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Enhancing Collaborative Learning: A Conversation Analysis of Moodle Platform Forums

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Abstract

Teamwork, collaboration, and co-construction are terms that have long been addressed. Educators are interested in communication between learners in groups. Their communicative skills and their interpersonal relationships are considered. Interactions in learning are at the heart of the sociocultural theory. This article provides conceptual and empirical information related to online interactions in forums. It aims at exploring students' knowledge co-construction through forums. A mixed method was adopted to gain deep insight regarding the online exchanges. Quantitative data were collected via a survey shared with IFTEC master program students to know their perceptions regarding the use of forums and their importance in the co-construction of knowledge. Qualitative data were collected based on a conversational analysis model and a textual analysis method through "Tropes" software, to release various levels of meaning and number of occurrences. Quantitative data have shown that most of participants believe that online interactions are important for the co-construction of knowledge in blended learning. Some measures were suggested to improve the online learning experience. The qualitative data showed that the general style of the content is rather argumentative. The narrator is mostly present with favorable intervention by the tutor. An average level of interactions and a reduced participation rate are noticed. The co-construction is manifested in the dyadic and triadic relationships created in some forums.

1. Introduction

Group work, collective work, collaboration, cooperation and co-construction are notions that have long been dealt with. In describing teachers' classroom practices, we always refer to the nature of the work or tasks requested by the teachers, whether collective or individual. Collaborative work between learners has been the subject of research in didactics for many years. The questions addressed concern the distribution of tasks, the roles played by the learners, the posture taken by the teacher during group work. The topic of interactions between learners working in groups is of a particular importance. Teachers are interested in the communication that takes place between learners in small working groups. The communicative skills they acquire and the interpersonal relationships they establish with each other are also considered. This interaction between learners enables them to develop interpersonal skills to better integrate their society i.e. they are prepared for the real interaction that takes place outside the classroom. Interaction in learning is at the heart of several theories and research, notably those that pay particular attention to the social dimension in learning, such as Vygotsky, 1997 and his successors, who see group learning as a means of knowledge construction (Mahn,2013). Today, interactions do not only take place in the classroom. With the development of digital technology, the notion of working in small groups is being rediscovered. New tools for communication and interaction are being created; such tools promote collaborative work and online interactions between learners.

1.1. Background of the Study

Online education is of a great importance today in Moroccan universities. It comes in the first place as a solution for the problems that students encounter in universities, in particular over-crowdedness; the number of students joining the public university is increasing every year. Also, with the Covid19 pandemic, the emergency remote learning has highlighted the importance of online learning nowadays. This puts the teacher in a difficult position to manage these large groups face-to-face. Thus, the use of digital distance learning environments is essential. Furthermore, blended learning, which combines face-to-face and distance learning, is becoming an alternative in higher education. In the case of Mohammed the first university in Oujda, the IFTEC master degree is an example of blended learning. Learners access the course in advance, work at their own pace and according to their needs. The classroom remains the place for discussing complex notions and sharing ideas and knowledge through presentations or debates organized in the classroom. The presence in the platform (Moodle) and the participation in the forums of discussion is highly recommended by educators and tutors in

different courses. In this master program (IFTEC), collaborative work is of a great importance. It is seen as a means of cognitive, socio-cognitive and socio-affective development for learners. Collaborative tasks are at the heart of the strategies taken by the teachers in this master program, hence comes our interest for studying online interactions in forums of discussion in Moodle platform in three different courses:

- Ingénierie de formation (2020-2022)
- Ingénierie de formation (2021-2023)
- Modèle pragmatique de communication et d'apprentissage (2020-2022)

1.2. Problem statement

Collaboration plays an important role in learning; online learning is no exception. Forums of discussion in learning management systems (LMSs) constitute suitable tools for enhancing collaborative skills through interactions. The quality of online interactions has an important role as well among learners and teachers (Khlaif et al. 2017). Within this environment learners have the ability to build knowledge collaboratively. However, the quality of interactions is not related to the number of participations, but rather to the quality of discussion (Lima et al.2019). So, understanding learners' perceptions regarding forums as collaborative tools in addition to analyzing threads of discussions is of a significant importance in the current study. Hence, the article tackles the role of discussion forums as a means of co-construction of knowledge in the context of online collaborative learning and the possibility of enhancing collaboration and online interactions through forums of discussion.

1.3. The Purpose, Significance, and Scope of the Study

The objective of our research is the analysis of online interactions among learners using forums of discussion and aspects of knowledge co-construction as well as online discussion patterns. We will try to understand, describe and explain the manifestations of co-construction in such an interactive and collaborative digital space. We want to find out what students think about collaborative work and how they perceive online collaboration in their blended learning. This study is based on the description of aspects and manifestations of collaboration and co-participation within forums. Moreover, it aims at understanding the usefulness of online forum discussion in the learning process. Therefore, the socio constructivist theory along with computer-mediated communication (CMC) constitute theoretical frameworks for our study. Besides, the understanding of online interactions and discussion patterns in forums is made possible through the conversation analysis model.

1.4.   Research Questions and Hypotheses

The present article tends to find answers to the following research questions:

- How do university learners perceive the use of forums in blended learning?
- To what extent can discussion forums facilitate collaboration and communication among learners?
- How do online interactions enhance students' level of knowledge co-construction?

