

The effects of a prescriptive scenario promoting collaborative tasks on students' learning in a prototype of a MOOC

Hasnae Mouzouri and Abdeljabbar El Mediouni

Laboratoire Cultures, Usages Numériques, Education et Langage (CUNEL)

Faculté des Lettres et Sciences Humaines d'Oujda

mouzouri.hasnae@gmail.com ; mediouniuk@yahoo.co.uk

Résumé

Cette recherche a été réalisée dans le contexte marocain sur un cours en ligne ouvert et massive (MOOC). Elle vise à répondre aux questions suivantes : Quel type de scénario répond le mieux aux besoins des apprenants dans une formation à distance ? Est-ce que les apprenants ont besoin d'un scénario prescriptif dans lequel ils sont amenés à effectuer des tâches collaboratives plutôt qu'individuelles ? Quel est le mode de travail (individuel/collectif) le plus apprécié par les apprenants dans une formation à distance ? Nos résultats ont révélé que l'usage d'un scénario prescriptif qui favorise les tâches collaboratives a un impact positif sur les performances des apprenants et leurs attitudes. Par contre, les apprenants semblent avoir une attitude négative pour les tâches collaboratives qu'ils sentent imposées.

MOTS-CLÉS : Activités d'apprentissage, apprentissage à distance, Mooc, tâches collaboratives, pratiques d'apprentissage.

Abstract

This research was conducted in Moroccan context to find out the impact of a prescriptive scenario promoting collaborative tasks on students' learning in a prototype of a Massive Open Online Course (MOOC). The main results which will be exposed cope with the following questions: what kind of scenarios in distance learning fits the needs of students? Do students need a prescriptive scenario in which they are incited to do collaborative tasks rather than individual ones to success in learning? What modality of working (individual/collective) is the most appreciated by students in distance learning? Our results showed that designing a scenario which favors collaborative tasks has positive impact on students' performances and their learning attitudes. Nonetheless, students seem to have no appreciation for collaborative tasks in any way when they feel constrained to do it.

Keywords: Distance learning, Mooc, collaborative tasks, learning practices.

1 Introduction

1.1 The main purpose of this study

In any form of distance learning, such as MOOCs *inter alia*, great emphasis is put on designing pedagogical scenarios which promote collaborative tasks to enhance students' learning. Indeed, as it has been widely suggested previously by the proponents of social constructivism (Bandura, 1977; Bruner, 1960) and recently by founders and followers of connectivism (Downes, 2009; Siemens, 2004), learning is a result of human-environment interactions which are rooted in socio-cultural context. This means that developing individual cognitive capacities requires the internalization of externally available knowledge which is created and constructed collectively with other individuals (Wake, 2001). Moreover, Vygotsky's (1978) concept of "Zone of Proximal Development" (ZPD) is an interesting idea which underpins collaborative interactions in learning activities. As a matter of fact, the capability of student's problem solving is developed when involved in collaborative activities with more capable peers.

In relation to this, several old and even recent studies (Molinari, 2004; McBride, & Fuller, 2007; Wei, Chen, & Kinshuk, 2012) have advocated the importance of social learning theory in fostering the social presence in distance learning, and, thus, affecting learning interaction (collaboration) and achievement. It is argued that connectedness in addition to the application of collaborative groups constitute a beneficial constructs, among others, that are able to impact positively learning outcomes. In this way, the success of online courses implies the design of conducive psychological environments (Simonson et al, 2006) in which these constructs are provided to ensure "students' engagement, retention and success" (McBride & Fuller, 2007).

Having developed a Community of Inquiry, or CoI for short, as a framework for explaining a deep and meaningful (collaborative) learning experiences (Garrison & Akyol, 2013; Rourke & Kanuka, 2009), Garrison et al. (2000) reported three basic interrelated elements in their framework, namely: social presence, cognitive presence and teaching presence.

Social presence refers to the degree to which learners feel socially and emotionally connected with others in an online environment; teaching presence is defined as the design, facilitation, and direction of cognitive and social processes for the realization of personally meaningful and educationally worthwhile learning outcomes; and cognitive presence describes the extent to which learners are able to

construct and confirm meaning through sustained reflection and discourse. (Karen et al., 2008, p. 1)

These three presences assume “... that effective online learning requires the development of a community (Rovai, 2002; Shea, 2006; Thompson & MacDonald, 2005;) that supports meaningful inquiry and deep learning” (Karen et al., 2008). But, how this happens?

It is well known that online programs provide opportunities for learners to post and submit assignments, to interact with instructors and fellow students, to collaborate on assignments, to co-construct the knowledge and build learning communities (Olson & Wisher, 2002), Garrison et al. (2000) suggested, through their CoI model, the development of a community of learners, as a result of the interaction of the three presences mentioned above, by providing “an environment that is supportive intellectually and socially, and with the guidance of a knowledgeable instructor, students will engage in meaningful discourse and develop personal and lasting understandings of course topics” (Rourke & Kanuka, 2009). Operationally, students are expected to communicate with each other and with their instructor using the collaborative and social tools, such as discussion forums for the following reasons (Garrison, 2011):

- Creating a climate and sense of belonging to the group and its educational goals (interpersonal communication).
- Recognizing, complimenting, and responding to the questions and contributions of others, thereby encouraging reflective participation and interaction (open communication).
- Identifying with the group and perceiving themselves as part of a community of inquiry, the discourse, and the sharing of meaning (cohesive communication).

