ONLINE GROUPS IN EDUCATIONAL SETTINGS: AN OPPORTUNITY FOR ARGUMENTATION

Grupos online em contextos educacionais: uma oportunidade para argumentação

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ABSTRACT

The aim of this paper is to explore how students and teachers used posts in five groups on Facebook and how argumentation emerged as a communicative activity. For understanding such argumentative process, this study is framed in the Cultural Historical Activity Theory (CHAT), with a methodological perspective that enables the participants to act as co-authors of the intervention design. We draw our data from the posts inside five groups of teacher-students on Facebook, from February/2013 to June/2014, which were analysed qualitatively, considering discursive and linguistic aspects of the posts. Our findings pointed out that in situation in which collaboration occurred among students, there was a transition from authoritative discourse to internally persuasive discourse in the posts with argumentative indicators.

| **KEYWORS:** Collaboration, Argumentation, Online Groups, Authoritative Discourse, Internally Persuasive Discourse.

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RESUMO

O objetivo deste artigo é explorar como alunos e professores utilizaram posts em cinco grupos no Facebook e como a argumentação surgiu como uma atividade comunicativa. Para entender tal processo argumentativo, este estudo está baseado na Teoria da Atividade Sócio-Histórico-Cultural (TASCH), e sob uma perspectiva metodológica que possibilita aos participantes a agirem como coautores da pesquisa. Nós coletamos dados dos posts de cinco grupos de professor-alunos no Facebook, de fevereiro de 2013 a junho de 2014, que foram analisados qualitativamente, considerando aspectos linguísticos e discursivos dos posts. Nossos resultados demonstraram que em situações em que houve colaboração entre os alunos (nos posts), houve uma transição de um discurso autoritário para um discurso internamente persuasivo nos posts.

Palavras-Chave: Colaboração, Argumentação, Grupos Online, Discurso Autoritário, Discurso Internamente Persuasivo.

1. Introduction

Education is influenced and shaped by social and cultural contexts (FORMAN et al., 2016), so differences in terms of expectations and results may arise when dealing with the various educational systems around the globe. Likewise, we can also find similarities, for instance how educational systems emphasise the use of argumentation for promoting learning. According to Schwarz and colleagues (2003), argumentation is an important skill not only for learning, but also for living in society.

Most researches conducted at elementary and secondary schools on students' argumentation deal with specific settings in which designed tasks are given to students, and students are aware of such activities, and are expected to argue (SCHWARZ; DE GROOT, 2007). However, such activities are unlikely to happen in many educational and out-of-school contexts due to various reasons.

For instance, one of the objectives of secondary education in Brazil, where this study was conducted, is to prepare students for the National Exam of Secondary Education (in Portuguese, ENEM) (BRASIL, 1996, 2009). Having a good grade in that exam is mandatory for being accepted in a university. Thus, students are flooded with content, to cover the maximum number of themes for the test, and usually have little time to further discuss them in the classrooms. Because of the content overload and lack of time during classes, there is almost no argumentative activity in classrooms. Additionally, in our view, education is not exclusively meant for passing exams, but should equip students with functional skills for participation in cultural life. Argumentation is one of those

useful skills. Hence it is important to look for opportunities in (school) education to improve students' argumentation skills.

As a way of providing teachers and students with means for deepening discussions about a given topic, the use of online groups emerges as a suitable tool: first, it enables sharing content and information on the web; second, because of sharing part of the class content online, teachers and students may benefit from more time in the classrooms for discussions, and from the possibility of extending unfinished classroom discussions to the online groups.

Thus, the present study aims at understanding how students and teachers used posts in five groups on Facebook and how argumentation emerged as a communicative activity, over a 18-month-period. The reason for using groups of teacher-students on Facebook is because Facebook is widely used by students and teachers on a daily basis outside schools (CUNHA JR. et al., 2019), and all the participants already had a personal account on it. In addition, the asynchronous setting of online groups provides the participants enough time to think and engage in argumentative activities (STEGMANN; WEINBERGER; FISCHER, 2007).

In order to understand in a more detailed way how argumentation, as an activity, proceeded, evolved, and impacted on the participants of the five groups of teacher-students on Facebook, we base our discussions on the Cultural-Historical Activity Theory – CHAT – (ENGESTRÖM, 2015; LEONTIEV, 1978), and on Critical Collaborative Research (CCR) (MAGALHÃES, 2011, 2016), which will be explained in the following sections.