We assumed that:

- Discussion forums improved learners' co-construction of knowledge.
- Discussion forums enhanced learners' collaboration and communication skills.

The current article is an exploratory research which aims to find answers to the aforementioned questions by tackling the following sections: the first part revolves around a general literature review, which focuses on interactions and collaboration and the theoretical framework underpinning our study. The second part revolves around the methodology followed which is a mixed one and the third section is about the analysis and discussion of the findings.

2.   Literature review and Theoretical Framework

2.1.   Social interactions in the socio constructivist theory

In order for everyone to be able to share, exchange, collaborate and co-construct, it is necessary to develop certain "social" skills. It is about learning to learn from each other. It is about listening to and respecting each other in participatory educational situations. Social intelligence is of a great importance in this context. The socio-constructivist theory highlights the importance of social interactions in the construction of knowledge as well as the roles of peers and tutors in the development of social and collective intelligence. (Powell & Kalina,2009). Vygotsky, 1978 insists on the role of interactions in the development of the individual. The socioconstructivist theory sees the social context as a determining point in the development of learning. In the sociocultural approach, in order to understand the interaction, it is necessary to perceive the mental distance between the learners, considered for Vygotsky as the zone of proximal development (ZPD) (Vygotsky & Coles, 1978). It means the distance between what a learner knows and be able to know with the help of an adult or an expert 'scaffolding principle'. However, some authors (Doise & Mugny, 1981) do not believe that it is necessary for one of the participants in a collaborative learning situation to be more competent or expert than the other in order for learning to be effective. Cognitive development can also be ensured by socio-cognitive conflict in social interactions. The latter is a factor in the mental

development of individuals. It is through cognitive confrontations, that learner come up with common solutions for tasks.

2.2. Collaborative learning and computer mediated communication (CMC)

In the 21st century era we are living in, collaboration is seen as one of the most important soft skills needed for today's economy. Amalia, 2018 argues that *collaborative Learning provides students with opportunities to get new ideas from their peers and thereby establish mutual interaction in the learning process.* Working collaboratively in face-to-face or online guarantees a certain cognitive and socio-cognitive development for learners. They develop their communicative, cognitive and affective competences or skills. In the same context Amalia (2018) considers the communication that occurs while working collaboratively as a means for *activating their mental function to maximize thinking, reasoning, and problem solving.* According to Lin, 2014 Collaboration aims at *providing more language practice opportunities, improving the quality of students' talk, creating a positive learning climate, promoting social interaction, and allowing for critical thinking.* Our study focuses mainly on the benefit of encouraging online interactions among learners. It is through sharing, discussing, agreeing and disagreeing that the interaction takes place in collaborative work, which is at the heart of the conversation analysis model adopted in this study.

Nowadays, and with the evolution of new technology and digital learning, learners are able to work collaboratively within digital workspaces. Such workspaces are the discussion forums in online educational platforms. Hence, comes the notion of computer-mediated communication (CMC). Thurlow et al. (2004) defines it as *"communication that takes place between human beings via the instrumentality of computers"* (Thurlow et al, 2004). Considering the discussions among learners in such digital spaces as 'conversation' has been a controversial issue among researchers. The notion of conversation has long been considered in face-to-face discussions where communication is synchronous as opposed to CMC, in which communication is usually asynchronous and where this notion of time and space is no longer an obstacle. (Nurul, 2018). However, with the growth of studies in CMC, this notion of conversation and interactions in digital spaces is accepted. In the current study, we are interested by the online interactions taking place within forums of discussion. The latter, constitutes an important space for collaboration, exchange and co-construction. To study the interactions among learners in the forums we have adopted as already mentioned before, the conversation analysis model by Marcoccia, 2004 and Mondada, 1999.

2.3. Conversation analysis in forums discussion

Ethnomethodology is a stream of research in the social sciences. Its founder is Harold Garfinkel (1967). It is concerned with the social practices of individuals in their everyday lives; their ways of understanding each other, their reasoning and their social actions. Inspired by this stream, collaborators and students of Garfinkel (Sacks, Schegloff, Jefferson) developed conversation analysis. Their interest in conversation stems from the fact that it is an important element in social life. (Mondada as cited in Müller et.al 2013) In principle, conversational analysis studies face-to-face conversations. It was then applied in CMC to be able to analyze and understand the dynamics of online exchanges (Marcoccia, 2004). In conversational analysis, the focus is on interactional activities, where context is of a great importance; every action is attached to its context. The conversation is ordered in a sequential organization where participants take into account previous and subsequent actions. This sequential organization plays an important role in understanding online exchanges; and the forum is a good example of that. The advantage of the exchanges on the forums is that they are archived and the traces are kept and can be viewed at any time. We note that the exchanges occurred in a natural way and were then collected by the researcher. Conversational analysis is in fact concerned with 'natural' conversations that are not provoked by the researcher. (Strioukova, 2006).