Through these types of purposeful communication and interaction, students are expected to construct knowledge in a collaborative and reflective way. Thus they are able to move deliberately from (1) identifying the problem or the issue for further inquiry to (2) exploring (individually and collectively), (3) integrating and (4) applying the collaborative inquiry, which characterizes each of these four phases, can help to produce deep and meaningful learning when encouragement, support, constructive feedback on assignments, guidance, and guidelines for facilitating online discussions are provided to learners by their instructor.

Being inspired by Dewey (1933) who considered that reflection has to do with the state of learning and one’s own mind (knowledge and strategies; to know

and use), Garrison et al (2000) argued that the collaborative inquiry can help modeling and shaping thinking (cognition) through sharing experiences, asking questions, “seeking answers to these questions, and then confirming understanding, diagnosing misconceptions and testing solutions through applications and/or discourse.” (Garrison et al, 2000). Evidently, this requires the engagement of learners in learning activities which are designed in a way that enable them to collaboratively construct meaning and understanding within a community.

Nonetheless, one assumption was that although all the opportunities provided by online programs to enhance the learning outcomes through reflection, interaction and collaboration, learners rarely participate in online collaborations (Karsenti, 2013). It is stated by several researchers (see Karsenti, Gervais,& Lepage, 2002) that it is challenging to get students exchange online if there is no reward (grades, appreciations...) for whoever invests his time and energy to participate in collaborative activities. Finegold & Cooke (2006) and Meyer (2003) also discovered that in the absence of teaching presence, student discourse is impoverished (Rourke & Kanuka, 2009).

Certainly, the issue of online collaboration is really complex (Karsenti, 2013). Neither the question of rewards, nor the absence of teaching presence can justify independently of other reasons not participating to collaborative interactions. Indeed, there is evidence that online programs are generating complexity in learning situations mainly because of the feeling of isolation (lack of physical presence) which stems from the factor of distance. So it is becoming clear that confronting this complexity, requires to investigate the concept of presence, in all its forms, in a way that foster the sense of belonging to a community of learners to impact positively the overall success in online programs. This is, for some researchers, “essential to support collaborative learning and discourse associated with higher levels of learning.” (Garrison, 2007).

As distance learning has continued to expand, new forms of online courses have continued to emerge giving rise to questions about the real value of interaction (collaboration) and its effects on students’ performances in these courses. Yet, with the advent of MOOCs, many are wondering about the effectiveness of online learning with new communication media since enormous numbers of students are taught at once. So issues exist regarding the nature and extent of “social and communicative interactions between student and teacher, and student and student” (Picciano, 2002). Indeed,

The handful of studies that have been conducted on MOOCs have demonstrated that notwithstanding the enormous popularity of MOOCs today, the vast majority of learners do not participate in discussion forums (see Fournier, & Mak, 2011; Kop, 2011; Kop; Sanders & Manning, 2013). (Karsenti, 2013)

While various studies, as stated above, have approached the usefulness of collaborations in learning and investigated the concepts of presence and interaction, they have not been updated. Furthermore, they have not always examined the practical design of collaborative scenarios in distance learning and its effects on students' learning by measuring their actual performances. The purpose of this study is to analyze preferences, behavioral patterns and performances of students in a particular online course in which online collaboration is brought into play. The aim is to better understand how we can fit the needs of students in new contexts and situations brought by the expansion of distance learning. Data on collaborative interactions and performances were collected and subjected to analysis.

1.2 Context and research questions

1.2.1 Overview of the prototype of the proposed MOOC

In November 2013, the research team of Mohammed First University Language, Imaginary and Technological Mediation (LIMTEC) and the Centre for Studies and Researches on social Sciences and Humanities Oujda (CERSHO) launched the first prototype of a MOOC (Massive Open Online Course) about Instructional Design and Mediatisation of Courses (IDMC). It was a non credit course designed for approximately 100 participants from different regions of Morocco. This course was original since it suggested a particular scenario in which not only the main pedagogical resources (objects submitted to students) were represented using various media, but also learning activities were particularly prescriptive in a way that stressed the importance of collaborative processes and products rather than individual ones.

The prototype of the proposed MOOC was a six-week program aiming essentially at initiating the target audience to the fundamentals of instructional design for the mediatisation of their courses following a rigorous theoretical and practical process. For participants, who were asked to work for about at least six hours each week to achieve their learning goals, the course was really motivating since it represents for them an opportunity to develop their personal and professional competencies at their own rate of learning. In fact three levels

(elementary, intermediate and advanced), in the certificate of achievement, were proposed to them. So each participant had to realize different tasks which vary according to the desired level. These tasks combined a set of learning activities inspired by the main theoretical foundations which underpin the learning environment, namely: the behaviorism, the social constructivism and the connectivism. For instance learners were required each week to submit, in addition to interactive exercises, activities of production, collaboration, interaction, and execution to validate each sequence of the course.

Being designed to fulfill three major phases which are: the preliminary phase (the first week), the training phase (weeks 2, 3, 4 and 5) and the evaluation phase (week 6), the course suggested to students, as any technical system, the following spaces (Paquette, 2002):

- The space of information: which includes mainly chapters of the course and complementary resources mediated in various formats (pdf, websites, video lectures...).
- The space of collaboration: which offers to participants different tools of both synchronous and asynchronous communication such as EtherPad (Collaborations), Forums (Discussions) and electronic mails (inbox).
- The space of assistance: in which we had put online descriptive learning and activity guides containing links to the download pages of the main tools necessary for the realization of learning activities.
- The space of production: which provides essentially areas for submitting the assignments needed for each week during the training.
- The space of self-learning management: which makes available to participants a Calendar for the concerned learning activities, work plans and descriptive activity scenarios.