2. Theoretical background

2.1 Cultural-Historical Activity Theory in online communication

As seen from a Cultural-Historical Activity Theory (CHAT) perspective, humans use tools to mediate their activities. In this study, the groups on Facebook can be understood as a mediational tool for enabling – and potentially leading to – the development of communication and collaboration among teachers and students. As argued by van Oers (2013b), human development is a process based on interpersonal interactions mediated by cultural tools in a specific socio-cultural context, in the case of this study, the groups of students inside Facebook.

Differently from other mass communication tools, such as the radio, television, and even internet 1.0 (CRESS; MOSKALIUK; JEONG, 2016), the use of groups on Facebook - as well as other digital platforms – enables the participants to become subjects of the communicative activity, that is, they not only receive a content broadcast by mass media, but they are allowed (and

expected) to interact with the initiator of the communicative act. Since human communication is based on some pre-stablished social reality, and is a social activity extending over real time (ROMMETVEIT, 1974), we understand communication as the interaction of two or more people, consisting in an exchange of meaningful messages so as to coordinate and unite their efforts to establish a relationship and achieve a common goal (LISINA, 1985).

It is important to highlight that communication on Facebook is not limited to verbal written communication: it allows the use of different modalities of digital media, as well as non-verbal language, such as emojis[4], or liking a post. In addition, the groups on Facebook are a potentially collaborative space for communication, permeated by social relations, and with the possibility to promote participants' development. In such scenario, participants follow rules adopted and adapted by themselves, for instance, who can post or comment, how often shall the participants post, the main reasons for posting, among others.

However, such rules on Facebook are not taken as fixed and the participants are often allowed some freedom to negotiate new rules for the activities or to change the ones previously defined. According to van Oers (2013a), the degrees of freedom and rules, together with the level of involvement of the participants are the main general characteristics (parameters) of a tool-mediated human activity.

Every stakeholder at schools – students, teachers, management team – may perceive needs in different ways, which could lead them to different levels of motivation and understanding of an activity (BOURKE; MCGEE, 2012). Consequently, in terms of argumentation, every stakeholder has a different argumentative need: a management team needs to argue with the Secretariat of Education in order to improve school general conditions; teachers are constantly arguing with each other about different teaching strategies to be used at schools with students; and students are expected to argue during classes for improving their learning. However, such argumentative activities are isolated, that is, there is no effective communication among the stakeholders.

Thus, a collective need for improving and enabling effective communication among the stakeholders arises. Leontiev (1978) too emphasizes the importance of social relations to satisfy a collective need due to the relationships between the participants arising in the process of labour, that is, the social relations (LEONTIEV, 1978). According to Lisina (1985), subjects of a communicative activity should pursue a common purpose while communicating. However, there are moments in communication that a common ground or coordination is far from being reached. In this article, we understand such

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[4] Emojis are ideograms and smileys used in electronic messages, such as ☺ .

moments as cases that may need argumentation, which will be discussed in the following section.

2.2 Argumentation as a (collaborative) communicative activity

As our objective in this study is to understand how students and teachers used the posts and how argumentation emerged as a communicative activity in five groups on Facebook, we conceptualize argumentation as every communicative activity in which the participants get themselves collaboratively engaged to express agreement or disagreement, to express a claim or counter arguments, or to add information to a communicative act (CUNHA JR., 2017). In order to understand how students and teachers communicate and argue in the online groups, we consider the notions of authoritative discourse and internally persuasive discourse (IPD), and how Critical-Collaborative Research (CCR) influences such a process.

Argumentation has played an important role for understanding how language works in social practices, dating back to 350 BC, from Greek rhetoric (ARISTOTLE, 1926; PERELMAN; OLBRECHTS-TYTECA, 1971; TOULMIN, 2003). In a school setting, we consider argumentation as a process of collaboratively creating new and valid shared meanings for different activities, which may also lead to a higher engagement of the participants, as well as to critical thinking (LIBERALI; FUGA, 2012).

A great majority of studies on argumentation focus on how students use argumentation in very specific settings, for instance in Science (LARRAIN; FREIRE; HOWE, 2014; LEE; KIM; KIM, 2014; MOYO; KIZITO, 2014; SCHWARZ et al., 2003), or Physics and Mathematics teaching (NARDI; BIZA; ZACHARIADES, 2012; QHOBELA; MORU, 2011; TRIANTAFILLOU; SPILIOTOPOULOU; POTARI, 2016), and do not consider argumentation as a tool that can be learned and applied to other contexts. In our study, we assumed that the use of groups on Facebook can provide teachers and students with the opportunity to develop and apply argumentative skills not only in one, but in different subject matters that are part of the school curriculum, online and in-class.