3. Methodology

3.1. Sample, Participants and instruments

Our target audience are learners in the IFTEC master program. Learners who belong to the school year '2020-2022' and '2021-2023'. We used an online questionnaire through 'Google form' and distributed it to 31 students pursuing their university education in the 'IFTEC' hybrid master program, 18 students are from the 2020-2022 class, and 13 from the 2021-2023 class. According to this questionnaire (See Appendix), we aim to identify in a more or less broad way the following points: The role of technological tools in collaboration between learners and the roles of online interactions via these tools. On the other hand, it will allow us, through the results that we will have obtained and analyzed thereafter, to confirm or refute totally or partially our hypotheses, which we will analyze later in a rather qualitative manner.

The questionnaire consists first of all of questions related to personal information. In addition to questions related to their use of web 2.0 tools, perceptions and frequency. They were also asked about their perceptions regarding working collaboratively and the importance of forums in enhancing their collaborative and communicative competences. Different questions were used through Likert scale, yes/ no questions, open-ended questions… As we adopt a rather

mixed approach; both quantitative and qualitative and given the complementary nature of these two methods. We opted for a qualitative analysis of the data collected in forums of discussions to support the results obtained from the questionnaire.

3.2. Qualitative data collection

The second mode of data collection concerns the qualitative side of our research, where we aim to collect data that we will later analyze adopting the conversation analysis model. We aim at collecting the traces of the learners' exchanges in the forums within their pedagogical platform (Moodle). A descriptive study of the context and the number of participations within the selected forums in our study seems important for the research. Henri et al, (2004) speaks of the classification of the discussion forum. It is about making a descriptive study of the elements constituting the forum so that it facilitates the qualitative analysis thereafter. Thus, we plan to classify our data in the form of charts, which we will then process in order to decide on our final corpus:

Table 1. *Classification of exchanges in the discussion forums in the course "Ingénierie de formation" (class of 2020-2022)*

Section	Discussions	Total number of contributions	Discussions with answers	Discussions without answers
Forum 1	6	19 contributions	5	1
Forum 2	15	18 contributions	11	4
Forum 3	5	8 contributions	4	1
Forum 4	4	6 contributions	3	1

Table 2. *classification of exchanges in the discussion forums in the course "Ingénierie de formation" (class of 2021-2023)*

Section	Discussions	Total number of contributions	Discussions with answers	Discussions without answers
Forum 1	7	24	6	1
Forum 2	4	9	3	1
Forum 3	3	20	3	0
Forum 4	1	1	0	1

Table 3. *Classification of exchanges in the discussion forums in the course "modéle pragmatique" (class 2020-2022)*

Section	Discussions	Total number of contributions	Discussions with answers	Discussions without answers
Forum 1	**10**	29	9	1
Forum 2	**8**	10	9	1
Forum 3	**6**	7	3	3
Forum 4	**3**	0	0	0

As we are looking for threads where interaction, exchange and sharing of ideas and collaboration are present, we have decided to base our choice of forums to be studied and analyzed on the total number of contributions. We have kept only the discussions with answers and deleted the other discussions without answers. Moreover, among the discussions with answers and through a preliminary observation we have decided to keep only the forums with the highest number of answers. Therefore, table 4 presents the discussions that we have finally kept as a corpus for our analysis in order to answer our research hypotheses. We will discuss later in the study this phenomenon of unanswered discussions.

Table 4. *Final corpus of the study*

Class	Course	Section	Number of discussions	Total of contributions
2020-2022	IF	Forum 1	4	17
		Forum 2	3	9
		Forum 3	3	7
		Forum 4	1	3
2021-2023	IF	Forum 1	4	21
		Forum 2	2	7
		Forum 3	3	20
2020-2022	M.P	Forum 1	4	20
		Forum 2	1	3
		Forum 3	1	3

4. Results

To investigate on the importance of collaboration and the use of forums in blended learning for university students we have asked the following question: Q1: How do university learners perceive the use of forums in blended learning? Also, to understand and explain the manifestations of co-construction and collaboration within forums of discussions, we have asked the following questions: Q2: To what extent can discussion forums facilitate collaboration and communication among learners? Q3: How do online interactions enhance students' level of knowledge co-construction? We assumed that: H1: Discussion forums improve learners' co-construction of knowledge and that H2: Discussion forums enhance learners' collaboration and communication skills.

4.1. Quantitative results

When asked about the most required activities by the educators in their blended learning, students classified the participation in forums first, followed by mind mapping and glossary activities. In the same sense, when asked about the most used web 2.0 tools in their studies 94.4% chose the forums followed by 88.9% for Google docs and 77.8% for social media. 38.9% expressed that the use of such tools in blended learning is interesting. 72.2% said that they often participate in forums of discussion and that the latter enhances both their communicative and collaborative skills. However, when asked about their perceptions regarding collaboration, the majority prefers to work either individually (61.1%) or in pairs (66.7%). Besides, they have chosen Google doc as the most convenient tool for collaborative work followed by forums of discussion though the two are totally different in nature. They have stated that they encounter different difficulties while working in groups online. Among the difficulties, they state: organizational and communicative difficulties, also complications related to comprehension and interpersonal and technical problems and also problems related to task completion. Besides, they find that forums are less useful compared to Google docs. When asked about the forums whether they represent a good tool for knowledge co-construction 55.6% said no, and 44.4% said yes. Furthermore, when asked about the utility of web 2.0 in collaborative learning, 83.3% agreed on their utility justifying their answers as shown in figure 1. The most frequent reasons are that web 2.0 tools promote collaborative work, facilitate exchanges and learning, help in promoting active learning, develops virtual relationships and encourage peer learning. On the other hand, though learners have expressed their preference of working individually or in pairs,