All these spaces were placed at the disposal of learners through a Computer Environment of Human Learning (CEHL) called “Canvas”. This latter is an open-source LMS (Learning Management System) built by Instructure⁴¹.

1.2.2 The prescriptive pedagogical scenario of the course

Schneider (2004) defines “the pedagogical scenario as a sequence of phases within which students have tasks to do and specific roles to play”. For Peter and

⁴¹ It is an American society located in Salt Lake City. To know more about it, see the following link: <http://www.instructure.com/about-us/>

Vantroys (2005) the pedagogical scenario “defines the activities which must be done by the learners and the tutors, the sequencing of these activities as well as the learning objects and tools that should be provided to the different actors”. Some authors like Depover (2003) note that any pedagogical scenario, which refers to a sequence of stages (mandatory or optional) that learners will have to follow, in one way or another must deal with the following dimensions:

- The nature of the material provided to learners and the outcomes.
- The sequence of tasks to be performed.
- The rules of constitution of groups.
- The modes of learners follow-up.
- The tools of analysis and reflexivity.
- The modalities for interaction.

The training phases	Weeks	Type of learning activity	Modalities of working		Tools of communication
	2	Activity 1: a glossary	Individual		Collaborations (EtherPad)
			Collective (extra marks)		
	3	Activity 2: a concept map	Individual		
			Collective (extra marks)		
	4	Activity 3: a website	Individual (Practical Work)		Discussions (Forums)
	5	Activity 4: a course scenario and its mediatisation through a website (Problem Situation: PS)	Individual	Making the choice between these two modalities of working	Electronic mails
			Collective		

Table 1: Sequencing of the learning activities during the training phase of the course

In an enlightening perspective, these authors seem to be agreed that the notion of pedagogical scenario covers anything related to guidelines whether prescriptive or descriptive that expose what learners have to do to achieve their objectives in terms of learning. So in the prototype of the MOOC, which is the object of our study, we have opted for a prescriptive scenario in which learners were asked implicitly, in most cases, to work collectively the learning tasks proposed to them.

Indeed, in the first two learning activities, even if learners were free to work individually or collectively the assignments, it has been indicated to them that extra marks will be given to those who have chosen to perform collaborative tasks. Except for the third learning activity (Practical work) which had to be done individually, in the fourth learning activity learners were totally free this time to select their most preferable working modality: individual or collective, since the scoring system was the same for the two modalities.

One can notice that the proposed learning activities were characterized by a strong prescription and a low degree of flexibility (Quintin et al. 2005). The prescriptive character of it concerns particularly the nature of instructions given to learners which deal with both the expected products and the process of production. Concerning the degree of flexibility, it is about the articulation of the collaborative learning tasks and their realization over time. So learners were constrained in some way to undertake these tasks to be rewarded with highest marks.

The following table illustrates the sequencing of the learning activities during the training phase which interests us under this communication.

1.2.3 The course's collaborative tasks

Before specifying collaborative tasks which characterize the pedagogical scenario of the course, we should define what these tasks are and how they will be investigated to find out responses to our research questions.

By referring to the definition of Dillenbourg (1999), collaborative tasks are situations in which two or more people learn or attempt to learn something together. These situations imply some actions, scripts and activities to be performed by learners drawn on their own will to engage in a fruitful exchange, and meaningful interaction between them to resolve the problem or the issue. Evidently this requires coordinated efforts, and particularly active participation to co-create together a common conception of the problem solving in order to achieve a common goal (finding a solution=learning).

In the prototype of the proposed MOOC, learners were asked to submit assignments for each week of the course, so when working collectively, they were asked first to form a working group before beginning exchanges on the organization of work second and finally submitting their assignments. Obviously the set of collaborative tasks related to the proposed learning activities consists in (i) posting messages in forums to form a working group (join or invite learners to a suggested working group), (ii) utilizing the Collaborations tool to define what to be done, who does what, the calendar of the subtasks, the objectives to achieve and

the product to develop....., and finally (iii) submitting assignments in the space of production which is dedicated to it in the platform and performing the pair evaluation.

How these specified tasks will be investigated to respond to our research questions? The first step is to shed the light on learners' participation in each collaborative task by analyzing both qualitatively and quantitatively their discussions quoted from forums and the Collaborations tools. Furthermore, it is essential for us to uncover the anatomy of learners' responses to our research questionnaires. After that, we will look at the study participants' performances to assess their learning progress by reference to their modality of working learning activities of the course. This is what will enable us to make sense of the proposed pedagogical scenario in terms of its impact on students' learning and attitudes.

1.2.4 The extent of transactional distance in the course

One approach that has gained attention in the design of online courses is that of Moore (1972). The theory of transactional distance identified the main variables (dialogue, structure and learner autonomy) that could be brought into play to understand the universe of teacher-learners relationships in the case of distance learning. Each of these variables relates directly to the behavior of teachers and learners and is reflected by the following categories:

Variables of transactional distance	Categories
Dialogue (Positive/ Negative)	Interactions (collaborations)
Structure (Flexible/ Rigid)	Instructional directions and guidance
Learner autonomy (dependent/ self-directed)	Degree of self-directed learning

Table 2: Categories of each variable of transactional distance

According to Moore (1972), the extent of transactional distance in an educational program is the function of these three sets of variables which influence in concert the effectiveness of online courses. So, in our online course, concerning dialogue, learners were informed they were expected to interact, in a purposeful way, first with teachers (and tutors) who would not always moderate the online discussions. Then with each other as facilitators through discussion forums and

Collaborations tool by asking and responding to questions, expressing opinions, and assessing each others' work...etc.

