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SOCIAL ASPECTS AS REGARDS THE TIME FACTOR

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Social aspects as regards the time factor: an analysis of the work process in a virtual group

#03 SOCIAL ASPECT AS REGARDS THE TIME FACTOR:
AN ANALYSIS OF THE WORK PROCESS IN A VIRTUAL GROUP

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ABSTRACT

The aim of this article is to analyze how social aspects are created according to the time factor in a virtual work group. Although these informal or emotional aspects are often undervalued or separated from those of learning, there are numerous studies into educational environments that show how social aspects play a basic, necessary role in a groups' success, taking into account the fact that this is responsible for the climate created, the perceived feeling of community and the learning carried out. Using this eminently qualitative process to analyse the

different degree subjects studied at the Universitat Oberta de Catalunya, the study focuses on identifying features associated with the time factor, which have implications in establishing the social side of virtual group work. Specifically, three elements have been detected that are associated with: Individual aspects, group dynamics and teaching staff intervention. The article also analyses the repercussions of features on the social side, noting that the time factor is significantly involved in forming the social dimension.

KEYWORDS

Collaborative learning; Social dimension; Time factor; e-Learning.

INTRODUCTION

As pointed out by Bullen (2010, in Bates et al., 2010), learning, by definition, requires time. Indeed, the time factor is present in any learning activity. This fact is even more evident in a virtual environment, which exists independently of the time factor, ensuring flexibility in the learning process (Bates, 2010 in Bates et al., 2010). According to Barberà (2010:13) "this temporal dimension in e-learning" is considered to be a real tool which is always present and which spreads out into the planning and implementation of online education. Perhaps the time factor does not appear as a keyword for research and conferences but good management and conscious adaptation of it is decisive for online learning to work well". This is why the time factor is gaining ever more significance in literature on e-learning due to its influence on the teaching/learning processes (Gros et al., 2010).

The time factor is also a key feature in collaborative learning processes, specifically in small group work where a defined group of students (3 - 5 in number) works in an interdependent manner, in coordination with and committed to a shared virtual environment in order to achieve a common goal. Work teams have traditionally been formed in the educational environment geared towards developing cognitive abilities. However, social, affective and relationship dynamics are gradually being given greater consideration when studying learning processes, considering that they may be closely related (Delfino & Manca, 2007)

Based on different definitions¹ as regards social features in a virtual environment, we understand the social dimension to mean features perceived or seen by the participants in a virtual context that go

beyond the interaction strictly necessary to achieve an academic goal, and which may be directly or indirectly related to the formal content of the subject matter or else appear independently. These social features are the basis for perceiving participants as "real" and developing a feeling of connection and relationship building. Experts point to two features apparently linked to the social dimension: the group's atmosphere and the feeling of belonging to it. Both aspects arise from the student's perception.

Many studies² show the fundamental role of social, affective and emotional aspects in carrying out collaborative activities successfully and in helping to achieve significant, profound learning. In this vein, emphasis is placed on benefits such as increased group cohesion, a lessened feeling of loneliness, disconnection and feeling distant, encouragement of exchange between members and continuity of the students, increased student motivation, the creation of a support system, etc.

Despite the significant role of the time factor and social features in a virtual collaborative learning environment, literature on the matter shows that both the time factor (Reimann, 2009; Bullen, 2010, in Bates et al., 2010; Barberà, 2010) and social aspects (Contreras-Castillo et al., 2004; Kreijns et al, 2003) have been ignored in literature on e-learning. However, in each case we noted that an increasing number of studies take these factors into consideration.

Consequently, in this article we intend to help understand how the social dimension and the time factor appear in the context of virtual group learning.



METHODOLOGY

Our study aims to understand how to see the social dimension in relation to the time factor in a virtual teamwork environment. Specifically, we have adopted an interpretative methodological frame of mind to add to the studies concerning the time factor, which are mainly based on a quantitative approach. (Reimann, 2009; Gros et al., 2010).

