Students on Facebook: from observers to collaborative agents

Fernando Rezende da Cunha Júnior, Claudia van Kruistum, Michalis Kontopodis & Bert van Oers

Published online: 13 Nov 2019.

Submit your article to this journal

Article views: 279

View related articles

View Crossmark data

Routledge
Taylor & Francis Group

Students on Facebook: from observers to collaborative agents

Fernando Rezende da Cunha Júnior [ID][a], Claudia van Kruistum [ID][b], Michalis Kontopodis [ID][c], and Bert van Oers [ID][a]

[a]Vrije Universiteit Amsterdam; [b]University van Amsterdam; [c]University of Leeds

ABSTRACT

The aim of this paper is to explore how secondary school students' agency evolves over time across offline and online spaces. We focus on five Facebook groups of teachers and students interacting online in various ways over a period of eighteen months. Combining a variety of innovative analytical techniques and procedures (descriptive statistics, network analysis and discursive analysis) we analyze students' online posts and interactions in a cultural-historical activity theoretical frame. The findings suggest that students' agency can evolve from individual agency to collaborative agency by using Facebook groups under certain conditions, which teachers play a key role in establishing.

Introduction

Digital communication tools such as Social Networking Sites (SNS) are changing our ways of interacting with others (Ishtaiwa & Aburezeq, 2015), and are highly integrated in the out-of-school daily life of students and pupils (Kontopodis, Varvantakis, & Wulf, 2017). However, it is a challenge for educational settings to benefit from the communicative advances provided by online tools, especially in developing countries, where still major constraints with respect to access to digital technology exist (Archer, 2005; OECD, 2014). Although the use of digital technologies is widely spread in these countries, there is neither equipment at schools to enable a mass scale use of new media, nor enough support for teachers to introduce and use effectively new media inside the schools.

Despite this lack of resources, there is increased access to broadband and mobile internet connection. Take Brazil for instance. According to Getúlio Vargas Foundation, there were more than 300 million devices connected to the internet in 2015, 154 million of which were smartphones (Exame, 2015). More than 92 million people were subscribed to Facebook (2015).

The lack of relevant equipment and teacher abilities regarding the application of SNS is, to some extent, a worldwide phenomenon. A number of relevant studies have been carried out to better understand the potential uses of SNS for educational purposes. For instance, Goodband, Solomon, Samuels, Lawson, and Bhakta (2012) studied how the use of SNS could enhance communication among students, while other researchers were focused in other aspects of employing SNS in the classrooms (Aaen & Dalsgaard, 2016; Prescott, Wilson, & Becket, 2013; Sumuer, Esfer, & Yildirim, 2014).

While participants in many of these studies have been undergraduate students or pre-service teachers, in this study we aim to explore the potential use of SNS at other educational levels, such as primary and secondary education. Research outcomes in this domain would provide opportunities for teachers to gain knowledge on working with SNS. Moreover, students could hopefully make use of additional communication channels in their interaction with their teachers and other students. As SNS platforms allow collaboration among students, their usage could furthermore help students to become more collaborative in the educational process.

Color versions of one or more of the figures in the article can be found online at www.tandfonline.com/hmca.

In this frame, we aim to explore the following question: how does students' agency evolve by means of class group interaction on Facebook, in a context in which participants are encouraged to act and collaborate with each other? We briefly present the theoretical frame, methodology and findings of our study, and conclude the article with a few remarks and observations on the role of the teacher and the potential use of online platforms and chat groups for educational purposes.

Such understanding is important because students tend to be passive during the final years of basic education, in part due to the large amount of content they need to learn for the exams that will allow or prevent them from entering universities, turning the school, as Freire (1967) describes it, into banking education. Thus, collaboration and agency, as well as how we understand their development, are of extreme importance for this study, and will be explained in the following sections.

From individual to collaborative agency

Many studies have demonstrated how students and teachers become agents in the teaching/learning process (Ebrahim, 2011; Goodman & Eren, 2013; Hilppö, Lipponen, Kumpulainen, & Virlander, 2015; Lindgren & McDaniel, 2012; Mäkitalo, 2016; Siry, Wilmes, & Haus, 2016). In such studies, agency is often defined by focusing on the individual's perspective. Agency is manifested, for example, in "the power that subjects have to choose what happens next" (Lindgren & McDaniel, 2012), or "the capability of the individual to make a difference to a pre-existing state of affairs or course of events" (Giddens, 1986, p. 14).

In this study, we conceptualize individual agency as the ability subjects have to control their own actions (Laitinen, Sannino, & Engeström, 2016), by willfully and responsibly engaging themselves in an activity, so as to fulfil their own intentions.