they do not deny the importance of collaborative work in enriching discussions, sharing ideas, solving tasks, learning, creating an affective link, being a source of motivation …and others.
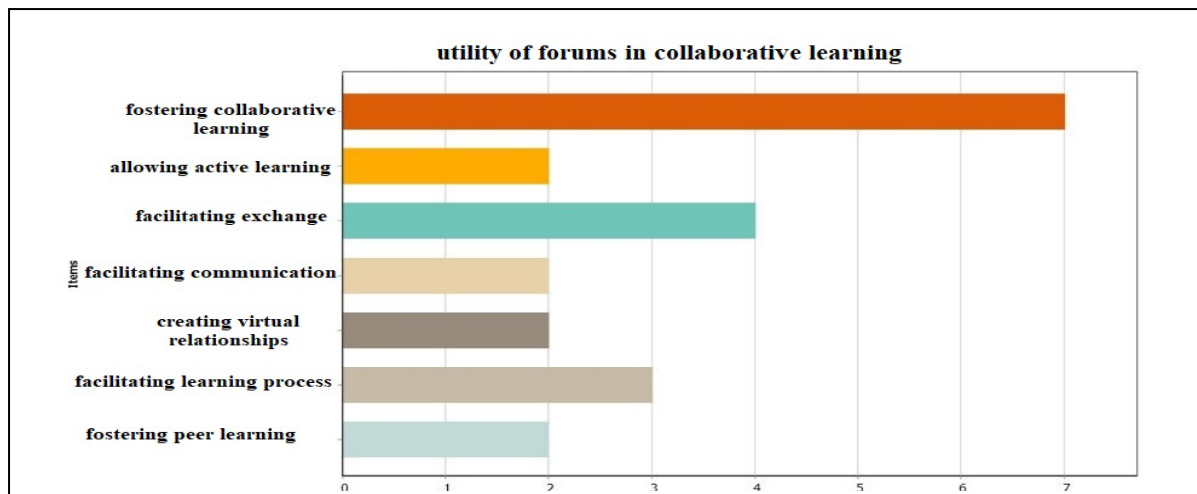

Figure 1. *The utility of forums in collaborative learning*

Learners were also asked to suggest some measures to undertake in order to improve co-construction via forums, their answers justify somehow why the forum was not ranked the first (Figure2). The most frequent suggestion is related to the organizational difficulties we mentioned earlier. Learners suggest organizing the forums in a thematic way *(Une organisation thématique des sujets à aborder…Proposer du contenu à tour de rôle et y réagir obligatoirement)*.
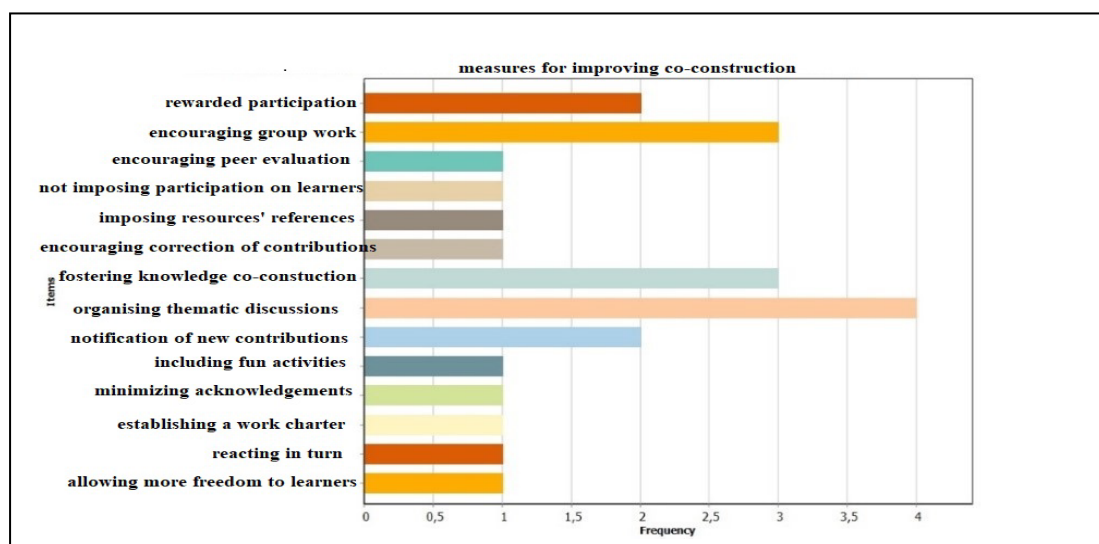

Figure 2. *Measures for improving co-construction according to learners.*

Moreover, learners suggest that teachers should encourage collaboration and co-construction through feedback and rewarding system. They also highlighted the fact that participating should not be obligatory; they have to participate freely and without being controlled by the presence of a teacher. Here learners, seem to be less at ease knowing that their teacher is reading their

contributions. A point that supports the fact that they resort to other exterior tools to work with, and where the teacher is not present. Overall, we can say that the forum structure and the participation framework constitute an important point for learners to participate. Besides the freedom of expression or participating and the role played by the teacher in such workspaces are all to be considered.