In keeping with the interpretative paradigm, we have adopted a qualitative point of view that aims "to understand people" and to interpret the point of view of social players. In keeping with the definition by Patton (1985, in Merriam, 1998), we intend to understand our subject of study in terms of uniqueness and as part of a particular context. Taking

these considerations into account, we have used the case study (Stake, 1998; Yin, 2003) as a way of developing our own study. Using the following general research question as a starting point:

"How is the social dimension structured as regards the time factor in virtual group work?"

This general question gives rise to the following specific ones:

- What features associated with the time factor in virtual teamwork are relevant in shaping the social dimension?
- How do these features affect group dynamics and thus shape the social dimension?

A) SCENARIO

The educational environment used for our research is the Universitat Oberta de Catalunya (UOC)¹. The UOC is an online university arising from the "Sociedad del Conocimiento" (Knowledge Society), which aims to provide people with education and learning throughout their life. UOC students do not attend the university in person; so their entire educational process is carried out online (Guitert, Romeu & Perez-Mateo, 2007).

In order to fully understand how the social dimension is involved in virtual group learning, different scenarios within the UOC environment were considered. The cases selected include a diversity of profiles and levels of experience in teamwork.

Student profiles have a relation to the degree course in which they are enrolled. Experience

shows that students differ in their style of interaction according to the degree course they are studying. Based on this factor, we chose two student profiles: Psychology students and IT students. . While psychology students have a high level of interaction during group work, IT students tend to communicate less.

The level of experience in teamwork is linked to skills acquired in virtual collaboration during the degree course. As stated in literature on the matter, online learners progress through the different stages from novice to expert (Brown, 2001; Scott-Fredericks, 1997 in Brown, 2001). While taking into account different points in time throughout the degree course (beginning, middle and end), we have only considered two levels of experience: novice and expert. In

other words, novices are students beginning the degree course, while experts have assimilated the learning process associated with the virtual campus environment, the UOC's educational model and the methodology of teamwork in virtual environments.

In the context of the EHEA, certain UOC subjects develop teamwork strategies or incorporate them into their pedagogical approaches. Given the student profile and level of experience, three course subjects were chosen for the study. Firstly, a subject was chosen from the beginning of the degree course in which group work covers almost the entire methodological approach. Given that this is a subject common to all UOC studies, it was analysed for the two chosen degree courses: Psychology and IT.

Secondly, a subject studied in the middle the degree course was chosen. In this case, group work is only one of three proposed activities.

Thirdly, a subject at the end of the degree course was chosen. Teamwork is involved in 5 of the 6 proposed activities.

When the degree subjects had been chosen, two classrooms were selected per degree subject, forming a total of 8. To carry out our study, work groups were chosen in each one. In particular, 3 were chosen from each class from the initial course subject and 2 for each class from intermediate and final course subjects. Finally, 20 groups came to represent the specific context for analysis. The choice of groups was made according to criteria such as carrying out group work in a common area, in order to analyse the process, develop the dynamics successfully, use expressions associated with social dynamics with different purposes and frequencies in this group communication area, perceiving a positive work atmosphere, and so on.

B) METHODS FOR DATA COLLECTION AND ANALYSIS

Different data collection methods were used in order to facilitate profound overall knowledge of the reality under study, combining interactive methods of data collection (i.e., semi-structured interviews and a questionnaire) with non-interactive methods (such as group observation). These instruments complement each other, thus ensuring the holistic nature of the data analysis and providing a basis for their triangulation and the validity of the research procedure being carried out.

With respect to observation, we analysed the following common functionalities beyond the tool used: The teaching staff's communication area, discussion, file repository, Wiki and chat.

Both students and teaching staff were interviewed. Student respondents were chosen using the following criteria: active participation in the group, participating significantly in the group's development; receiving a positive evaluation from the teacher; using social expressions or showing the value of the social dimension in the group's development, and perception of their willingness to cooperate from the messages exchanged during the research. Given the availability and willingness of students to collaborate in our study, 31 students were finally interviewed, i.e. 37.8% of the total members of the chosen groups. 7 lecturers were interviewed, due to their personal availability.