Considering the groups of teacher-students on Facebook, the argumentative activities can be understood as a process in which both students and teachers have some freedom to question the others' utterances without using a so-called authoritative discourse. According to Bakhtin (1981), the authoritative discourse is a type of discourse that does not change meanings in the contact with other voices, thus, the meaning (content) is only transmitted and cannot be questioned by the other people. In other words, authoritative discourse may occur

as two people argue for two different points of view without listening (or taking into account) to what the other is saying (MORTIMER, 2005).

In addition, we understand that argumentation in school contexts is not only about trying to persuade or convince somebody: it is connected to the possibility of collaboratively creating shared meanings through social interactions, as described by Liberali and Fuga (2012). According to Pontecorvo (2005) the development of conversational exchange and argumentation in educational contexts is constituted by a general need for solving communicative problems, that is, a collective need, as proposed by Leontiev (1978). Thus, we do not expect students to formulate a full argument, as described by Toulmin's model of argumentation (TOULMIN, 2003), since students do not use such a model at schools, but to engage in a socially constructed argument (BILLIG, 1996), in which a fully-fledged argument, as described by Toulmin's model, may be fulfilled with guidance of the teacher.

From a collaborative perspective, participants can be encouraged to move from an authoritative discourse in argumentative activities to a more dialogic perspective, what we understand as internally persuasive discourse (IPD) (BAKHTIN, 1981). For Bakhtin, while authoritative discourses present many degrees of distancing from the listener, the IPD is a type of discourse which is opened to the other's point of view and can be negotiated. Matusov and von Duyke (2010) explain that Bakhtin's notion of 'internal' should be conceived in relation to a community, and not as an internal process in the subject. So, IPD is a discourse constructed within a community, and not only by one single subject. As such, this notion comes close to what Mercer & Littleton (2007) called 'exploratory talk'.

The use of the concept of IPD enables a meaningful, shared construction of knowledge, and enables the students and teachers to reconstruct their discursive practices, in this case, how to argue in the groups on Facebook for educational purposes. That goes in the same direction as suggested by Freire (1970), who argues that teachers are not the only ones with knowledge, and that students' voices should be considered as well in the teaching-learning process.

In addition, collaboration among the participants may enable an open argumentative setting, and for that reason we follow the CCR in this study, a research methodology widely used in the Brazilian educational context over the last two decades (CUNHA JR.; VAN KRUISTUM; VAN OERS, 2016; LEMOS, MONICA FERREIRA; CUNHA JR, 2017; LEMOS, MONICA; LIBERALI; TOIVIAINEN, 2015). This approach enables, according to Magalhães (1998, 2011, 2016), a reorganization of relationships among the participants, in which through interactions one agent affects and is affected by the other.

Moreover, collaboration between participants enables them to develop intersubjectivity (THARP et al., 2000), and to be free to act to a certain extent

upon the research design. According to Magalhães (2011), through language the participants are able to raise, share and question the other participants on a given topic. In this communicative process with the other participants, the group is able to find new shared objects to their activities.

3. Research setting

3.1 Context of Research

The present study is part of a longitudinal research project that started in February 2013 and involved 43 teachers and more than 500 students from upper-secondary education in Brazil. The aim of the broader project was to describe and evaluate how teachers and students used groups on Facebook for educational purposes. Two types of groups were created on Facebook: first, a group only for teachers, named Teachers Using Facebook in Classrooms, in which they could discuss how to use digital media with their students (CUNHA JR.; VAN OERS; KONTOPODIS, 2016); and second, groups of teacher-students, so they could discuss themes related to what was studied in the classrooms (CUNHA JR.; VAN KRUISTUM; VAN OERS, 2016). In the present article, we will report on five groups of teacher-students, with focus on the emergence of argumentative activities inside the groups on Facebook.

The use of groups on Facebook was proposed by the first author (from now on referred to as the researcher) to the group of teachers, based on his previous experiences with using online groups with secondary education students. The groups were considered as a context for improving communication between teachers-students, and to encourage collaboration among them. All the members of a group of teacher-students could post, comment, or to suggest any possible improvement for using the group. By participating in the groups with a relatively high degree of freedom, the teachers and students had the opportunity of constructing a shared body of knowledge.

