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Online environments: collaboration in learning activities

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Abstract

At a time of profound changes in both learning conceptions and the construction of knowledge representations and in their application in real-life and professional situations, there is a huge need to deepen the processes that help us understand collaborative learning in online environments. These environments, due to their advantages, are powerful means for the development of the flexibility of representations and their suitability to practice contexts.

The success of online collaborative activities depends on several aspects, among which can be mentioned their planning and monitoring of learning, bearing in mind the necessity to create a feeling of community and connection among the students seeking to engage in the joint definition of learning objectives.

Therefore, the online environments are a way of expanding the boundaries of human communication and sustaining complex processes of interaction through the networks that make up the virtual classroom.

Apart from admitting the importance of online environments, which goes beyond the development of the themes of online learning and online collaboration, we shall also present some results about student perceptions when exposed to the development of learning activities in online environments, based on research carried out within a doctoral thesis done in the University of Minho.

Collaboration and the ways it develops in new learning communities is one of the main aspects of the above-mentioned study as well as a fundamental means for student learning because in this way they can understand questions, develop arguments and share meanings and conclusions [1].

Keywords:

Online environments, collaboration, interaction.

1. Introduction

Online education and training appear as dynamic and vital concepts for the development of contemporary society. The concern with the promotion of such a culture that will value education and training poses a challenge to teachers and researchers to look for strategies that could help in and make the effective development of each person easier throughout life. As a result, we believe that collaboration among different participants of society is the main approach for human development and that information and communication technologies are the chief tool to achieve this.

Collaboration does not show up spontaneously, since the creation of collaborative activities follows different processes, based on the idea of collaboration stages or levels. These stages involve the definition of the objectives for the activity of the community, the creation of the online environment, the modelling of the

collaboration process, the management and monitoring of the collaboration process and the evaluation of the process [2].

Relating the permanent modifications and the needs for change that society experiences to the advantages of information and communication technologies, online environments emerge as support platforms for the development of education and training, based on strategies that require the involvement and cooperation of the several participants as structuring features for the building-up of knowledge.

The dynamics and development of online environments is the object of study in a field to which the study carried out by Miranda within her doctoral thesis in the University of Minho [3] has contributed, because of the importance given to online environments and their implications in the process of learning.

Following closely the results of such research, the purpose of this paper is to present these data in order to contribute to the deepening and justification of information and communication technologies in the improvement of learning environments as well as to show which aspects can be the object of analysis and encourage a culture of collaboration supported by student experiences in higher education, which were involved in this same research.

From the objectives that guided Miranda's research, we could point out those that refer to understanding the adjustment of online environments to the teaching and learning process and to comparatively analysing student perceptions in relation to their usage. The procedures developed in the research followed a methodology close to that of a case study.

Hence, the main conclusions are not only the students' positive recognition of the suitability of online environments used for the achievement of teaching and learning objectives, but also the fact that students considered synchronous and asynchronous communication tools as complementary in the same environment as being a positive aspect.

Once having overcome many of the technological barriers either financially or in terms of resources, there are almost unlimited advantages to allowing training and education to be promoted throughout life, at any time and in any place. However, it is not enough to have the means to make them useful, it is also essential to challenge people into becoming qualified in their use, not only by developing the necessary skills and by building knowledge, but also by promoting positive attitudes in relation to the search for answers to their own needs and their aspirations to know more.

Therefore, to emphasise the features of online learning environments and collaborative learning in these environments can be a contribution to making the advantages of information and communication technologies more and more useful and interesting for the society we belong to.

2. Online learning environments

With the growing development of information and communication technologies and their many advantages, the concept of learning environment has reached new dimensions. This concept is no longer linked to a time break or to a well-defined physical space, it has assumed new variables based not only on technological characteristics but also on the flexibility of time and space, since each person can make use of learning cognitive tools at any hour and in any place.

Considering Keegan's opinion about distance learning [4], we admit that an online learning environment can be defined by: a) the physical separation among the

teachers and students the possibility of developing synchronous and asynchronous communication, and the necessary conditions to interact in a bidirectional or multidirectional way.