Well-structured materials, learning activities, strategies, and methods of assessment were developed to provide all the guidance and directions for learners. Therefore, the structure of the course was characterized by low flexibility somehow. There appears that learners' autonomy was not high since there is a relationship between dialogue, structure and learner autonomy (Moore, 1972), for the more dialogue and the greater the structure in a program, the less autonomy the learner has to exercise.

In light of what we have stated above, our course was a medium transactional distance where dialogue was permitted and possible in a program which was tightly structured to provide directions and guidance for learners who were used for a long time ago to be dependent in the school system.

It should be noted that variables of transactional distance of Moore (1972) could be associated with the main components of the Community of Inquiry (CoI) framework of Garrison et al (2000). Thus, variables of dialogue and learner autonomy reflect the social and cognitive presences and that of structure relates directly to teaching presence.

2 Methods

This was a research action study aiming at improving our practices concerning the design of pedagogical scenarios for online courses. Our main objective was to better understand students' needs when involved in distance learning programs. A mixed approach was adopted to analyze the data collected essentially from online questionnaires administered through the platform at the end of every learning phase and participants' tracks arising from Canvas' communication tools (Forums and EtherPads). Moreover learners' individual and collaborative productions (Pretests, posttests and assignments) were searched for the measure of their performances.

Being inspired by research works of Huberman & Miles (1991, 1994) and L'Écuyer (1990) on content analysis, we have opted for the following steps when analyzing participants' responses to questionnaires and contributions (commentaries, statements...) to discussions in communication tools:

- Step 1: Reading all texts repeatedly to identify meaningful units (key words, concepts, phrases...) and derive the main categories and

subcategories under which it can be grouped by referring to the objectives of the study.

- Step 2: Classification of the gathered data in function of the determined categories and subcategories.
- Step 3: Quantification and statistical treatment of the gathered data using, inter alia, descriptive methods and correlation analysis.
- Step 4: Interpretation of results.

Operationally, the author has coded and explored posting patterns of collaborative interactions (dialogue) which represents the main concept used in this study. Based on the explanatory and interpretative nature of the research, the coding procedure was to code for each of the three collaborative tasks defined above at the message level. Then, the emergent categories and subcategories (see table 4) for each collaborative task into which, the contributions in both discussion forums and Collaborations tool were grouped, was developed. Participants were stratified by their engagement to collaborative versus individual work. Aligned with this, participants who were engaged in collaborative works would first express their opinion about working in groups in a positive or negative light, and then perform the collaborative tasks mentioned above. Those who were not engaged in collaborative works would also express positive or negative opinions about it and, then, perform individual works.

The questionnaires of research, developed by the author based on the six dimensions of pedagogical scenarios of Depover (2003) , aimed at identifying students' preferences, behavioural patterns and perceived satisfaction of each component of the scenario of the course (the material, tasks, time, tools, modality of work (engagement in collaborative/individual work) and modalities for interactions). Fifty-eight items with a mix of selected responses (Yes/No, multiple choice, Likert-style, and open-ended questions), was classified in subcategories (see table 5) determined by the researcher for purposes of this study. Forty-five students completed the questionnaires.

When getting satisfied with the categories and subcategories, descriptive statistics and the T- test were performed to compare between the two groups of students: those who were engaged regularly in collaborative works and those who were engaged in individual works. A relationship between students' performances and the perceived satisfaction of the proposed scenario has been identified.

2.1 Enrolment of participants in the course

Participants (72% males and 28% females) registered for the course, consisted of 29 Masters' and Doctoral students from each faculty of Mohammed First University, and 46 teachers operating in primary, college and high schools. The course was also open access for those who were interested in it within the 100 places available for this first prototype of the MOOC.

An announcement for the course's enrolment has been published in CERSHO's website one month before the official beginning of the training on 11 November 2013. In addition the e-mail service has been utilized, for the diffusion of the announcement, to enroll the rest of learners.

Only 45 participants, from the 87 who have enrolled in the prototype of the MOOC, have remained really subscribed to online interaction for the duration of the course, among them 27 have worked regularly in group from 2 to 5 learners (see table 3) the proposed collaborative learning activities (assignments :1, 2 and 4). It is these 45 learners that are our sample when collecting and analyzing the data in this communication.

Assignments	Number of individual Works	Number of collaborative Works	Number of working Groups	Number of active Participants
Assignment 1	19	8 (28 learners)	8	47
Assignment 2	8	11 (36 learners)	11	44
Assignment 4	18	7 (27 learners)	8	45

Table 3: Individual and collaborative works during the course

Our study attempts, as was explained above, at highlighting the effect of the prescriptive collaborative activities which characterize the scenario of the course on students' learning. The table 3 distinguishes between individual and collaborative works which were performed by learners throughout the course (except assignment 3 because it was done individually). Obviously, this will allow us to focus on the progress and organization of collaborative activities which are considered as a prime unit of our data analysis in one hand, and to make a comparison between individual and collective works in terms of performances in the other hand.

2.2 Data analysis

The Canvas communication tools (Forums and EtherPads) and questionnaires of research were searched for study participants' statements about collaborative interactions and a list of categories and subcategories have been identified then (see table 4 and table 5).