All students and teachers used their privately-owned devices, such as mobile phones or tablets, since their schools could not offer technological support. It is important to highlight that all the participants had a portable device connected to the internet and could participate throughout the research period.

3.2 Procedures and participants

From the 43 teachers participating in the group on Facebook, twenty-two created a group with students, and five teachers authorized the researcher to be a member in their groups of teacher-students to follow up their discussions. The five teachers were aged 26 to 34, with more than five-year experience on

teaching. From the bigger group of students (more than 500), the 385 students who participated in the five groups on Facebook were aged 14 to 18 and were all from public schools.

All students and teachers already had a Facebook account before the research started and used their existing accounts for participating in the groups. In this study, the five online groups were from different classes and different schools. We will refer to each of them as G1-Biology, G2-Sciences, G3-History, G4-English and G5-Portuguese. An overview of the groups can be seen in Table 1.

Table 1. Groups' overview

Group	Teacher's age	Teacher's experience (in years)	Classes per week	Number of students	Number of classrooms in the group	Students' age
G1-Biology	26	5	2	22	1	15-16
G2-Sciences	30	8	2	220	7	14-15
G3-History	26	5	2	33	1	15-16
G4-English	30	9	2	77	3	16-18
G5-Portuguese	34	10	6	33	1	17-18

Source: authors' data.

After the teachers created the groups and invited the students, they started using the groups according to their current needs. They used the groups, for instance, as a complement to what they studied in class or as an introduction to the following class, by sharing links, videos or pictures. For this study, we consider the posts from January 2013 to June 2014 (18 months).

3.2 Data sources

The data reported in this study were drawn from the posts of the five teacher-students groups on Facebook. The posts were made by teachers and students. In total, we analysed 238 posts from the 5 groups, which were saved as a .pdf file every six months by the researcher. From the posts, we analysed if, when and how teachers and students got involved in argumentative activities. All data reported were in Portuguese, and after the analysis, the parts used in this article were translated into English by the researcher.

3.3 Methods of analysis

In this study, data were analysed qualitatively in order to understand how students and teachers used the posts, and how argumentation emerged as a

communicative activity in five groups on Facebook. To have an overview of the communicative activities, and how they enabled argumentation in the groups, we used Atlas.Ti to code the posts. First, we coded the posts in two categories: with communication and without communication. Departing from Lisina's definition (LISINA, 1985), we understand communication as every reaction or interaction with the post, like comments, use of emojis, and likes (using the like button on Facebook). Posts without communication were posts in which none of the previous reactions happened. That is, there was a message posted, but no student (or teacher) reacted to it online.

From the posts with communication, we analysed three other aspects: if the post presented only likes, if the post presented only a message exchange, or if the post presented argumentation. From the posts with message exchanges, we analysed the content of the conversation to establish if the interactions were only responses of a post or if there were argumentative activities.

From the posts with argumentation, we considered four argumentative aspects: expressing agreement/disagreement, adding information to a discussion, expressing a claim and expressing counter arguments. Although some linguistic markers can be easily found in the posts (e.g. 'but' or 'however' for expressing contradiction, or 'I think' to express opinion), there were cases in which such linguistic markers were missing, but the context of the comment was indicating one of the four aspects analysed (see 2, Table 2).

The following step of the analysis was to identify, from all the posts analysed in the first stage, occasions of authoritative discourse and internally persuasive discourse, as discussed in the theoretical background. For that we analysed if who posted or commented to the posts was referring to another source (e.g. to a book, video or website) or if he/she was presenting his/her own ideas (3, Table 2). Table 2 provides an overview of the codes and some explanation on how they were used for analysis.

In order to identify the IPD and how it impacts on students' argumentation, we consider the use of modal verbs, plural forms of personal pronouns and verbs (in Portuguese verbs are inflated) from students' and teachers' discourses. Those linguistic markers enable us to identify how the discursive process of communication develops, since the participants are able and permitted to question the other participants and to expose their opinions.