The technologies that sustain online environments, namely the Web, browsing options through information pages, the use of the email, the integration of web conferences or the use of discussion forums or chats, turn them into platforms that will enrich the teaching and learning context offered in each educational institution.

As Dias states to build up online training spaces is a challenge that is not restricted to the simple offer of contents in the environment or in the platform. (...) What is important is the need to create a new pedagogy based on sharing, exchanging individual perspectives among peers and engaging in collaboration and joint initiatives directed to innovation and creation [6, p. 7].

In order to characterise online learning environments, supported by network-based technologies, Duart & Sangrà draw attention to the following as their main features: they offer flexibility and interactivity, allow for the connection to a true learning virtual community and grant access to study materials and other resources. These technologies not only permit us to challenge our imagination, but also give the opportunity to make use of it and rebuild it [7, p. 31].

Consequently, online environments can be considered as interactive and flexible learning and teaching contexts, with different degrees of technological sophistication that allow us to build knowledge without students and teachers having the need to be together in the same physical place or with a previously-agreed schedule. They can, in a flexible manner, take part in the building of learning communities, which are based on the sharing of objectives and interests.

The association of student-centred methodologies, based on constructivist theories, with the advantages of the Internet allow for the creation of virtual learning environments open to research, divulgation and content presentation which will promote collaboration not only between students and teachers, but also between them and the community where the school belongs.

Direct and face-to-face collaboration has followed the evolution of mankind in its various dimensions, emphasising face-to-face collaboration and family, institutional, regional, national and even international collaboration as possible examples. Therefore, collaboration as a way of approaching and helping people has occurred in every generation and continues to occur. The need for collaboration between people and between populations is an easily acceptable and defensible reality, which is taking on importance. What have changed in recent years are the means and the ways to develop and promote that collaboration. If we go on defending and stressing the importance that face-to-face collaboration can have, we will need to emphasise the collaboration possibilities that information and communication technologies have offered through the most various means, because they can assume their own forms or, as very frequently happens, work in complementarity with other collaboration forms that already exist.

In teaching and learning contexts, we shall have to question and grapple with the concept of online collaboration, as well as point out some examples of the perceptions of higher education students after the development of activities in an online learning environment.

3. Collaboration in online environments

There are many reasons to justify the establishment of collaboration between people. The creation of communities of the most different interests and sizes, in a format that nowadays fills up people's universe, is nothing more than the result of multiple and complex collaborations. Then, in the educational context, collaboration results in one of the many ways to answer to learning objectives in a joint manner, to encourage interaction between people and, generally speaking, to offer the construction and use of knowledge, having learning communities as a starting point.

Learning communities can be considered as groups of people that share and together reflect upon things in order to reach common goals. So, the chief people involved in a learning community are the students, teachers, researchers and other elements of society that might be interested in contributing to the resolution of specific problems in the educational context. Online learning communities can discuss their own ideas and information or the exchange of experiences, bearing in mind the construction of knowledge, whether in physical or virtual spaces, with special importance placed upon virtual spaces.

A model that could represent the relationships that might occur in an online learning community is presented in the following diagram:

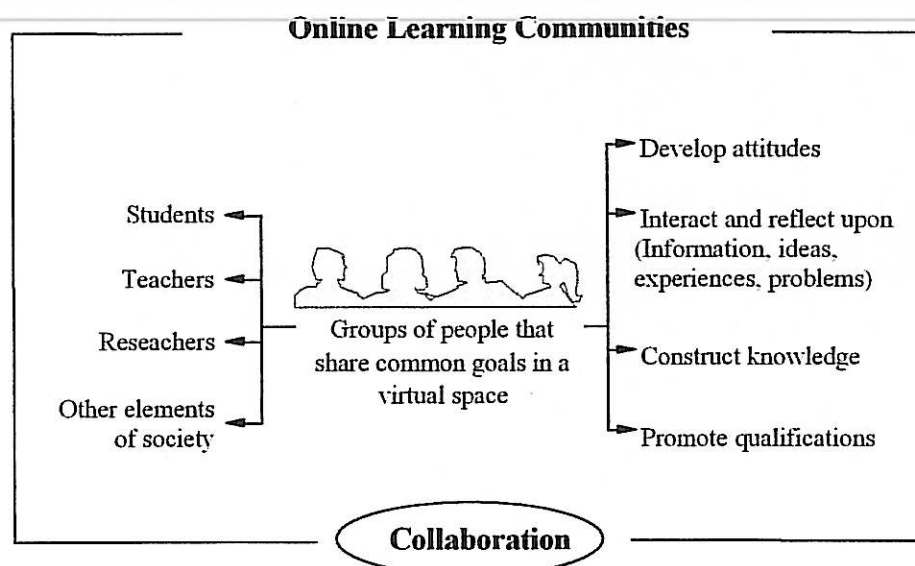


Figure 2: Collaboration in online

learning communities

Collaboration means working together in the way of reaching a common goal [8]. The same author adds that the cornerstone of all collaborative practices is to create common practices and common meanings.

The main agents in the teaching and learning process are students and teachers, who develop various types of interaction in their daily relations not only among themselves but also with the contents that are susceptible to reflection and learning. As far as interaction is concerned, in online environments, we can ask numerous questions either about the level of interaction or about the ways of collaboration that can be experienced and promoted, in view of the construction and use of knowledge.

Moreover, in online education, the most important elements for student success are the interaction between students, the interaction between teachers and students and the collaboration in learning which result from all these interactions [9].

Therefore, we can consider that the words “collaboration” and “interaction” are keywords about which one should think when intending to promote the construction of knowledge based on online learning environments. Collaboration is the principle for the construction of a learning virtual community [10]. According to Dias, collaboration and interaction consist of the most important means for the modelling of learning processes in online environments [6, p. 6].

By creating new opportunities for students to communicate, regardless of space and time, the advantage of online environments is to enable the use of constructivist and collaborative learning approaches that will consider learning as an active process. These environments, because they possess a set of technologies for synchronous and asynchronous communication, are decentralised and collaborative learning spaces based on a paradigm of innovation, directed to the promotion of students’ skills.

When referring to collaboration in online environments, there are a lot of questions to pose, for example “Why should we collaborate?” or “How are we to guide students to collaborate online?”

According to Palloff & Pratt, the success of an online collaborative activity depends on planning and supervision, emphasising that the feeling of community and connection between students has positively contributed to students’ satisfaction and learning results [2].

The answer to the question of knowing how to guide students to collaborate online is based on different aspects, of varied complexity, because of the multiple dimensions it involves. Conrad & Donaldson’s opinion contributes to this general answer, by mentioning teachers’ responsibility to promote meetings in learning environments so that students can build up a collaborative relationship or by suggesting that the online teacher should promote aspects of the course that stimulate the increase of the number of students in these new relations. The same authors consider several stages for the implementation of an online course, the most important of which are: the motivation to manage the level of online communication and to make students and teachers focus on the performance of their new functions; the need for teachers to group students into pairs to work together, considering the information of warming-up activities; the obligation of teachers to integrate the already-created pairs in collaborative groups, that should take on a role as members of the community, supporting each other and being responsible for their learning; and, lastly, the responsibility of the teacher to take part in the learning environment like any other member of the learning community and as a knowledge creator.

Morais highlights the importance students give to working together in online environments and defends the promotion of collaboration and discussion between partners in the completion of learning tasks [12]. Generally speaking, the motivation in the resolution of a task in an online environment can lead to heated discussions by the participants involved in the task. Online discussions are an opportunity for teachers to guide learning experiences according to the paradigm of social and collaborative learning, in which students can share perspectives and their own experiences, building knowledge through shared meanings.

The discussions function as an additional means for teaching and learning that make the acquisition of competences of thought at the highest level easier for students, allowing them to be more qualified in the transfer and application of information to new situations [14].

The importance of dialogue as a collaborative process is recognised by Beaubien, which is of the opinion that it adds new ideas to the discussion without excluding preceding ones [15]. By stressing the fact that conversations stimulate

diversity, they create a productive environment in which new levels of understanding can be developed, by leading to an exchange between the participants and to the creation of a productive set of information that will support the environment in which experiences are emerging.