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While the research presented here is based on a qualitative point of view, it is not easy to ignore accessibility to large-scale quantitative data that enables one to contrast and better understand the subject being analysed. Along these lines, we drew up a questionnaire, based on existing ones in the matter (Fung, 2004; Gunawardena & Zittles, 1997; Richardson & Swan, 2003; Rovai, 2002; Swan & Shih, 2005) and included Likert rating scales and open questions. The tool used for the survey was Netquest and it was conducted in a voluntary, anonymous and non-graded manner. It was sent to all classrooms giving the subjects under study, including the 8 being specifically analysed. In total, it was sent to 19 classrooms averaging about 60

students each. 192 students ultimately answered the questionnaire.

Data from observation, interviews and open questions from the questionnaire were analysed qualitatively through Atlas.ti software, and the identification of labels, annotations and choice (Blaxter et al. 2000). Data from the Likert-type questions in the questionnaire were analysed using SPSS software. For cross-sectional analysis we also used the so-called triangulation processes on the complementary nature of data collection instruments used and on contrasting data and players. This process enabled a holistic and at the same time precise view of the subject under study.

RESULTS AND DISCUSSION

The analysis of data collected in the light of the research questions shows that there are some features related to the time factor that influence the configuration of the social dimension in a virtual teamwork process.

These features can be grouped as follows:

- 1) Individual factors,
- 2) Factors related to dynamics, and
- 3) Factors related to the teaching task.

In this section we will analyse each of these factors.

1) INDIVIDUAL FACTORS

According to literature on the matter, there are individual characteristics associated with both personal skills and aspects of the personality of students that shape the attitudes they take toward teamwork in general and social aspects in particular (Tu & McIsaac, 2002).

Specifically, there are three characteristics associated with the time factor that have implications in shaping the social dimension: Availability, willingness and ICT skills.

AVAILABILITY OF GROUP MEMBER

The availability of members is linked to having sufficient time (Baym, 2003; Issroff & Del Soldato, 1996 in Jones & Issroff, 2005 and Brown, 2001) and therefore (according to Bates, 2010, in Bates et al, 2010) to the time

the student has to invest in the collaborative activity. Availability of students for interaction becomes a basic premise in a collaborative virtual environment. As Harasim et al. (2000) point out, the advantages of

interacting with peers decrease if there is insufficient time to read, reflect on and enjoy what is on the screen.

Time is essential in online learning, above all for adults with work and family responsibilities, so that establishing mechanisms to integrate their study with other aspects of their life becomes a requirement (Fung, 2004). According to Romero (2011), in e-learning, the students are responsible for regulating their learning time. In this vein, students recognize that "what's difficult about working, studying and having two small children, is knowing how to organize it all". Nevertheless, 65.1% declare to have been able to devote time to teamwork.

A student's availability affects the group work process, i.e. its progress. Specifically, there are two associated aspects that have significant implications in shaping the social dimension.

Firstly, the level of interaction and participation in the group. According to research conducted by Tu and McIsaac (2002) and Brown (2001), the data show that interaction and participation in the group are crucial elements for creating the dynamics and the social dimension, since, as one student notes, "if people don't get involved, there's no work". In this vein, one student confirms how interaction and participation are the basis of the social side in their

WILLINGNESS OF GROUP MEMBER

Another factor associated with the time factor, with implications in shaping the social dimension, is the willingness of students as regards social features, i.e., the time they spend on group dynamics beyond achieving the strictly academic objective. This time is related in turn to their availability. The willingness of members as regards social

perception of the atmosphere and sense of group: "Judging by comments after submitting the work, everyone agreed that it was noticeable that there was a group that was formed to get on with the work, and not for one or two individuals to work while the others looked on, so that everybody's involvement meant that there was good synergy and coordination in order to create a good group".