Table 2. Categories of analysis of the posts and survey

1. Communication	**With communication:** posts that presented comments (message exchange) or likes. **Without communication:** posts that presented no reactions.
2. Argumentative aspects of the posts	**Expressing agreement/disagreement:** comments using single words or small expressions such as yes, no, I do, I don't. **Adding information to a discussion:** participants would respond to the post with no expansion of what was posted (e.g. the teachers asked: Who was approved at the test? And students reply: I was approved or I don't know). **Expressing a claim:** claims were coded by analysing the use of adjectives, modal verbs and if clauses, as well as the discursive context. **Expressing counter arguments:** contradictions or problems could be indicated by adversative conjunctions, such as 'but', 'however', 'although', and by the context of the post. For instance, when a student commented: I tried it again. I could not do better! Although no conjunctions were used, the second sentence expresses a contradiction to the first.
3. Type of discourse	**Authoritative discourse:** this type of discourse can be identified by how the participants make legitimizing references to other people (e.g. the teacher) or sources, e.g. Galileo said the earth moves. In that case, the responsibility for what is said is transferred to a source outside themselves. **Internally persuasive discourse:** is permeated by (but not limited to) modal verbs, plural forms of personal pronouns and verbs, that can be taken as manifestations of self-responsible reasoning.

Source: authors

3.4 Ethical considerations

All the members of the groups on Facebook participated voluntarily and no real names were used in this study. In addition, the privacy level of those groups was set to secret, which means that only the participants could find the group and to see or comment its posts. The members of the groups were aware of the research purposes and an informed consent was given by the participants or from the parents of students under 18-year-old. The broader research was also approved by the Ethics Committee of Vrije Universiteit Amsterdam.

4. Findings

The analysis of the posts from the five groups of teacher-students enabled us to understand how students and teachers used the posts and how argumentation emerged as a communicative activity. For doing so, we present an example of each type of post: one post with and without communication, one

post with simple comments, and one post with argumentation. The posts were randomly selected after coding and were used to illustrate the different types of communication that took place in each group.

4.1 Using the groups on facebook

In our first stage of analysis, we identified the posts with and without communication. From the 238 posts from the five groups, ten posts presented no communication (likes or comments), while the remaining 228 presented communicative activity (see Table 3 a). Although presenting no communication, the ten posts coded in this stage were also considered for analysis of the type of discourse they presented (last step of the analysis), since they still presented a message to the participants.

Table 4a and 4b provide an example of a post without and a post with communication. In Table 4a we can observe that, although the post was seen by 27 people, there was no communicative activity in it.
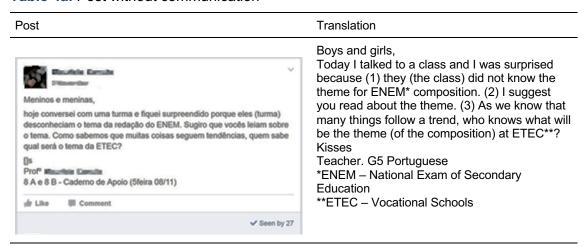
Table 3. Types of posts

a. Posts with and without communication	G1 Biology	G2 Sciences	G3 History	G4 English	G5 Portuguese	Total
Post without communication	1	1	0	2	6	10
Posts with communication	9	66	12	83	58	228
Total of posts per group (with and without communication)	10	67	12	85	64	238
b. Number of posts with and without comments						
Posts with comments	3	23	7	29	32	94
Percentage of posts with comments	30%	34%	58%	34%	50%	39%
Posts without comments	6	43	5	54	26	134
c. Posts with argumentation and with simple comments						
Posts with argumentation	1	5	1	4	6	17
Posts with simple comments	2	18	6	25	26	77

Source: authors' data.

Table 4a. Post without communication

Post	Translation
	Boys and girls, Today I talked to a class and I was surprised because (1) they (the class) did not know the theme for ENEM* composition. (2) I suggest you read about the theme. (3) As we know that many things follow a trend, who knows what will be the theme (of the composition) at ETEC**? Kisses Teacher. G5 Portuguese *ENEM – National Exam of Secondary Education **ETEC – Vocational Schools

Source: authors' data.

Table 4b. Post with communication

Post	Explanation
	Student's post of a picture of cellular model made during a class. The post was seen by 134 students and 4 students *liked* it.

Source: authors' data.

It is interesting that no communication took place in the post depicted in Table 4a. Since students from this group were students that were going to universities or vocational schools in the following year, we could expect reactions to this theme. First, ENEN's (National Exam of Secondary Education) composition scores correspond to 50% of the total score of the exam, which is used both as admission test in most Brazilian public universities, and for obtaining funding in the cases students attend to private universities. Second, ETECs are public educational institutions for professional development, and are the only

possibility of studying for students that cannot afford a private training. An explanation for the lack of reactions could be, in terms of Toulmin's model (TOULMIN, 2003), that the teacher from G5 presented the data in (1), a claim (2) and a warrant (3) (see Table 4a), we observed that an argument by itself was not enough to initiate an argumentative activity with the students.