Consequently, collaboration based on online environments is becoming more and more prolific in terms of resources and more and more suitable to users' interests, which can bring about an added value to the education and training of people throughout life, wherever they are. For this reason, we shall present some of the higher education students' perceptions about the use of online learning environments in learning activities.

4. Online collaborative activities with higher education students

Bearing in mind that the majority of teaching and learning activities depend on teachers' suggestions, they need to be always present and concerned with assuring that students will be interested in the significant resolution of learning tasks. In an online environment, teachers must act as mediators; they have the responsibility to promote strategies that will lead to the accomplishment of the objectives students should reach, in order to guarantee their responsibility for their own learning process.

If we accept that interaction based on online environments can be one of the basic requirements for the joint construction of knowledge, the improvement of a collaboration culture between the various participants of education or training curricula can turn out to be a way to quickly identify the potential of technology, as well as its adequate use.

There are highly powerful technological means that can be useful for those for whom they were created, but this is not enough. It is also necessary for people to need them, to want to solve their problems with them and recognise in those technological means the usefulness, potential and advantages that research in general can assure them. Only in this way will collaborative activities, which we intend to implement, be successful.

Although the concepts of interaction and collaboration are different, it is not easy to discuss them in a separate way when they are in a teaching and learning context. As a result, we shall consider some forms of interaction that can be developed using online learning environments and later question a few aspects associated with collaboration within this type of environments, as well as present student opinion taken from the research conducted by Miranda [3].

This research was intended to contribute to the evolution, innovation and integration of information and communication technologies in the educational context. We have given more thought to the theme of online education about the execution of procedures within the scope of a case study, which involved 32 students of the higher education system and a learning and teaching platform supported by the Internet. This platform has, among other characteristics, support material oriented for the teaching and learning process and it also offers synchronous and asynchronous communication.

According to what has been defended throughout this paper, collaboration demands due preparation and does not emerge in a spontaneous way. So, considering learning activities proposed within the students' curriculum, it was possible to create in them a sense of community and also to obtain a new perception about online environments while they were using them in the resolution of learning activities.

We wish to highlight the students' opinions concerning online learning environments and the interaction between them by means of the use of discussion forums and chat, from among all the issues that were the object of study and analysis in this research, especially through the participation of the group of students involved.

4.1. Students' opinions about their involvement in learning activities in the context of online environments

In order to try to understand the role online learning environments have, or might have, since they are supported by synchronous and asynchronous communication networks on the Web, we asked a group of students a few questions about some aspects considered essential to facilitate and improve the processes of construction and the sharing of knowledge among the participants within these web-based learning environments.

From the 32 students that were part of the study group, we selected 16 using criteria based on the number of publications in the discussion forums and in chats. These 16 students stated their points of view about online learning environments through an interview given to each.

The students' discourse was essentially about the approach of online learning environments and their adaptation to the educational context. Accordingly, we questioned students about these learning environments as well as the appropriateness of the discussion forums and of the chats to learning tasks. Finally, we compared their views regarding these tools.

From the questions presented to students, we selected the following: "What are the words or expressions that come to your mind when you think about online discussions?" In the presence of these data and assuming that students mentioned the words and expressions that were the most significant to them, we can conclude that, in 44,7% of the expressions, the students emphasised the culture of the relations established between the participants and the importance of sharing information. During online discussions, the students interpreted the participation, the social gathering and the contact as the interconnection of a large number of people, which also derived from the interconnection of network participants as a huge community in communication. The production of different opinions was considered as being the result of the sharing of information, which was illustrated by students' expressions, such as: "debate each others' opinions", "understand everybody's points of view" and "contradict each other". From the remaining expressions, we could point out those associated with communication (15,8%), with information (10,5%), with technological means (13,2%) and with others (15,8%).

One of the most important aspects was the interaction developed between students and between them and the teachers. For the majority of students, it was important to have worked in group because the various contributions allowed them to create a set of information with features they had never thought of, to recognise different opinions and to keep in touch with different points of view about a number of subjects. A lot of students emphasised that the discussion called their attention to a conscious observation of the ideas of others, as well as to a comparison with their own ideas, enabling them to realise that many times their opinions were not always correct. This was imperative for a greater reflection on and reformulation of their ideas.