Therefore, it is on the basis of these categories and subcategories that the data is presented and analyzed. The specific questions of research are as follows:

- What kind of scenarios in distance learning fits the needs of students?
- Do students need a prescriptive scenario in which they are incited to do collaborative tasks rather than individual ones to success in learning?
- What modality of working (individual/collective) is the most appreciated by students in distance learning?

Main categories	Subcategories	Number of messages
Engagement in collaborative tasks	Calls for forming a work group	7
	Responding to these calls	16
	Positive opinions about collaborative works	7
	Negative opinions about collaborative works	11
Work planning process	Reference to the learning activity guides (objectives, calendar...)	53
	Reference to the organization of collaborative work (division of labour...)	95
	Contributions of every member for the collective product.	23
Productions	Consensus on the final collective product to be submitted.	38
	Performing the pair evaluation	26

Table 4: Categories and subcategories compiled from content analysis of Canvas communication tools

Before the presentation of the findings of this research related to these questions, it is important to mention that when measuring participants' performances, Individual and collaborative productions have been calculated on the basis of the mean of the marks obtained in the assignments 2 and 4 for each participant. Only 8 of the 19 participants who had performed regularly individual works (assignments) will be compared in terms of their performances with those

(26 learners) who had submitted both the second and the last assignment. Moreover, a comparison between students learning individually with those learning collaboratively has been made in light of the data arising from their pretests and posttests.

Main categories	Subcategories	Number of statements
Satisfaction of the course's scenario	Positive opinions about the course's scenario	39
	The use of communication tools	38
	Positive appreciation for the incitement to perform collaborative tasks	19
	Learning difficulties related to the proposed scenario of the course	6

Table 5: Categories and subcategories compiled from questionnaires of research

3 Findings

3.1 Results related to the research question 1 : in light of questionnaires

To report on the kind of scenarios in distance learning that fits the needs of students, it seems evident to us to analyze questionnaires responses of the study participants by reference to categories and subcategories which were stated above. The main elements that emerge from it are the following:

Overall, 87 % (n= 39) of questionnaires respondents (n=45) manifested their satisfaction of the scenario of the course. A series of statements (n= 39, 87%) such as: “The learning activities were clear and easy to understand”, “Working in groups was so interesting because it allow us to construct and share our knowledge” reveal the positive opinions about the scenario of the course. Other statements (n= 19, 42%) which refer to the use of communication tools have shown that these tools were really functional, particularly for students who have performed collaborative activities in groups. Indeed, the majority of those students have said that they had mainly used these tools to participate in online collaborations. Only a limited number of students, among those who have favored individual works, have used the communication tools for interaction about the pedagogical resources of the course. Similarly only 42 % (n=19) of the 45 participants who had responded to questionnaires of research had expressed positive appreciation for the incitement to perform collaborative activities. Moreover, very few participants (n= 6, 13%) have indicated that they have faced

learning difficulties related to the proposed scenario of the course (comprehension of tasks, use of tools....).

Even if the majority of students (n=39, 87 %) appeared to be quite comfortable with all the components of the proposed scenario since highly structured directions and guidance were provided and it was more dialogic, but, some of them (n=26, 58 %) preferred a flexible scenario which permit a high degree of autonomy.

We can therefore deduce from these responses that in distance learning students need a highly flexible scenario in which a focus is put on not only collaborative activities but also on individual ones in a way that respects their autonomy and constraints. The prescriptive character of the scenario should be low. Furthermore, learning activities should be relevant to students' needs requiring tailored tools whose added value is justified. To give rewards (for example extra marks) is a good thing for students' motivation to participate in online collaborations but it could have negative effects if it is used in a way that neglects students' individual characteristics and preferences.

The data analysis shows also that a large amount of students were dependent of the teachers and the structure of the teaching program. This goes along with the idea of Knowles (1970): "adults are typically not prepared for self-directed learning; they need to go through a process of reorientation to learning as adults". It is evident, thus, that not all adults are able to take fully the responsibility of their learning. For some kind of adults, to engage in a constructive dialogue (collaborative interactions) is very important to acquire new skills and be trained for fully self-directed learning.

3.2 Results related to the research question 2: The effects of the proposed scenario on students' learning

The proposed prescriptive scenario of the course had positive effects not only on students' learning but on their learning attitudes as we shall see in what follows. Indeed firstly the results of the observation of students' attitudes toward learning during the training phase of the course and the analysis of their responses to research questionnaires had demonstrated that their learning attitudes had really changed in some way toward learning in group collaborations (see figure 1).

Many of the participants (n=27, 60 %) said that they were conscious about the benefits of participating in collaborative works in terms of learning but they had a tendency to perform individual works because of their personal and professional constraints.

In a series of statements quoted from research questionnaires such as: “You have surely remarked that forming a group takes time. I was forced to work individually because of my professional constraints which have prevented me from waiting the group to be formed...”, “In this course, we strongly focus on working in groups (because of extra marks given to those who perform collaborative works), that certainly does not help many of us (engagement, professional work...), in addition, in a group there are only two members who are dynamic and serious”, “the extra marks force us to work in a group and that touch our freedom to learn as we like”, “I have tried to work in a group, and you cannot imagine the inordinate amount of time that we spent together explaining banalities one to the other”, students had manifested negative opinions about collaborative works which may account for the low degree of participation in collaborative works in the first assignment compared to the second assignment. A large number of the students ($n = 26, 58 \%$) had felt constrained to work in groups to be rewarded with high marks and this is what justifies the increasing number of students who had worked in groups in the second assignment. In the assignment 4, even if students were totally free to choose their modality of working since no reward has been given to collective productions, we have remarked that the degree of participation to collaborative works had not strongly decreased compared with the first assignment.