4.2. Qualitative results

4.2.1. A content analysis inspired by the conversational analysis of Marcoccia (2004)

In order to begin our analysis of the corpus made up of interactions in discussion forums, we divide this analysis into three sub-categories that are suggested by Marcoccia and which we apply in our case, namely: conversation structure, participation framework, and messages production and reception format.

Conversation structure.

The functioning of the forum is particular. Exchanges are organized in a hierarchical manner following a chronological order. Interventions are organized by date and time of publication. The instructor has taken the initiative to initiate the theme or topic of the discussion. This is for reasons of management and organization of space. The learners all gather around the same topic of the week through sharing and discussing. Learners usually take the initiative of launching discussions, still we have observed the intervention of the teacher from time to time to encourage and prompt learners to take part in discussions. However, the participations are most of the time short and in which learners answer most of the time only to thank the initiator of the subject for his or her intervention. For instance, in this forum (IF / forum 1, class 2020-2022); only one contribution out of 17 contains a new added idea to the discussion. Thus, the interventions are often very short. In most cases, they were answers to the question asked or suggested at the beginning by the initiator (learner). Some students reacted to their friends' answers with a comment or an addition, while other students did not react at all. We have observed also the presence of an active initiator in seven different initiations within the forums that belong to the class 2020-2022. Yet, only four discussions out of seven, which contained learners' reaction, though only to thank, add or ask a clarification question. In the other discussions, the intervention of the learner was faced with silence. This problem causes a phenomenon that is often present in online discussions, named *truncated* messages. *(Marcoccia, 2004)* Some questions, for example, remain unanswered and other questions are answered but shortly and most of the time without following the thread of discussion. Additionally, we have observed the existence of some forgotten interventions, seen as *obsolete*

which makes learners launch new messages without reacting to the previous ones, and this phenomenon we have noticed, exists in almost all the studied forums. Overall, the conversation structure in the studied forums have not allowed us yet to touch that aspect of collaboration and co-participation.

Participative framework.

Here we refer to the types of participants existing in the exchanges within the forum. The number of students in our study is 31 in total, yet we notice a great absence of participants in the forums. In some forums, we sometimes find conversations between only 3 to 4 students. We assume that those who prefer to observe without interacting are those who have communicative and organizational problems. Thus, this may even be related to a lack of motivation or interest in using such tools. The reasons for this lack of interaction can be diverse, but we will focus on the present tracks to look for elements of collaboration and co-construction that we aim for in our study. The participation framework as Goffman (1981) calls it, is the set of participants who are engaged in the interaction within the forum and the mode of participation of each. We can initially identify two types of participants in the forums studied, which are organized as follows:

- The number of students in the class 2020-2022 is 18, however only nine learners keep participating in the forums of the course '*Ingénierie de formation'*. i.e., nine other students remain passive observing only without leaving any trace.
- The number of students in the class 2021-2023 is 13, however only eight learners keep participating in the forums of the course '*Ingénierie de formation'*, which leaves us with a number of five passive students not reacting to their friends' contributions. It is worth mentioning the presence of a tutor in this forum who has contributed in four different discussions in encouraging and prompting learners to participate.
- The number of students in the class 2020-2022 is 18, however only nine learners keep participating in the forums of the course 'modéle *pragmatique'*. i.e., nine other students stay away as mere observers.

The production format

According to Marcoccia, all present members in the forum of discussion are considered participants. What differs from one participant to another is the degree of interaction in the space. Hence, in a forum for instance two types of participants exist those who produce the message and those who read only. Even among these engaged participants, we find that some

interact several times more than others do. In this regard, Marcoccia, (2004) suggests a tripartition of participants as follows: *a silent reader, an occasional/casual participant, an animator*. In the studied forums this tripartition is embodied in the number of students participating. Those who don't and whom we counted before are silent readers, those who participate more than others are animators and hence the others who participate less are occasional. In the same sense, Goffman 1981 distinguishes three levels of speakers: an animator, an author and a principal. The principal is the one *responsible for the message*, the author is the composer of the message, and the animator is the producer of the utterance (Annie, R. 2012). However, if we apply this tripartition in our case, we realize that the students/participants play all these roles at the same time. In other words, these different levels all correlate with the same person in the interaction situation. The student is at the same time the author of his or her production, the principal and the animator.

The reception format

Based on Figure3, which summarizes the reception format as proposed by Goffman. Ratified participants are *involved in the exchange (Shaeda.2009)* They are engaged in the interaction, and are in principle all producers of messages. They are the students who participate, add comments, react to what the other contributors have said and ask questions that provoke discussion. All the interventions are public; addressed in principle to everyone. Nevertheless, there are recipients who are directly involved, which gives rise to dyadic or triadic conversations sometimes. Those recipients who are directly involved are usually *addressed* by their names. However, the existence of *unaddressed* recipients makes it somehow difficult for us to analyze. Such recipients are not addressed by name. In this case, the interventions are simple responses to the original message and not a reaction to a specific participant. This phenomenon makes our task as an analyst difficult, as we will not be able to understand the sequence of the discussion because everyone answers on their own without taking into account the previous answers. The unratified (bystanders) people are those who chose not to interact and to be mere observers. We have counted them earlier in the article. *(Nine in the forum IF 2020-2022/ five in the forum IF 2021-2023/ nine in the forum MP 2020-2022).* We can call these students 'overhearers', borrowing the term used by Goffman. The speakers are aware of the presence of these people and that they are probably reading and observing the exchanges but without any feedback. The opposite category is called 'eavesdroppers'. Draucker, 2013 defines this category as *those who purposely put themselves in a position to be a recipient of the talk, often without the speaker's awareness*. They are *recipients that come across talk by*