Secondly, the atmosphere and sense of group perceived by students. Students reported that the time factor influences the group atmosphere to the extent of shaping the level of involvement of its members. This view is consistent with research by Fung (2004), who pointed to a lack of time as the main factor limiting student participation. One student said that the creation of a positive work environment influenced "the willingness of all members of the group and we've had the time necessary to do the work". The data also indicate that the time available influences their experience and willingness to create a pleasant and friendly group atmosphere, as well as their participation and involvement. One member argued along these lines from a negative point of view: "The workload of all group members has sometimes negatively affected the group atmosphere. We all know that the more stress one has to cope with, the more irascible one becomes and the less time one has to lose."

features determines two important aspects of the social dimension:

Firstly, there is the level of opening up to interpersonal interaction, which is associated with the student's willingness to participate and to establish personal relationships among group members. According to research by



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Rourke & Anderson (2002), observation of groups shows that some students invest more time than others in expressions of social nature. Thus, we found marked differences in terms of the personal characteristics of each student, even among participants in the same group. While one member of a group claims that the group work had been satisfactory because "I always like to make contact with new people and share experiences ", another person from another group comments on establishing personal relationships, "making an effort to relate to people I don't know(...) I'm not very sociable; At the end of the semester, I don't see them again, I don't form a relationship. "Also, one lecturer argues that willingness to establish social relationships decreases as students progress through the degree course. In their own words, "The student is advancing (...) through semesters at the UOC, and gets more and more down to the point. And more and more you realize that the course subjects are becoming increasingly difficult, you want to get the credits and, of course, you focus your time much more and concentrate more on work".

Secondly, the building of personal relationships. Literature on the matter points

ICT SKILLS

The third and final factor associated with the time factor and the personal characteristics of students is their ICT skills and the technological environment in which the education is carried out. Indeed, some students spend time learning about the resources and tools, while others do not. Brindley et al. (2009) point out that accessibility to technology for the different members of a group and the level of skill in using the virtual environment can either help or hinder the dynamics of successful collaboration, i.e. mastery of technology may

out that a virtual student can create ties on the net, since in virtual groups the tendency is to build and maintain relationships (Molinari, 2004). The creation of personal ties affects their perception of the atmosphere and especially of the group feeling. One student shows this fact when telling how the atmosphere and feeling of the group took shape: "One of the members of my group and I began a friendship that we both appreciate a lot (...). I think this factor has been very important in order to have confidence and further enhance the creation of teamwork". The creation of personal ties takes time, as they mainly arise from sharing aspects of personal life, that is, interpersonal interaction beyond the academic dynamics. As one student says, "If you start talking about one thing and end up talking about football or skiing or ... well, this means that when you finish the semester you can go on talking about football or skiing, right? And this is what makes you maintain the relationship; it's what makes you establish the relationship. If the conversations were limited to work and course material, maybe by the end of the course, the conversation would have ended".

be the reason for their frustration or for motivation.

Students consider ICT skill or ability as an important feature of their participation in group work. However, if we look into data based on student profile and level of experience in the UOC, it appears clear that both factors have implications regarding their perception of how the mastery of ICT skills facilitates their participation in the group. Table 1 shows these data expressed in percentages:

Table 1. "My mastery of technology has facilitated group work" (percentage of agreement)

LEVEL OF EXPERIENCE	ENG. IT	PSYCHOLOGY
Novice student	84,08 %	65,51 %
Expert student	85,18 %	79,4 %

As seen in Table 1, students with more experience in the context of the UOC perceive that their ICT skills helped them with group work more than students in the same degree course with less experience.

In addition, a technological student profile assumes that mastery of ICT skills helps more with group work than in the case of psychology students. One IT student stated in this regard: *"Perhaps a technological student has it easier. (...) It's easier for you to use the tools; you are more accustomed to them. We already do all our assignments on a computer or else we're programming or compiling or doing things with processors."*

Students point out that this mastery of ICT skills has different implications for group

dynamics. On the one hand, it enables them to be connected almost permanently. As one student says, *"I have my digital calendar on my mobile phone (...) and I have it synced with my desktop PC... this means that I can be looking at an e-mail when I'm on the train and, like it or not, you're more connected."* On the other hand, some state that as they have this knowledge beforehand *"it leaves you more free time to devote to other things"*. In particular, students argue that this is an important factor in shaping the social dimension. One student said that the positive atmosphere of the group was influenced by *"the fact we know how to use ICT and that we know how to communicate and express ourselves taking into account other people."*

2) FACTORS ASSOCIATED WITH GROUP DYNAMICS

Along with individual factors, other features of the process can be distinguished, i.e. group dynamics related to the time factor that influence how the social dimension takes shape: The effectiveness of interaction, the group's internal organization and management of critical situations.