In contrast, despite the lack of written comments, the post in Table 4b presented four likes (thumb up symbol highlighted in the bottom left of the post), which we also considered as a way of communicating (which might mean "I liked the cell you made"), in the sense that there was a traceable evidence of interaction in the post. It is important to highlight that we considered communication in terms of Lisina's (1985) definition, differing from simply broadcasting a message.
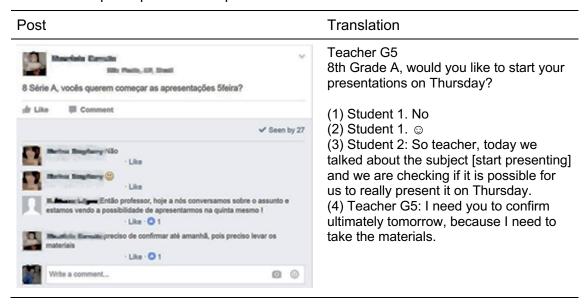
From the 228 posts which presented interactions, 94 posts presented comments, either using text or emojis, which correspond to 39% of the total of posts with interactions. G3 and G5 were the groups with a higher average of posts with comments, as described in Table 3 item b, while G1, G2, and G4 presented a more similar average of posts with comments (around 30%). The remaining 134 posts were posts as described in Table 4b, which presented only likes as interactions.

The analysis of the comments of the posts revealed that argumentative activities inside the groups did not occur very often. From the 94 posts with comments, only 17 presented argumentative activity, which corresponded to 7% of the total number of posts (total of 238 posts). In addition, in the cases in which argumentative activity occurred, they were only in an initial stage, that is, no fully-fledged arguments in terms of Toulmin's model could be found.

One example of post with simple comments can be observed in Table 5. In that post, we observed that the teacher gave the students some degree of freedom to respond to his question (would you like, I need you to confirm), and ended the discussion by presenting a reason to his question (because I need to take the materials). Although all students could comment, only two (from 33) responded: student 1 simply replied with a *no* and a *smile*, while student 2 demonstrated a commitment (and collaboration) with the other peers by using *we talked* and *we are checking*, and by using an if clause to demonstrate they were considering the possibility of presenting the work on that Thursday. However, there was no conclusion to that discussion: the teacher asked the students to confirm if they would present or not, but no further comments from the students were made.

Table 5. Example of post with simple answers

Post	Translation
	Teacher G5 8th Grade A, would you like to start your presentations on Thursday? (1) Student 1. No (2) Student 1. ☺ (3) Student 2: So teacher, today we talked about the subject [start presenting] and we are checking if it is possible for us to really present it on Thursday. (4) Teacher G5: I need you to confirm ultimately tomorrow, because I need to take the materials.

Source: authors' data.

From the example in Table 6, we can observe different argumentative processes taking place. Student 2 started posing a problem he did not know how to solve (how long does it take for gelatine to melt). Subsequently, student 3 posed another problem, in which he informed he could not assemble the cell parts, then he tried again, and he was still having a problem (I tried again […] it was a mess). After realizing the students were struggling (after trying for the 3rd time) to find a solution for the problem, the teacher suggested them to use other materials, and highlighted that it was just a model of a cell. After using one of the materials suggested by the teacher, three students could assemble a cellular model and expressed their opinion about their work (it was awesome, it was good).

To conclude the dialogue, Teacher G2 expressed her opinion about the works of class T6 and invited the other students (Let's check) to see what the students from other classes did, which can be understood as an indication of promoting collaboration among students, but still not accomplishing a fully-fledged argumentation (as defined by Toulmin, 2003).