Students’ attitudes remained relatively the same as it had been at the beginning of the course when students were constrained to work in groups. This is what allows us to confirm that learning attitudes in some way have moved towards participating in collaborative tasks and activities. Participants’ responses to questionnaire of research in the evaluation phase of the course showed that 64% ($n=29$) of them could not agree that working in groups the proposed learning activities was not very helpful from a pedagogical point of view, it was very demotivating and it constitutes a waste of time and blockage for them. Moreover 67 % ($n=30$) of the participants had indicated that working in groups had promoted in them the sense of belonging to a community.

The effects of a prescriptive scenario

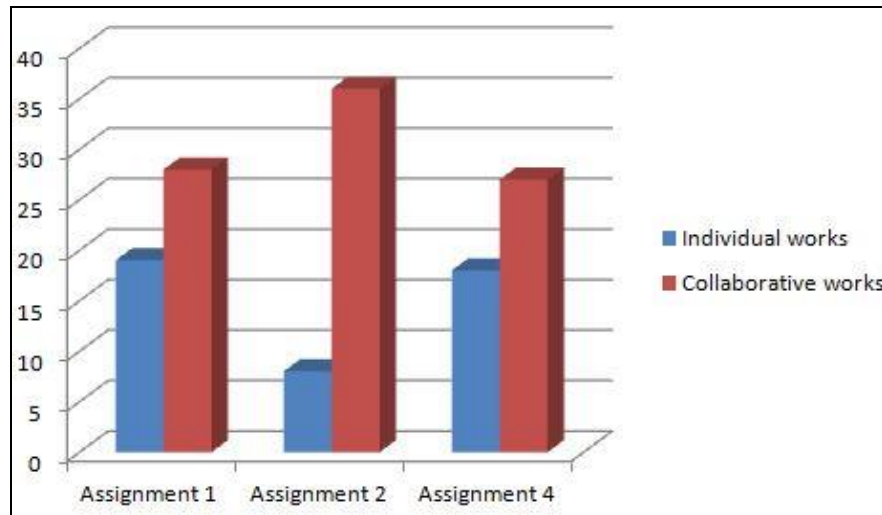


Figure 1: Students' attitudes toward learning activities during the training phase of the course

A total of 276 messages extracted from forums and data arising from the chat service of EtherPads have been analyzed according to categories and subcategories mentioned above. The results revealed that the engagement in collaborative tasks ($n= 41$, 15%), work planning process ($n= 171$, 62%) and productions ($n= 64$, 23%) was so valuable and regular even if it varied from one group to another. These results demonstrated also the effects of the course's scenario on learning attitudes since 19 (42%) of 27 participants who have worked in groups have been very active particularly in work planning process despite the fact that they had at first negative appreciation of collaborative works ($n= 11$, 27%). This is what explains also why overall the quality of collaborative productions was better than individual ones. Furthermore students who had performed individual works were characterized by a low degree of participation in online collaborations (less dialogic). Evidently, they are autonomous learners (Moore, 1972).

In terms of the effects of the proposed scenario on students' performances, table 6 shows the net mean learning gains⁴² of students who had realized individual works (G1) compared with those who had regularly worked in groups (G2).

⁴² The net mean learning gain corresponds to what it is really gained in terms of learning and is calculated simply by making a difference between the mean of students' posttests and their pretests.

	Pretest (m)	Posttest (m)	The net mean learning gain
G1 (Individual works) N= 8	4,45	7,43	2,98
G2(Collaborative works) N= 21	5,11	9,18	4,07
Difference	0,66	1,75	1,09

Table 6: The net mean learning gain of students learning individually and those learning collaboratively

When analyzing the table 6, there was a significant difference (1,09) between the mean of the two groups of students in terms of the net mean learning gain. Indeed students who had worked in groups had manifested higher degree of success in learning ($4,07 > 2,98$) than students who had favored to work individually (see figure 2). But a t-test on the data did not show a significant difference between the two groups (Test $t = 1,46$; $ddl = 27$; $p = 0,156 > 0,05$).

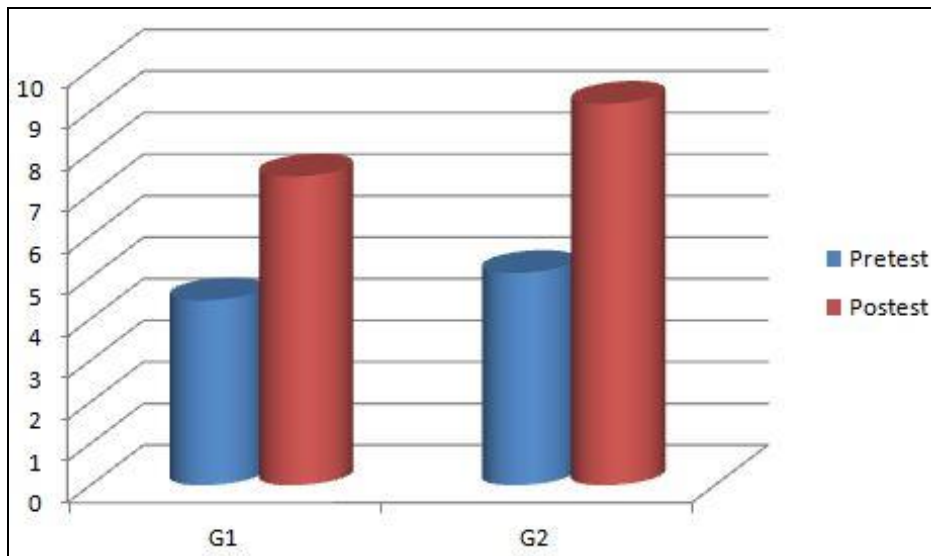


Figure 2: The mean of students' performances before (pretest) and after (Posttest) the course.