EFFECTIVENESS OF INTERACTION

The level of effectiveness refers to communication strategies in virtual environments and the time spent on this. As suggested by Guitert & Gimenez (2000), in electronic interaction, it is important to

achieve a fast and streamlined system that does not imply added time and energy but which favours the team's work and ability to function, making it more dynamic.



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The exchange that takes place in group spaces does not always produce a clear and effective system. In some cases, a lack of communication strategies leads to a high amount of intervention, causing confusion, backlogs and delays, and may even adversely affect the quality of the activity. One lecturer referred to this fact by saying "Sometimes, results are not as good as expected. It sometimes happens that groups that have been arguing, arguing and arguing... submit work that is rather poor", data show that these situations are common in groups regardless of their experience and student profile, and they are very frequent in those with a high level of involvement.

One noteworthy feature as regards the

INTERNAL GROUP ORGANIZATION

Internal group organization refers to all decisions made by members on how to proceed in order to carry out the work in collaboration. Specifically, we can highlight three features of group work with implications for the relationship between the time factor and the social dimension.

Firstly, monitoring the planning, as a key feature in managing the time spent on carrying out virtual group work. Monitoring and fulfilment of the designated tasks within deadlines specified in the group planning has important implications for the social dimension from a positive standpoint. Indeed, on the one hand, monitoring planning associated with commitment increases trust between group members when one considers that it allows them to corroborate the involvement of all members. In addition, monitoring planning involves working steadily, promoting a positive, informal work atmosphere. Consequently, the main problem occurs when one member is irresponsible as

effectiveness of communication is the use of social expressions. Despite their benefits in creating dynamics, such expressions and in particular those associated with personal aspects can be detrimental to learning to the extent that they imply an added investment of time. They even also destabilize it or hinder it. One lecturer mentions: "it is clear that a group that spends time talking about football or what's happened to me instead of doing the work isn't working". One student noted that *"At first I do a minimum amount of thanking, because if not you are reading messages such as "I've just had a baby"; "ah, congratulations"; "more congratulations"... and you say "my God!"*.

regards monitoring planning. One teacher commented on this aspect: *"I think one of the problems UOC students sometimes have is that they are anxious because someone doesn't comply with what has been asked of them and this makes the group work badly"*.

Secondly, information management, i.e. how content related to the collaborative activity is exchanged, in other words, process optimization with relation to the time factor. In a virtual system it is essential to facilitate information management. Indeed, when communication and information exchange occur via text, the structure, clarity and instructions for optimizing time spent favours smooth dynamics and the creation of a relaxed atmosphere. Along these lines, data shows the importance of specifying contributions or changes made to the information exchanged in the group, either in the document itself or in the communication area. There are also some noteworthy features such as *"Tracking changes"*,

organization for depositing files and a system for notifying changes. Based on these features, the main conflict situations identified in this area are concerned with unstructured and unsystematic information exchange systems, which can adversely affect the quality of work carried out, deadlines and the work atmosphere.

Thirdly, the use of ICT for group work. One important feature as regards virtual group work concerns the tools used to carry it out. In general, we can see that some tools may foster both management and the social dimension to a greater or lesser extent. It is worth noting along these lines that although students perceive synchronization as favourable to the social aspects and they

appreciate its potential as regards specific or occasional situations, they highly value asynchronicity due to the flexibility it provides. In the words of one student: *"One of the things I find most important when doing group work of this kind is the ability of team members to work asynchronously. In some virtual workgroups I have participated in, some members insisted on having frequent chats, which were slow, cumbersome and where you normally could not get everyone together. (...) Having a means of asynchronous communication can greatly facilitate virtual group communication (...). It is also useful to do it this way, since everyone connects at different times"*.