Table 6. Example of post with argumentative activity

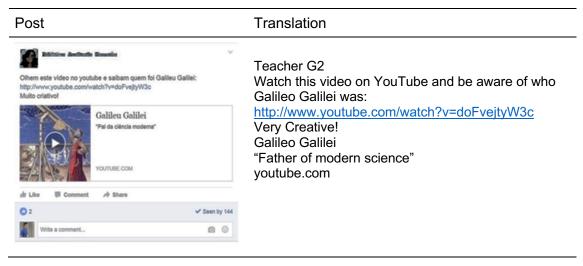| Post	Translation	Argumentative activity
	Teacher G2 To my beloved students so they can understand the cellular structure. Kisses! 3D cell animation youtube.com (1) Student 1. It is good for T06 [class number]. (2) Thank you, Teacher G2. (3) Student 2: I would like to make mine with gelatine, but I do not know how long it takes to melt. (4) Student 3. I made everything so tidy with paraffin wax and modelling clay. When I tried to assemble the cell parts in the big Styrofoam ball with paraffin wax, it did not fit. (5) Student 4. (Laughs) (6) Student 3. I tried it again. I put some gel. It turned into liquid, it took out the colour of the modelling clay and it was a mess… Now let's go to the 3rd attempt! (7) Student 1. (Laughs) (8) Student 2. Student 3, I tried [to make the cell] and the same thing happened! (Laughs) (9) Student 3. (Laughs) I will try again. There is only the modelling clay missing. (10) Teacher: Dear students, what if instead of using modelling clay you use other things? Porcelain clay or even cereals you have at home, like beans, corn or even pasta. It is just to illustrate! ☺ (11) Student 3: Now I made it again. And it was good! (12) Student 4: Porcelain clay was perfect. I made mine and it was awesome. ☺ (13) Student 1. My work is ready. Now it is just wait. (14) Teacher: The works from T6 [class] were very beautiful. Let's check the works of other classes. I know they will be the same! (15) Student 5. I loved the video. Very cool. Thank you. (16) Student 5. It was a pity we could not watch at school using the overhead projector.	(1) Adding information (3) Problem posing (4) Adding information (6) Problem posing / contradiction (8) Warrant to (6) (10) Expressing a counter argument (11, 12, 13) Adding information (14) Claim (15) Adding information (16) Claim (no warrants)

Source: authors' data.

The results from the last step of our analysis – to identify the types of discourse in the posts (authoritative discourse or IPD) – demonstrated that the posts in which an attempt of argumentative activity could be observed (17 posts), presented a predominant use of internally persuasive discourse. From the example given in Table 6, we could observe that, throughout the discussion there is no imposition from any of the parts involved. In addition, although a link to a video is shared in the beginning of the post, the teacher gives students freedom to choose how they are preparing their cellular model.

On the other hand, there was still a considerable number of posts with authoritative discourse (40% of the posts). That is, the content of the posts was backed up by outside references such as links to other websites, videos or images. One example of posts with the use of authoritative discourse can be observed in Table 7. In that post, the teacher from G2-Sciences suggests a link on YouTube so students can have information about Galileo Galilei. However, while suggesting the link she is basing the knowledge about Galileo on the video, so it is not her responsibility what is said or what the students will learn from it.

Table 7. Example of post with authoritative discourse

Post	Translation
	Teacher G2 Watch this video on YouTube and be aware of who Galileo Galilei was: http://www.youtube.com/watch?v=doFvejtyW3c Very Creative! Galileo Galilei "Father of modern science" youtube.com

Source: authors' data.

Interestingly, from chat logs with the teachers, we also found out that, despite having a small amount of participation of students of the groups (in terms of argumentative activities), the teachers perceived one important change in their classrooms. The content shared in the Facebook groups enabled a decrease in the amount of content the teachers needed to cover in class, enabling teachers and students more time to promote discussions (argumentative activities) in the classrooms.

5. Discussions

In this article, we reported on a study to understand how students and teachers used the posts in five groups on Facebook and how argumentation emerged as a communicative activity.

As argued in the introduction of this study, secondary education students in Brazil are overburdened with content at schools, and there is little time for promoting argumentative activities at schools. Our findings from the posts reflect such reality in different ways. First, posts without follow-up comments were predominant, which reflect a traditional teacher-centred approach of transmission of content to students (Freire, 1970). Second, from the posts with comments, we observed that no fully-fledged arguments emerged from student's comments. That is, we observed the emergence of proto-argumentative activity, which occurred in only 17 cases. As described by Vasconcelos and Leitão (2016), proto-arguments are the first stage of an argumentative activity, which may lead to the development of full argumentation in later stages of an activity.

In that sense, the social context in which the activities were carried out influenced the outcomes, that is, students might not be familiar with using Facebook for educational purposes. According to Rommetveit (1974), the initial stages of any cultural change in social interactions may lead to a state of alienation of the participants, which might explain why only a small number of students participated in the argumentative activities in the groups on Facebook.