Despite the fact that the students had not paid that much attention to technological means, their presence was concealed in some of the expressions that

referred to the fact that communication was not face-to-face, but was done through writing (in forums and chat), that its main characteristics were interventions and anonymity, as it is shown in the following examples: "I think there is social gathering, despite not being a face-to-face conversation"; "there is a lot of honesty, people were really interested in what we were writing"; "seeing what others think"; "being in touch with a lot of people at the same time, to talk, communicate without knowing with whom we were actually speaking".

Online discussions are also remembered by a set of expressions that were integrated in the category of "others", among which we can highlight the expressions of "teacher", "support", "very positive experience" and "entertainment". These expressions might not be very important when they are considered separately because of their low number. However, their identification alone is an indicator of the type of participations that, in a certain way, are significant for students in online discussions.

The expressions that spontaneously showed up among students about online discussions demonstrate that participating in these discussions is to communicate, to establish relationships, to exchange opinions, to observe and confront the ideas of others, regardless of the technological means used. We can also add that the pedagogical potential of online discussions has not yet reached its peak in the actions that were mentioned, since these discussions provide meanings for students to think about, to reformulate and build their own ideas. These expressions are key ideas that are also useful indicators for the development of teaching and learning activities in online environments.

According to what Conrad & Donaldson suggest, it is highly necessary that, to achieve the success of interaction and collaboration in the completion of activities, students go through a great number of stages concerning the use of online environments, which in turn suggests that the students' role begins with the role of newcomer, continuously proceeding through the stage of co-operator, collaborator and, by the end, reaching the stage of partner. In other words, the students in interaction with their colleagues and with teachers can turn out to be more than someone who is just doing the activities to reach other levels, but someone who is supervising or conducting activities or projects intended to be implemented in the context of the community.

As indicators of the students' position concerning collaboration in online environments, we shall present brief observations about these environments bearing in mind the discourse used by students in the solving of learning activities and recorded in the discussion forums and chat.

Related to the discussion forums, students also regard them as learning environments suitable to the discussion of themes that demand a detailed management and lead to development issues. When students characterise the forums as learning environments, they refer to the inherent potential of asynchronous communication environments, because they allow time to think, and to technical and graphical characteristics of the interface, such as the possibility to display the participants' interventions in an organised way and the opportunity to create texts, at any time, with the intended length as well as the availability of support texts. According to the students, such potentialities are favourable to the construction of a complex, well-thought, coherent and careful participation.

In order to check their viewpoints about the use of discussion forums, we presented them with the following question: "Has the online platform through forums led to greater interaction among students in terms of their involvement in the task?"

Therefore, one of the students says:

– “In the forum, we can develop our opinions, create a text in which we can say more things about the theme in discussion. We think more to give meaning to what we are talking about. There is more concern about writing because there is also more time to write the answer”.

The students emphasise the importance of communication among participants being done by means of a written text and being stored in the archives, because it allows all students to express their opinions, read other participants’ interventions as many times as they want, reflect upon them, clarify their doubts, organise their ideas, reformulate their opinions and consolidate their knowledge. We selected the following from students’ statements that give forums a more important role in the resolution of activities:

– “(...) in the classroom, we listen to people discussing about different themes and something gets into our minds, but now that is written, we can read it; if we think it is ok, we will re-read it as many times as necessary so as to consolidate our knowledge”;

– “if a theme is suggested for discussion, at the time of answering, we can see what our colleagues have answered, because the information is stored and if we have any doubts or are not really sure about the question, we can go back and see what the question was; it’s still there, the information is all stored there”.

The possibility to read and store the interventions, for future searches, is regarded by two students as positive reinforcement, because for them the forum participants know that these can be visited and their participations can be important for the clarification of other people’s doubts. Another student commented on the exchange of opinions and expressed his favourable acknowledgment of forums because they allow for the collaboration between people in a more extensive way, but not as fast as in chats. One other student states that the storage of interventions is highly important not only for the students but also for the teachers, since they could be enlightening elements for students’ evaluation.

