and timely comments were each time a little cognitive challenge).

> Non posso fare altro che confermare in pieno le parole di Marco, ci avete dato davvero un nuovo modo di intendere e vivere la geografia. M.A.N. (I cannot but confirm Marco's words, you really gave us a new way to understand and experience geography).

At the end of the analysis, the fruitful integration of the two models was confirmed and

[21] The other skills are "in-depth clarification", "inference", "judgment", "strategies".

[22] The indicators are clear: "identifying relevant elements", "reformulating the problem", "asking a relevant question", "identifying previously stated hypotheses".

permitted to seize some key elements of the course. The analysis carried out with the MDE TAT, in fact, highlighted from a quantitative and "synchronic" point of view some peculiarities about the ways knowledge is socially constructed that France Henri's model allowed us to investigate thoroughly and follow in its development (in a more "evolutive" dimension) as well as in its level of complexity. What distinctly emerged was the necessity to reflect about how to improve participation, especially if we wish to emphasize the process and not only the outcome, or, rather, if we consider the acquisition of the ability to collaborate with other people as an outcome.

3.1.7 Geography and geography teaching

From a more "disciplinary" point of view, the most significant aspect in the part of the forum which was analyzed is the students' maturation and their personal mastering of geographical concepts (as "space", "place", "landscape", "environment", "territorialization", "structure", etc.).

The object of the third activity was in fact "to focus the attention on the tools and on the different languages of geography for nursery and primary school".

As previously observed, at the beginning of the forum the students replied to the tutor's suggestions mostly with messages which repeated ideas drawn from course materials or from other texts and books:

> In riferimento alla disciplina geografica e ai suoi strumenti, Staluppi G.A. […] individua alcuni linguaggi che si relazionano con le altre discipline: […] L.R. (As far as geography and its tools are concerned, Staluppi G.A. […] identifies some languages which are related to other subjects […]).

After this introduction, the author of the message added the list of the languages indicated by Staluppi, with no element of personalization of the content or support indicators; anyway, the progressive consolidation of the basic concepts induced the most active students to follow the tutor and to make the learning meaningful and personal[23].

> In effetti con i bambini piccoli è importante rendere chiare le conoscenze e quindi in un lavoro di ricerca sul territorio, per esempio, ritengo indispensabile fotografare, e /o videoregistrare i luoghi […], per poi osservare, confrontare e condividere emozioni e idee scaturite dall'esperienza concreta. L.B. (Actually, with small children it is important to clarify knowledge; therefore, in a research activity on the territory, for example, I think it is essential to take photos and/or to videotape the places […], and then to observe, compare, and share emotions and ideas derived from concrete experience).

The idea that mastering the tools (maps, mind-maps, drawings, photos, but also songs, clothes, food, etc.) and the languages (graphic, figurative, literary, mathematical, etc.) of geography passes concretely through the planning of activities inspired by the children's experience emerging from the examples provided by some students, which often came from their daily experience.

> …nelle classi prima e seconda direi che l'ideale sarebbe concentrarsi su ambienti molto conosciuti […] poi possiamo spaziare un po' più in là […]. S.B. (in the first and second year classes I think it would be better to focus on well-known environments […] then we can go a little farther […]).

This represents the premise so that the "performative" images of geography (learned by heart) undergo a critical analysis thanks to the multiplication of the points of view. But even more significant is the moment when the students recognize in their own activities the way to implement the new vision of geography

[23] "Constructivist teaching of geography places emphasis on the fact that the individuals should think more and understand that they are responsible for their own learning, and should learn to control their own behaviours. Geography teaching introduced a holistic perspective according to the constructivist approach. Geography teaching should take a place in the active participation of students in the process of holistic and meaningful relationships, while processing topics and multi-dimensional thinking skills in students related to events should be developed" (Aydin, 2010).

they are acquiring:

> […] la foto è molto evocativa, mi fa pensare a quando i miei alunni hanno provato a rappresentare il parco-giochi che avevano deciso di "adottare". E.F. ([…] the photo is very evocative, it makes me think about my pupils trying to represent the playground they had decided to "adopt").