In addition, one of the reasons argumentative activities did not take place is because while communicating, subjects are more concerned with others than during any other form of activity (LISINA, 1985). That is, considering that what is posted and commented on Facebook will be available for a whole group of participants to read and comment, subjects tend to avoid being exposed. According to Lisina (1985), this happens because people are not inclined to hear unfavourable criticism or being misunderstood. Also, given that communication on Facebook is asynchronous, the participants have more time to reflect on what they do, and avoid taking the risk of exposing themselves or being criticized by others (STEGMANN; WEINBERGER; FISCHER, 2007).

Another revealing finding was the predominance of authoritative discourse in the posts. That may indicate that students and teachers simply transfer their classroom practices to an online environment. That is, they are still focused on transmitting and repeating a content, which is necessary to fulfil the curricular expectations, and continue not to discuss them in the online groups. The presence of authoritative discourse may also reflect how the "banking" aspect of schools, as described by Freire (1970), is still strong in secondary education schools in Brazil.

When considering the few cases in which argumentative activities happened, we observed that students and teachers argued more for topics related to organizing a concrete activity (as demonstrated in Table 6) than for discussing content-related matters. We could also observe from such examples the emergence of IPD. That may be explained by the familiarity people have with the topics (Bakhtin, 1952) discussed in those groups. Such familiarity may also lead to different common places, as suggested by Billig (1996), which allow people to think and argue, tug in various contrarious directions.

In addition, the need for argumentation enabled the emergence of IPD. According to Matusov and von Duyke (2010), the IPD overcomes the authoritative discourse when the participants are free to express their opinions or concerns. In this study, the degrees of freedom for performing the activities – as suggested by van Oers (2013a) – allowed both students and teachers to use different discursive patterns according to their given needs, being able to create new meanings from the activities (VYGOTSKY, 1988).

In that sense, argumentative activities emerged from a need student had to achieve an objective, as suggested by Leontiev (1978), and not from a pre-stablished situation in which students were expected to argue, as described by recent literature on argumentation at schools. That is, students tended to argue when they were challenged by a situation, for instance how to solve the problem of making the cellular model. In order to foster argumentative activities in classrooms, the teacher is then responsible for providing situations in which students face such challenges, and not only by presenting arguments as described in Table 4a, which lead to no further discussion.

Although the use of groups on Facebook were not used by all the students, we can still argue cautiously that using such groups for educational purposes has a potential to be explored. From the students who used the groups more frequently, we observed an increase in collaboration among them. On the other hand, the low level of participation of students can be also explained because the work with groups was not mandatory or imposed to the students.

From the CCR approach, as described by Magalhães (2016), there is a need for a progressive and collaborative construction of the intervention, which demands time until all participants are able to envision new possibilities for using a given activity. This goes in the same direction as proposed by Parrilla (2004), who states that transformations in school settings demand time and effort from all the participants to succeed.

6. Conclusions

The use of groups of teacher-students on Facebook for educational purposes, as described in this study, demonstrated that there is still a huge

potential to be explored in terms of how the use of SNS (Social Networking Sites) can influence argumentation in educational settings. As we observed from our data, the argumentative activities performed by students and teachers were still in a very beginning stage, that is, in terms of Toulmin's model of argumentation (TOULMIN, 2003), and only a minority of students were really participating in such communicative activities.

However, in the cases in which argumentative activities took place, we observed that students and teachers could appropriate and integrate the use of a SNS into the school routine, and show and expand their repertoire of argumentative actions while discussing in the online groups, even though no fully-fledged arguments could be identified.

In this study, the analysis of the types of discourses, enabled us to explore different perspectives of how students and teachers used the groups. It demonstrated, for instance, that the needs – which are essential from a CHAT perspective – participants have for a given activity and its purpose may impact on the results obtained by the research. Moreover, our findings were possible due to the critical-collaborative aspect of this research (CCR perspective), since it enables all the participants to become subjects, orchestrating the activity. Without impositions of a research design, the participants feel themselves freer to participate, becoming more engaged in the discussions.

Despite providing some insights on how students and teachers used the online groups for educational purposes, this study was limited only to the observations of communicative activities inside the groups on Facebook. That is, we could not observe how the use of groups impacted in the classroom routine, and to what extent students were arguing in the classrooms. Such observations were not possible given the distance among schools and lack of funding for research.

Considering what was presented and discussed in this study, more research is needed on the use of Facebook groups (or other SNS) for rousing and improving argumentative activities in school settings. Future research may focus, for instance, on how to encourage students to produce backings and warrants for their arguments in online settings, or on how to create situations in which students perceive the need for using argumentation in educational contexts.

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