their own design and do not leave a trace in reception. We cannot consider this category for the simple reason that we ignore the possibility of the existence of this kind of recipients in the studied forums. Our conversational analysis of the forums does not stop here as further analysis is still needed to identify aspects of collaboration and co-construction. For this purpose, we will move on to a more detailed analysis of exchanges, interactions, expressions used and other clues by building on Mondada's analysis model of sequential analysis of online exchanges.
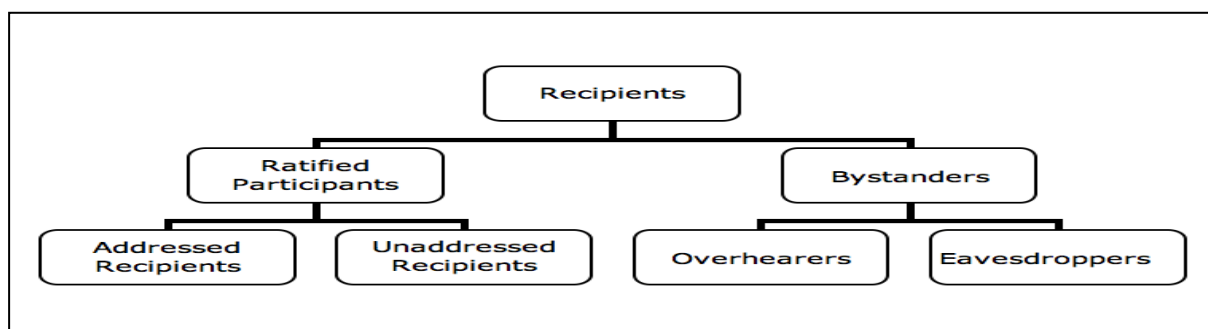
Figure 3. *Goffman's reception format adapted from Kerbrat-Orecchioni (1990:86 as cited in Shaeda.2009)*

4.2.2. A sequential analysis of exchanges inspired by Mondada's conversational analysis: aspects of collaboration and co-construction

In this second part of the analysis, we will look at the indicators as well as the aspects of collaboration, mutual understanding, and mutual communication that lead to the co-construction of knowledge. We will analyze these aspects based on a sequential analysis as proposed by Mondada. It is exactly an analysis of the *sequential organization (Mondada.1999)* of asynchronous messages, using certain notions of conversational analysis to detect the characteristics that can help us answer our research hypothesis.

Turn taking in forums

Whether face-to-face or remotely, the organization of the turns of speech is considerable. Although at times the conversation may seem 'chaotic', there is still a sequence; a machinery of turns (Sacks, Schegloff, Jefferson 1978 as cited in Alloatti et al.2021). The latter distinguish two techniques that allow the speech transfer from one speaker to another: *"those in which next turn is allocated by current speaker selecting a next speaker; and those in which a next turn is allocated by self-selection."* (Sacks et al. 1978) in other words either the speaker selects the next speaker, or through self-selection. Such techniques of being selected or self-selecting are not that obvious within the forums under study. The turn taking is touched only when there are addressed comments by names i.e. next speakers are selected when asked direct questions by addressing names specifically. The learners themselves create requests for exchange and

collaboration. Thus, A intervenes, B responds to his intervention, A reacts in return, and then there may be a C, D and even E who intervenes by responding to either A or B.

All these interventions constitute turns of speech. However, the length of those turns varies from one forum to another. The highest number of turns of speech exists in forum 1 and 3 (IF, 2021-2023) and also in forum 1 (MP, 2020-2022). However, the length of turns does not seem to be a good sign for collaboration or co-construction. While reading and observing deeply the interventions within those forums. We noted that the discussions are somehow superficial and are mostly related to the comprehension of the task given by the teacher during the week of discussion. In addition to that, some learners while participating seem not to follow the thread of discussions. In forum 1 (MP, 2020-2022) for instance, the sequence of turn taking was high. A speaks ➔ B adds an idea ➔ C adds another idea ➔ D adds ➔ E adds ➔ F adds. Learners were exchanging ideas related to the topic through clarification and addition which shows that knowledge is being co-constructed. However, what is worth highlighting here is the fact that some learners do not follow the thread and deviate from the starting idea initiated which causes some disorder in the thread of discussion. Such problem of not following the thread of discussion was present in almost all the studied forums. Nevertheless, we have lightly touched the aspect of collaboration and co-construction in few discussions as in forum 3 (IF, 2021-2023) where some learners reacted on each other's ideas by confirming, asking for clarification, and making deductions accordingly.