The mean of the assignments scores for students learning collaboratively (8,83) was higher than students who had studied individually (7,25). A t- test on the data this time showed that this difference was significant at the 0.001 alpha level ($t = -4,436$, $p = 0,001$). We can therefore affirm that collaborative activities which characterize the prescriptive scenario of the course influence students' performances.

3.3 Results related to the research question 3: The preferences of students concerning the type of working modality in distance learning

Here we focus on demonstrating whether students liked to work individually or in groups the learning activities of the course. Of the 45 students who have responded to questionnaires of research, 31 (n=69%) said that they prefer to perform collaborative activities than working individually. They gave the following reasons for this:

- Creating and constructing their knowledge.
- Sharing pedagogical resources and information about the course.
- Communicating, exchanging and interacting with other learners and the instructors particularly about the required tasks to be performed.
- Overcoming the feeling of isolation.

Furthermore, many respondents (n=26, 58%) had no appreciation of their incitement to perform collaborative works. According to them, they had felt constrained to work in groups and this is what had prevented them from benefiting a maximum from the course.

Of 27 students who have performed regularly collaborative works, 11 (41%) prefer to work in groups in distance learning. Concerning students who have worked individually (n=18), 10 (n= 55%) they said that the most preferable modality of working that fits their needs is the collective one.

Thus, there was a positive tendency toward collaborative tasks despite the fact that there were some negative opinions about collaborative works at the beginning of the course. These negative opinions were the result of the prescriptive character of the course's scenario. Indeed students liked learning collaboratively but without feeling to be constrained to do it.

4 Discussion and conclusion

In this research the aim was to understand students' needs when involved in distance education programs by reference to a particular design of pedagogical scenarios which promote collaborative tasks. Being conscious that the collected data is limited since it concerns only online group activities of reduced number of individuals which were analyzed by reference to a few indicators (engagement in collaboration, the quality of productions, learning gains...), however the findings may be useful and helpful for designing relevant, efficient and effective scenarios

which bring into play collaboration as a source of motivation for students who are involved in online learning.

The findings showed that students need a highly flexible scenario in which the degree of prescription is low. And this goes along with Wlodkowski's research works (1999) in which he had recommended that "flexible demands are important in enhancing participation in online group activities" (Kuyini, 2011). Also this aligns with the theory of transactional distance of Moore (1972) who advocated that there is a relationship between dialogue (collaborative interactions), structure of the course (flexibility) and learner autonomy. It was reported by this same author that: "While only a minority of adults might practicing as fully autonomous learners, the obligation on teachers is to assist [...] [other learners] to acquire these skills [being self-directed learning]" (Moore, 1972). Therefore, the design of pedagogical scenarios of online courses should take into consideration students' needs concerning the three variables of transactional distance, particularly the one related to the flexibility of structure (one of the components of teaching presence).

To get students exchange in online collaborations, we don't need to make them do that under constraints of rewards (extra marks as an example). Other innovative ways for increasing students' motivation to participate in collaborative activities should be checked by dealing with all scenarios' dimensions. The analysis of students' productions showed that students involved in collaborative activities perform better than students who worked individually. This is consistent with ideas of the proponents of collaborative learning (Vygotsky, Bruner) who had insisted in the fact that when working in collaborative situations, students are able to perform at higher intellectual levels than when asked individually (Gokhale, 1995). Furthermore, this goes along with the CoI model of Garrison et al. (2000) which reflects the main constructs of the transactional distance of Moore (1972).

The proposed scenario of the course had also positive effects on students' attitudes which had moved in some way towards more participation on online collaborations. Finally concerning the most appreciated modality of working in distance education, results showed that the majority of students liked the collaborative learning and they were aware of its benefits to enhance their performances, however they had claimed that their personal and professional constraints should be taken into consideration when designing the pedagogical scenario of online courses, particularly when thinking about the sequencing of collaborative activities.

The design of online collaborative tasks, as an integral part of a pedagogical scenario means in some way involving learners in complex learning situations,

which require from them to process consciously, and deliberately elements, relationships, diversity or change in order to handle these tasks (Elen & Clark, 2006). We think as Niccolò Machiavelli in the Prince that “there is nothing more difficult and dangerous, or more doubtful of success, than an attempt to introduce a new order of things”. So the question which remains is how pedagogical scenarios of online courses should be designed to get students participate effectively in online collaborations and enhance their learning performances? In other words how, as designers, we can get students derive maximum advantages from the new order of things that we create for them in online pedagogical scenarios? It is really an interesting question that further research should deal with to explore innovative ways of designing pedagogical scenarios which embrace student-centered learning approaches and are based on socio-constructivist models of learning.