MANAGEMENT OF CRITICAL SITUATIONS

Depending on the approach to the subject and the stage of the collaborative learning process, difficult or tense situations can arise in a group: Complicated activities, a heavy workload, occasional or prolonged absences of a member, abandonment, expulsion from the group, etc. Such situations have important implications for the social dimension.

Having sufficient time in any case becomes a key issue in handling this and in the students' experience. This becomes clear when these situations occur on starting an activity or on handing it in.

If we take the example of a one-off absence of a member, we note that the impact on the social dimension varies depending on whether this takes place at the beginning of the activity (when the availability of time is longer) or upon submission.

When the temporary absence of a member occurs at the beginning of an activity, i.e.,

when there is time to complete it, this does not hinder the dynamics, even if it delays progress in the work while the group awaits this person's contributions. In addition, occasional absences associated with a lack of connection to the Virtual Campus can cause duplications or confusion with the different versions of files. This is borne out by one member of a group on assessing the work contributed by a colleague who was absent due to connection problems: "Please work with the latest version, 9, since you've used version 7 (...). If you read V9, you can surely also add your contributions; on the other hand, they seem fine but they must be included in this version".

If this situation occurs near the submission date or stems from a lack of involvement at the beginning of the activity, the impact on dynamics is more significant. In this regard, it is necessary to take into account that interaction tends to build up as the delivery



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deadline comes closer. This aspect has been addressed in monitoring of the planning.

Moreover, time becomes a decisive factor in itself when managing critical situations.

Students tend to establish a certain period of time to make decisions, to decide when a member exceeds the minimum connection time or has left, etc.

3) FACTORS RELATED TO THE TEACHING TASK

In addition to factors relating to group dynamics, students identify some external features, i.e. outside the group's activities, in relation to the perceived social dimension. Although these are less numerous than those described above, they have significant implications in shaping this dimension.

Specifically, these factors are associated with lecturers' intervention, highlighting the duration of the activity, the level of difficulty of the task or workload, proposed activities associated with the dynamics and the evaluation process. According to Moore (2010, in Bates et al, 2010), these features refer to one of the critical aspects associated with the time factor in distance learning: Course design.

ACTIVITY DURATION

Students often resort to the time factor associated to activity duration, i.e. the period of time working together, in order to explain their perception of the feeling experienced in the group. One member shows this situation by saying, "I think that at some point you get to feel a sense of group, but it's not intense or long-lasting. The fact that the groups last a relatively short time is not conducive to feelings arising". Another said that while they had forged "good companionship, at the time, this has not gone any further. This is probably because of time". A third argues that if the activity had lasted less time, "group dynamics would not have been created because there wouldn't have been time". Even so, the data show that although

the duration of the activity may be a relevant factor in creating a group feeling, it is not decisive. Indeed, students working in groups for less time experienced this feeling to a lesser extent than those who worked together for longer, by a percentage of 77.76%. However, at the same time these figures show that, regardless of the duration of the activity, some students perceived it while others did not. In any case, qualitative differences are perceived as regards this feeling: While students who worked for a relatively short period, refer mainly to factors pertaining to carrying out the activity, many of the groups that interacted for more time, created work dynamics beyond achievement of the academic objective.

LEVEL OF DIFFICULTY OF THE TASK OR READING WORKLOAD

The level of difficulty of the degree subject or its associated workload is seen as an

important feature in shaping the perceived social dimension. With regard to this, one

student points out how the difficulties associated with requirements of the degree subject had had an influence on the establishment of a positive and cohesive work atmosphere. In his own words: *"Surely due to the use of chats and togetherness when faced with difficulties, the toughness of the project... I developed personal relationships with companions, which did not occur in any other subject at the UOC"*. Referring to the same aspect but from another perspective, the following student discusses negative atmosphere created: "The

fact that the course had a workload in excess of the assigned credits had an effect".