Apart from these, five students say that forums help learning, focussing on the meaning of their opinions not only in terms of the learning process, but also in terms of the product, stating that they learn a lot with their participation in forums. This is clear from the following sentence: “If I were a teacher, I’d use forums because they are very helpful and if I learnt with them, why can’t other students learn as well?”

We shall present another example of the opinions of the interviewed students, which is an extract of one of those students’ answer to the question in analysis. We decided to select some of the features of forums chose by students, as the ones that follow:

– “I think it is because we see the question, we think a lot about it... In addition, we had the support texts that were of great help for the comprehension of the question. I think it helps learning a lot. The forum is a completely new way of learning and has very positive aspects, such as providing everyone with the opportunity to answer, refuting other people’s opinions, talking with the teacher, clearing up doubts and every one has the time to do it. Another thing is that the messages are stored and can be seen again, which is an advantage for teachers and students, giving them the opportunity to rewrite what was previously said; as for teachers, if they have doubts about a student, they can

look up and see if the student has actually participated and if he knows about the subject in discussion.”

Getting to know the students’ opinions about the use of chat in the teaching and learning process was the aim of the following question: “Has the online platform by means of the chat led to greater interaction among the students in terms of their involvement in the task?”

From the surveyed students, 18,8% believe that the chat is an appropriate environment for the task; however, the majority of the students, 75%, in spite of considering that chats are favourable environments for these tasks, mention some characteristics that seem to make its use harder in the accomplishment of educational objectives. Nevertheless, only one student said that the chat is not an adequate environment for the completion of learning activities.

Considering the students’ global comprehension of the question in analysis, we tried to understand the given explanations. Students consider chat as an appropriate environment for the completion of learning activities and support their opinions in the interaction that is developed between the participants. They also point out that in a chat the exchange of opinions is so strong, because, by being done in an informal, direct and fast way, it creates conditions for students to pose questions, to agree, disagree, expose their doubts, create new answers and, consequently, learn with each other.

Because communication in chats is done almost in a real-time context, it turns the realisation of learning activities into an active and dynamic process, which is clear from one of the student’s answer:

– “Whenever we answer, we see other people’s opinion in the very moment, it’s more direct and much more communicative; it isn’t done in such an organised way but it is less tiring; it’s good for people’s leisure and, at the same time, is like having fun while you learn.”

Nevertheless, other students declared that the chat is not favourable for the completion of learning activities at a level of the construction and reformulation of knowledge because: “the answers are so quick that there’s not enough reflection upon them and here and then some mistakes show up and we end up getting distracted”.

On the other hand, the chat seems to be appropriate for the discussion of questions that demand a direct and short answer or the presentation of key ideas about the subjects. Because it is a dynamic environment, it will work well to clarify doubts and to discuss ideas as well as for students’ evaluation.

The immediate feedback of the presented participations in chat seems to be one of the aspects that determinate most of the development of learning activities. While some of the students enjoy the intense intervention of the participants as an important dimension of learning, others state that they feel enormous difficulties during the development of the conversation, due to the flow of messages that continuously appear on the screen and the need to increase the rhythm of work so as to accompany the subject that is being studied. We should add that it is the specificity of being a fast environment that makes the chat a stimulating and motivating environment, but it is also this quality that is seen as a restriction to its suitability in the completion of learning activities.

Moreover, some of the students that have presented these restrictions to the suitability of the chat regarding the completion of learning activities seem to regard chats as a much more adequate environment for a “coffee-break conversation”, a

discussion between friends. The sense of closeness, of a direct contact, associated with the problems of accompanying the development of this conversation, contribute to entering into parallel talks and drift away from the issues being discussed.

Among the characteristics of online learning environments, we should point out the fact that the majority of participants in the discussion are not in a face-to-face position. The students that admit to being shy say that in the classroom they feel more self-conscious than in these environments, which leads towards different attitudes and ways of participation, as we can observe in the following explanations:

– “Yes, because I am shy, it is more interesting to communicate by means of a computer than to have a direct conversation with people. In online environments, I have felt much more at ease than in the classroom because, even if I have doubts, I avoided speaking, so I have enjoyed chatting a lot”;

– “In the classroom, I felt a little bit more inhibited and I thought to myself if I say this to the teacher or to my classmates, they will laugh at me because they are right in front of me, I can see them laughing and so I didn’t answer anything else; it is completely different!”