> In una classe quarta per la rappresentazione del proprio territorio dal punto di vista geografico ho pensato di attivare un ipertesto multidisciplinare in cui sono inseriti link […] costruiti dai ragazzi, che rimandano ai vari e significativi elementi presenti in esso. […] L.C. (In a fourth year class, for the representation of the territory from the geographical point of view, I decided to activate a multidisciplinary hypertext […] with links made by the pupils, referring to its various and significant elements. […]).

In the following message, the teacher's ability to plan is oriented to promote the skill of children to become active subjects according to the needs of the activities they intend to realize and to the concrete problems they are confronted with.

> […] ritengo sia molto importante che i bambini possano "manipolare" il territorio, in classe ad esempio cambiamo spesso la disposizione dei banchi […] sono piccole, piccolissime cose, ma li aiuta ad impadronirsi e affezionarsi alla loro aula e a gestire meglio lo spazio a loro disposizione. S.B. ([…] I think it is very important that children can "handle" their territory; for example, in our classroom we often change the arrangement of the desks […] these are small, very small things, but they help them to take possession of their classroom and to love it, as well as to manage their space better).

The sequence of the messages, copied here in chronological order, clearly shows the direction of the tutor towards a progressive construction of the skills in terms of "education to/in/for the territory". The results achieved are coherent with the organization of the course, indicated by the epistemological and methodological models, in terms of geographical skills and awareness.

Anyway, what emerged from the application of the models also urged to modify the tutors' interaction in the forums (that is, the kind of "teaching presence") in order to make more profitable the learning environment of the following courses.

In particular, the teaching group aimed at maintaining a very high level of cognitive and social scaffolding and at monitoring – in progress – the formulation of the new geographical concepts shared by the students by orienting the tutors' interventions mostly towards the virtual class as a whole rather than towards each single student.

Furthermore, a similar in-depth socio-constructivist and cognitive analysis applied to the new forum discussions and students' satisfaction at the end of the course seems to confirm that the class evolved from a community of learning to a community of practice.

4. Conclusions

Several considerations emerge from the experience of the "Geography teaching" course: on the one hand, there is the confirmation of distance education potentialities (as we have seen, it is possible to construct new knowledge and, at the same time, to consolidate and systematize the skills which were previously acquired); on the other hand, there is the necessity to organize and to manage a learning environment which was planned so that the students can be active and mutually engaged, not only when "reacting" to the tutor's and the teacher's incitement, but also assuming participative and proactive attitudes which really place them at the centre of the learning process.

Through the collaboration developed in the "Geography teaching" course it is possible:

a) to exploit the "mediatic" dimension of geography, by offering "geographical experiences" as operational ways to practice the discipline in its multiple forms and languages;

b) to master the tools and languages of the discipline, re-interpret them with specific role and meaning, and apply them in the daily teaching practice;

c) to discredit some of the preconceptions that accompany geography which had emerged in the very first part of the first discussion and in a questionnaire about the students' beliefs and opinions about the subject. The results said that geography was often considered as a subject which demands reasoning but most of all memory, and which is easily forgotten; at the end of the course, several students declared having changed their mind, thanks to the discovery and the satisfying implementation of tools and methodologies exploitable in their teaching practices;

d) to plan a change supported by reflections joining geography and teaching research.

The distance between what was planned and what was actually realized which emerged thanks to the analysis highlights the need to increasingly stimulate meaningful interaction[24] and cooperation between students, in order to give the tutor the possibility to become a real facilitator and to entrust the students with the construction of communication and knowledge: the teacher and the tutor have therefore to employ the data which emerged as a "compass" to make the course really "learner-centered" and to exploit the knowledge and the skills the students already own[25] in order to give meaning to what they learn. A meaning which, obviously, will be the starting point for new reflections, new projects, new challenges.

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[24] Interaction is not sufficient if it simply means that the messages are connected one another: what is needed is a "meaningful interaction", as Woo and Reeves (2010) underline according to Vrasidas and McIsaac remarks: "Meaningful interaction is not just sharing personal opinions. Instead, the interaction must stimulate the learners' intellectual curiosity and directly influence their learning" (Woo and Reeves, 2010, p. 181).

[25] Some useful suggestions can be found in Woo and Reeves, 2008; Pelz, 2010.

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