Besides, in different occasions, some learners asked questions that were left unanswered and in others, the second speaker answered the questions only. i.e. A asks a question and B answers and in other discussions, there were repeated answers to the same question by different learners; which highlights again the problem of not following the thread of discussion. Hence, we can raise here a question asked by Marcoccia, 2004 related to the turn taking system: *how should the analyst deal with the fact that participants can seemingly make 'mistakes' in the way they deal with conversation dynamics or the turn-taking system?* And to which he deduced that *the dynamics of any conversation are a challenge to all methods of formal analysis.*

Adjacency pairs

The notion of turn taking is not the only aspect of collaboration and co-construction. Another notion that follows is that of adjacent pairs which can take the format of a *question/answer, invitation/acceptance, greeting/greeting*. The principle here is that there is communication between two individuals who interact with each other, so that dyadic relationships result. We

have touched the existence of this notion only in few discussions within the forum 1 and 2 (IF, 2021-2023) and in forum 1 (MP, 2020-2022). However, it has not allowed us to touch real indicators of collaboration and co-construction as either the questions were related to task completion, or the answers were too short that they lack any sense of interpretation or argumentation from the part of learners. Still, we have lightly observed the existence of dyadic and even triadic relationships that allowed a certain low level of co-construction and mutual understanding within a discussion in forum 1 (MP, 2020-2022) where learners reacted on the previous comments by adding and clarifying ideas. In brief, turn taking and the concept of adjacent pairs are criteria that have not allowed us to identify aspects of collaboration and co-participation in the studied forums. Furthermore, this sequential structure of asynchronous messages and especially at the level of the second speaker is defined by several types, which in turn forms attributes of communication and exchange

Sequencing types among participants/ speakers

Agreement/ disagreement

The classic way of chaining, affirming or refuting is through the use of 'yes' and 'no'. During our observation of the interactions in the forum under study and with the help of Tropes (a software for qualitative analysis), we have concluded that most of discussions are rather argumentative and that the initiator of the discussion takes the lead most often. However, signs of agreement or disagreement are very rare in almost all forums. The use of 'yes' to agree was found in only three forums. Learners used other expressions in French like '*effectivement'* '*vraiment'* '*certainement'* but not that much. In the course (MP, 2020-2022) for instance, we have noticed only 11 indicators of agreement in all the selected forums. In the course (IF, 2020-2022) we have noted only four indicators of agreement and in the course (IF, 2021-2023) only five indicators of agreement exist. However, in the case of disagreements, we did not find any explicitly stated expressions of disagreement.

Addressed comments

This possibility of addressing the comment to a particular person or to the whole group indicates the different ways of structuring interactivity in the forum (Mondada, 1999). The presence in the forum of certain forms of dialogues and sometimes also of trialogues indicates the constitution of a space of intersubjectivity where interpersonal relations are established between the learners. Addressing a comment to a particular person using pronouns (you singular/plural) shows the interest that his or her intervention has aroused in others. However, examples of this

exists but rarely. Twice in forum 1(MP, 2020-2022), and three times in forum 2 (IF, 2020-2022). Within the course (IF, 2021-2023) we counted a number of 15 times using (you/ *vous* in French) in forum 1 by different learners only addressing their tutor formally. Therefore, the use of (you) in formal situations like this one is understandable. Hence, we can deduce that addressing comments here was not in the sense of developing mutual understanding or reaching a certain level of collaboration and co-construction. In few cases, we have noticed the use of (you) only to ask for opinion *(que pensez vous de … 'what do you think about')* or to suggest some readings or documents to each other (je vous conseille de … 'I advise you to…). Therefore, this distribution of subject pronouns seems to address everyone in the forums, the bystanders included. The reactions of the second speaker are not only to express agreement/disagreement, or to address certain comments to others to seek answers or opinions.... but it can also play a repairing role.

 Repair notion

Another aspect of collaboration and co-construction is peer correction. When the learner reacts in a corrective way to the statements of other participants, he/she is acting on his/her cognitive, socio-cognitive as well as socio-affective skills. This notion of correction is called in conversational analysis 'repairs'. This is when a second speaker intervenes and corrects a problem or any other difficulties that hinder the way for *sharing meaning fluidly (*Alloatti et al. 2021). When looking for aspects related to this notion, we did not find many examples of such initiatives. The learners in discussing and interacting with each other did not make enough use of this type of interaction. Nevertheless, we have encountered some indicators that we have judged related to the notion of repair. There is a case when a learner A defined a concept, then the learner B expressed his agreement and repaired through *adding (…sans oublier que ... en effet…)* meaning in English 'Without forgetting that …. In fact, ….' Another case where a learner A raised an idea and the learner B answered through correcting uttering the word 'No', then A reacted *'So, we can say….., yes …'.* There is also another case when a learner A repaired or corrected the stated statement using negative form in French *(ne ...pas….).* These are the only cases where we could touch this notion of repairing and which we found only in the course (IF, Forum1 2020-2022) and in the course (IF, forum 3 2021-2023)