Online environments contribute to a change in students’ attitude. As it could be seen through the statement of a student, when evaluating his behaviour in forums and comparing it with the one he had in the traditional classroom, he states that in the latter he was more reserved and, therefore, he did not participate that much. He also referred that, in the traditional classroom, he agreed with what his colleagues said every time, while in the forums he wanted to express his ideas and be able to disagree when the opinions were different from his. Thus, discussion forums are adequate environments for the students who fell a certain degree of self-consciousness in face-to-face environments, due to the influence of the students’ personality and their way of thinking, as the following statement shows:

– “Our personality changes a bit, in class, I am more reserved, because I am shy and I don’t feel comfortable, while here I don’t see their faces and I am able to do it, I can talk, I express my opinions; I think it is very important for people who are shy.”

Another indicator of the change in students’ attitudes in the development of activities in online environments is shown by the advantages associated with an informal atmosphere used by everyone when they talk in forums, as we can see in the following comment: – “I think this experience was good to me. (...) I think I am no longer afraid of facing the class and people in general, because we are always afraid of making a mistake and in the forums we expressed our opinions; there was no kind of concern, we would say what we were really feeling”.

Apart from this, we should call attention to opinions related with collaboration in online environments that translate the overall feeling of students who have participated in the research: “By increasingly sharing our opinions, we are able to consolidate them (...). These forums help us in building ideas so as to share them later with others”; “This work session was very interesting. In the chat, we worked as a group, everyone asked questions and everyone answered. It enabled an exchange of opinions that has contributed to the acquisition of new knowledge”; “Learning with

others is always good... it is rewarding to know that we are all working to reach the same purpose”.

The general feeling of students, when they express their ideas in an online learning environment, is that of satisfaction. In the majority of students' answers to the question “Were you satisfied when you expressed your opinions in an online environment?”, we found expressions that revealed that feeling, such as: “Yes, of course, I was pleased with myself”; “I’ve liked it very, very much; I think if there was such a possibility, I would participate in it again”; “Yes, I have liked it a lot”; “There were times in which I was quite interested and I wanted everyone to know what my opinion was and I felt really good for giving it”.

From the great number of opinions presented by students, we have realised that the activities developed in an online environment stimulate a sense of learning community, stressing a relation of closeness between students, as well as the development of a group spirit and of collaboration among all its members.

5. Conclusions

The relationships of each person with herself, with others and with knowledge have been stimulators for the development of society and, consequently, have become the subject for continuous considerations, leading people to try to find the best strategies and resources to implement them at each time.

In this research, we have tried to give more emphasis to the characteristics of online learning environments, namely to the judgments of higher education students about the development of learning activities, as well as to point out the importance of collaboration between the various participants in the teaching and learning process. This allows for the understanding of online learning environments as having great potential to promote collaboration in the construction of teaching and learning communities under optimal conditions.

Since collaboration does not emerge in a spontaneous way, it is necessary to continue thinking about the best ways and strategies for its implementation, attempting to reach the learning objectives outlined by students and teachers, through the use of online environments.

From the main results obtained by Miranda, we should draw attention to the highly favourable judgments towards the suitability of the online environment of the students involved. Also the success of teaching and learning objectives, of the interaction and of the complementarity of synchronous and asynchronous communication tools in the same environment are viewed as positive aspects.

To sum up, the students valued the methodology used and the supervision of teachers in the development of activities, as well as the subjects which were being dealt with in a much more profound way in the discussion forums and in a much more natural and spontaneous way in the chat. Students' participations, under teachers' supervision, created a dynamics for information sharing, an agreement about the meaning of concepts and the joint construction of knowledge. Finally, we emphasise students' recognition of the suitability of the processes of online flexibility to the types of individual learning, which results in a useful attitude towards the involvement in community activities.

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