5 References

- Elen, J., & Clark, R. E. (2006). *Handling Complexity in Learning Environments: Theory and Research*. UK: Emerald Group Publishing. ok
- Garrison, D. R. (2011). *E-learning in the 21st century: A framework for research and practice* (2nd ed.). London: Routledge/Taylor and Francis.
- Garrison, D. R. (2007). Online Community of Inquiry Review: Social, Cognitive, and Teaching Presence Issues. *Journal of Asynchronous Learning Networks*, 11(1), 61-72.
- Garrison, D. R., Cleveland-Innes, M., Koole, M., & Kappelman, J. (2006). Revisiting methodological issues in transcript analysis: Negotiated coding and reliability. *The Internet and Higher Education*, 9(1), 1-8.
- Garrison D.R. (2003) Cognitive Presence for Effective Asynchronous Online Learning: The role of reflective inquiry, self-direction and metacognition, in Bourne J. & Moore J.C. (Eds). *Elements of Quality Online Education: Practice and direction* (vol. 4, pp. 47–58). Needham, MA: The Sloan Consortium.
- Garrison, D. R., Anderson, T., & Archer, W. (2000). Critical inquiry in a text-based environment: Computer conferencing in higher education. *The Internet and Higher Education*, 2(2-3), 87-105.
- Gokhale, A.A. (1995). *Collaborative Learning Enhances Critical Thinking*. *Journal of Technology Education*, 7(1). Retrieved from: doi: 10.21061/jte.v7i1.a.2
- Johnson, R. B. & Onwuegbuzie, A. J. (2004). Mixed methods research: A research paradigm whose time has come. *Educational Researcher*, 33(7), 14-26.

- Karsenti, T. (2013). MOOC: What the research says. *International Review of Technology in Higher Education*, 10(2), 23-37.
- Klenke, K. (2008). *Qualitative Research in the Study of Leadership*. UK: Emerald Group Publishing.
- Kuyini, A.B. (2011). *Exploring the Effects of Including Students' Ideas and Concerns on their Participation in Online Groups*. *International Journal of E-Learning & Distance Education*, 25(3). Retrieved from: <http://www.ijede.ca/index.php/jde/article/view/732/1292>
- Mackness, J., Mak, S., & Williams, R. (2010). The ideals and reality of participating in a MOOC. In L. Dirckinck-Holmfeld, V. Hodgson, C. Jones, M. de Laat, D. McConnell & T. Ryberg (eds). *Proceedings of the 7th International Conference on Networked Learning* (pp. 266-274). Lancaster: Lancaster University.
- McBride, R. & Fuller, F. (2007). Collaborative groups and mutual support strategies to ensure student engagement, retention, and success in on-line graduate programs: Models for face-to-face and virtual collaboration. In R. Carlsen et al. (Eds.). *Proceedings of Society for Information Technology & Teacher Education International Conference 2007* (pp. 418-425). Chesapeake, VA: AACE. Retrieved from: <http://0-www.editlib.org.aupac.lib.athabascau.ca/p/24573>.
- Molinari, D. L. (2004). The role of social comments in problem-solving groups in an online class. *The American Journal of Distance Education*, 18(2), 89-101.
- Moore, M. G. (1993). Theory of transactional distance. In D. Keegan (Ed.) *Theoretical Principles of Distance Education* (pp. 22-38). New York: Routledge. Retrieved from: <http://www.c3l.unioldenburg.de/cde/support/readings/moore93.pdf>
- Olson, T. M. & Wisner, A. R. (2002). The effectiveness of web-based instruction: An initial inquiry. *International Review of Research in Open and Distance Learning*, 3(2). Retrieved from <http://www.irrodl.org/index.php/irrodl/article/view/103/182>
- Picciano, A. G. (2002). Beyond student perceptions: Issues of interaction, presence, and performance in an online course. *Journal of Asynchronous learning networks*, 6(1), 21-40.
- Paquette, G. (2002). *L'ingénierie pédagogique: pour construire l'apprentissage en réseau*. Sainte-Foy, QC : Presses de l'Université du Québec.
- Pozzi, F., Earp J., (2006). Approaching pedagogical planning in learning design. In A. Méndez-Vilas et al. (Eds.). *Current Developments in Technology-Assisted Education* (pp. 281-286). Badajoz, Spain: Formatex.

- Quintin, J. J., Depover, C et Degache, C., (2005, 25-27 mai). Le rôle du scénario pédagogique dans l'analyse d'une formation à distance – Analyse d'un scénario pédagogique à partir d'éléments de caractérisation définis. Le cas de la formation Galanet. Dans *Actes de la conférence EIAH* (pp. 335-340), Montpellier, France.
- Rourke, L. & Kanuka, H. (2009). Learning in communities of inquiry: A review of the literature. *Journal of Distance education*, 23(1), 19-48.
- Simonson, M., Smaldino, S., Albright, M., & Zvacek, S. (2006). *Teaching and learning at a distance: Foundations of distance education* (3rd edition). Upper Saddle River, NJ: Pearson Education, Inc.
- Wake, J. D. (2001). *Evaluating the Organising of a Collaborative Telelearning Scenario from an Instructor Perspective. an Activity Theoretical Approach* (Doctoral thesis in Information Science). University of Bergen: Norway. Retrieved from: http://hal.archivesouvertes.fr/docs/00/19/01/15/PDF/Wake_2001.pdf ok
- Wei, C. W., Chen, N. S., & Kinshuk (2012). A model for social presence in online Classrooms. *Education Tech Research Development*, 60, 529-545. 529. Retrieved from doi :10.1007/s11423-012-9234-9.