According to these comments, it appears in general that the difficulty of the work influences the development of the dynamics, so that depending on time availability and the specific experience, this can sometimes be a feature that unites the members, while on other occasions it can be detrimental to the creation of an optimum climate for work and learning.

PROPOSED ACTIVITIES ASSOCIATED WITH THE DYNAMICS

Students mention different instruments or activities associated with the teaching approach as important features in shaping the social dimension perceived, and specifically the group atmosphere. More specifically, they include the monitoring of group planning of the activity and the joint creation of rules at the beginning. One student reflects the influence of planning and regulation of the social group perceived when they say, *"Good organization and*

compliance with planning was fundamental in our teamwork and the only negative aspect arose due to failure to comply with this planning. As a result, this created a sense of disorder, disorientation, anxiety and small tensions between group members".

The time spent creating the dynamics therefore becomes a guarantee for the subsequent dynamics of the group.

PROCESS EVALUATION

Another feature related to the perceived social dimension concerns the feedback process. As shown by data, feedback received as soon as possible is essential to revive the momentum following the previous delivery (taking into account that, as we have seen above, in a process of group work based on different activities, the interaction at the beginning of each of these is less than when they are handed in). As argued by one

teacher and, especially in the case of positive evaluations, the handing in of the activity *"puts gasoline in their engine. There are groups that submit the project, right. Then they relax, okay. They relax; first there are celebrations, "very good," and so on. But for a few days they stop. And then in this break they get my answer, my feedback. And that's what gives them the energy to apply themselves to the next practical activity."*



CONCLUSION AND IMPLICATIONS FOR PRACTICE

Based on the context of further education, in this research we have analysed how the social dimension is configured according to the time factor in work in a virtual group.

In general, it appears that the time factor appears consistently in virtual teamwork dynamics and as a result it has significant implications in shaping the social dimension.

Responding to the first research question posed, different features related to the time factor in the group work process have been identified, which have implications on the formation of the social dimension. In order to facilitate analysis and understanding, these features have been grouped into three categories:

- Individual factors. As regards individual or personal factors, i.e. regarding each student, there are three noteworthy factors related to the time factor that has implications in shaping the social dimension: Availability, willingness and ICT skills.
- Factors associated with group dynamics, i.e. associated with the process carried out by each group. With regard to this, we can highlight the effectiveness of interaction, the group's internal organization and handling of critical situations such as aspects regarding the time factor, which have implications on the social dimension.
- Factors related to teaching staff intervention, i.e. to their action. In particular, the following emerges: Duration of the activity, level of difficulty of the task or workload, proposed activities associated with the dynamics and the evaluation process.

Regarding the second research question

presented in this study, related to the impact of the features identified in the previous question on the social dimension, we have seen in each case that these influence the groups' social features. Indeed, how each student manages their time, how this factor is dealt with in the group and how it is handled through the planning and teaching staff action shapes students' perception and creates different types of social dimension.

In particular, we can conclude that when time is devoted to group work, this has a positive effect on the perception of the social dimension and therefore also on the benefits it provides for the learning process. In contrast, when students are short of time, management of the time factor is deficient in groups or this feature is missing from the educational activity. The implications in shaping the social dimension are negative and therefore the benefits for learning decrease.

These results have noteworthy implications for educational practice. Given the relationship established between the social dimension and the learning process, it is important to help students to have time to invest and encourage the social aspects during group work. In other words, if students are short of time or have little availability, they will avoid dedicating it to the social dimension, concentrating only on carrying out the activity. Taking this fact into account when forming pedagogical approaches and encouraging investment in the process' time and efficiency is the key to help create the social dimension and its positive impact on the learning process.

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Footnotes

¹Gunawardena (1995); Garrison et al. (2000); Tu & McIsaac (2002); Swan & Shih (2005) and others.

²Among them Angeli et al. (2003); Contreras-Castillo, Favela, Pérez & Santamaría (2004); Curtis & Lawson (2001); Garrison & Anderson (2005); Gunawardena (1995); Jones & Issroff (2005); Kreijns et al. (2003); Molinari (2004); O'Regan (2003); Richardson & Swan (2003).

³www.uoc.edu