5. Discussion

In brief, what we have deduced through this conversational analysis of online interactions in the forums chosen as the corpus of the study is that there is an average rate of co-participation

in exchanges between learners. Despite the number of participants, there were a lack of discussion, collaboration and exchange. Everyone responded to the initial intervention by the initiator without following the thread of discussion or responding to their friends' interventions. There were no examples of learners reposting messages to comment on or evaluate them. The case of these forums, in particular, did not allow us to provide positive answers to our research hypotheses given the weak presence of interaction between learners. Nevertheless, can we say that in this case online interactions have not played a positive role in collaborative learning? This is a difficult question to answer directly. There were not enough interactions, which would allow us to answer either by, yes or no. But, certainly the lack of coherence in the sequencing of messages in the forum affects the level of interaction. It should be noted, however, that there is an average number of indicators of collaboration and a low level of co-construction, especially at the level of the courses (IF, forum3 / 2022-2023) and (MP, 2020-2022). In sum, we argue that this low presence in the forums studied is due to the lack of a clear understanding of the notion of online interaction. Learners are not yet able to grasp the role of online interaction in participatory learning. Therefore, we believe that these points need to be clarified at the beginning of the training or course. The point is to make them understand that the interaction should be for cognitive and socio-cognitive development and not for final evaluation. These results led us to look back at the results of the questionnaire we distributed, where we sought the representations of the learners with regard to the use of collaborative tools in their courses. Though learners admit the importance of web 2.0 tools in enhancing collaboration, they are more at ease working individually or in pairs. Besides, they prefer using other tools more than forums of discussion which is justified by the organizational difficulties they encounter, the rewarding and feedback system they lack, the obligation of participation, the presence of the teacher/tutor inside the forums

6. Implications, recommendations and conclusions

The main purpose of this study was to investigate on the importance of using web 2.0 tools in enhancing collaboration among learners. It aimed as well at understanding and explaining the manifestations of co-construction in forums of discussions and the extent to which online interactions in forums may help enhancing the level of co-construction and collaboration. The study was conducted in the light of both the constructivist theory and computer mediated communication (CMC). Studying online interactions in two different modules belonging to different classes (2020-2022) (2022-2023) was done based on the conversation analysis model as stated earlier. The current findings have partially approved our first hypothesis concerning

the improvement of co-construction through forums. In fact, we believe that this hypothesis could be totally approved if the forum structure and the participation framework would allow co-construction. For the second hypothesis that stated that forums enhance learners' collaboration and communication skills. It is in fact refuted since the data generated from the studied forums are not sufficient to make a judgement. In addition to that there is an absence of a good number of indicators for collaboration and co-construction. Overall, we can say that the forum structure and the participation framework constitute an important point for learners to participate. Besides the freedom of expression or participating and the role played by the teacher in such workspaces are all to be considered. And like all studies, the current one has faced some limitations. The first one is related to the type of tasks required by learners. The content of the forum is not task based as it doesn't allow collaboration as in the case of project work for instance. The second limitation is the reduced number of interactions and discussions in the studied forums which hinders our way for a more detailed and deep analysis. The last limitation is the number of studied courses itself. We found that this number is not sufficient. Hence to get more data, we should probably broaden the scope of studied courses and to do further qualitative studies where we include interviews with teachers and students to understand well their perceptions in order to understand well the topic of online interactions in forums.

Conflict of interests

We have no conflicts of interest to declare and no financial interest to report.

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Appendix

Survey questions

General questions:

1. Gender:
   a) Male
   b) Female
2. What is your age? ……..
3. Level of studies:
   a. Master 1
   b. Master 2

Perceptions related to the use of web 2.0 tools

1. How do you perceive your level of use of technological tools? (Likert scale 1-5)
   a. Weak
   b. Excellent
2. What activities do you carry out as part of your online learning?
   a. Glossary
   b. Participation in forums
   c. Peer evaluation
   d. Mind mapping
   e. Using wikis for writing
   f. Other
3. Do you use web 2.0 tools during your blended learning?
   a. Yes   b. No
4. If yes, what tools do you use?
   a. Wiki
   b. Google docs
   c. Forums of discussion
   d. Social networks
   e. other
5. What do you think of the use of Web 2.0 tools in blended learning? (Likert scale)
   a. Not interesting
   b. Less interesting
   c. Interesting
   d. Very interesting
6. How often do you take part in discussion forums?
   a. Always
   b. Often
   c. Rarely
   d. Never
7. Do web 2.0 tools allow you to carry out your activities easily?
   a. Yes b. No
8. Do you think that forums have allowed you to improve your collaborative skills?
   a. Yes   b. No

Perceptions related to collaboration:

1. Do you prefer working:
   a. Individually
   b. In pairs
   c. In groups
2. What Web 2.0 tools do you find suitable for online collaborative work?
   a. Google docs   b. wikis   c. forums   d. other
3. Based on your own experience, do you think web tools are useful for participative learning?
   a. Yes   b. No
4. Why? …………………………………………………………………………….
5. In your opinion, what are the advantages of working collaboratively?
   …………………………………………………………………………………….
   …………………………………………………………………………………….
6. What kind of difficulties do you encounter when working in online groups?
   a. Comprehension
   b. Interpersonal
   c. Communicative
   d. Technological
   e. Organizational
   f. Type of tasks
   g. Producing collaboratively
7. In relation to the course as a whole, how do you perceive the usefulness of working within the forums, google docs, wikis?
   a. Less useful
   b. Moderately useful
   c. Very useful
8. Do you think that the forums of discussion constitute a real pedagogical support for the co-construction of knowledge?
   a. Yes   b. No
9. Make suggestions for improving the co-construction of knowledge using discussion forums.