Following Miettinen (2010, 2013), we argue that agency, in the terms in which it has been currently defined, is not enough for understanding how collective activities transform over time. We adopt Miettienen's notion of *collaborative agency*, since it enables us to understand how people develop new activities together. According to Miettinen, collaborative agency arises when two or more people with different types of expertise work together to solve a problem that they could not solve alone, resulting in a new product or service. In addition, Lemos (2017) highlights that collaborative agency is a process that enables participants to collaboratively construct and envision new possibilities toward a joint object, that is, they are able to transfer what they develop to another context (da Cunha, 2017).

In this article, we understand collaborative agency as a collective capability of a community in which actors bring their goals, knowledge, and abilities to work together to find a solution for a given collective problem, while being able to apply or transpose that solution beyond the initial aim and into another activity in collaboration with peers. Together, agentive students willfully use the concepts learned from a previous activity and apply them to another activity, focusing on a collective objective, and not only on personal motivations.

Cultural-historical activity theory and critical collaboration on Facebook

To better understand how students collaborate with each other and become collaborative agents in Facebook groups, the present study relies on Cultural-Historical Activity Theory (CHAT) (Yrjö Engeström, 2015; Leontiev, 1978; van Oers, 2012). This theoretical framework enables us to understand how the cultural and historical contexts impact the activities in our study. We examine how the use of Facebook groups as a tool for online activities impact students' agency inside and outside the classroom.

As it is required from a CHAT perspective, needs, motives and situational demands have to be taken into account for a deep understanding of human activity (Leontiev, 1978). Since all activities performed by the participants of this study are developed under a collaborative perspective, new demands may emerge during the activities within the Facebook groups. For instance, teachers and

students may have a different perspective on how often they should post in the groups. In that case, to satisfy their needs properly, they have to decide together what is best for them.

In addition, teachers and students need to follow the rules created by them on how/what/when to make posts or comments, while still having freedom to create new possibilities of working or for changing those pre-established rules. In that process of negotiating rules for the communicative activities, participants feel more responsible for the work, becoming more engaged (Cunha Jr, van Kruistum, & van Oers, 2016).

When students have the possibility of collaborating for developing the design of their communicative activities, as in the case of our study, this can lead to a greater engagement of the students and to more sustained activities (Cunha Jr, 2016). Furthermore, it can result in further developments of the activities, or even in their expansion to other settings. For that to happen, students need to be autonomous and responsible for the activities developed, which are requirements for becoming agents in the activities (Freire, 2011). It is important, though, that students can be at the same time *individual agents* focusing on personal objects/goals, and *collaborative agents*, as proposed by this study, focusing on a collective objective/goal, transcending the initial aims of the activity, leading to a transformation of the given context (Engeström, 2006; Haapasaari, Engeström, & Kerosuo, 2016; Sannino, Engeström, & Lemos, 2016).

In order to provide participants with opportunities for developing collaboration, in the activities analyzed in the present study we follow the Critical Collaborative Research (CCR). CCR is an interventionist approach, as described by Engeström (2015), which has been widely used in educational contexts in Brazil for the last 20 years (Cunha Jr, 2016; Liberali, 2009; Magalhães, 1998). That research methodology was developed based on Vygotsky´s ideas on praxis and praxis development, and on Critical Pedagogy (Freire, 1967; Giroux, 1988; McLaren, 1995). CCR was chosen because it allows participants to create and recreate an ongoing activity.

Consequently, CCR is suitable for studying the development of agency, as this approach considers all stakeholders as agents, capable to develop collaborative agency in the research process, and as coauthors of the research design. Thus, what participants initially do inside the groups of teacher-students can for example be transferred to other teachers and students from the same community who are not participating in the research program. For instance, students who use Facebook groups have the possibility to invite other students or teachers who are not part of the study to use the groups. In that sense, participants could expand the initial boundaries of their activities.

Magalhães (1998, 2011) suggests that collaboration is a central issue for educational change, and that participants benefit from becoming researchers of their actions. According to Magalhães, there is no transformation without collaboration. Participants are involved in an activity, mediated by language and by other tools, and have the possibility to talk, to raise new shared meanings from questioning others' senses, ask for clarification, or to construct a continuous *process of shared evaluation and reorganization of practices* (Magalhães, 2011, p. 36). Considering that Facebook relies heavily upon interactions among students and teachers, CCR is a suitable tool to investigate how participants develop agency through online interactions and collaboration over time.

Research setting

Context of research

This study, which started in February 2013, is part of a longitudinal research project involving 43 teachers and more than 500 students from the five last years of basic education in Brazil. The aim of the larger project is to study how teachers and students used groups on Facebook as a communicative tool, and how such activity impacted communication in everyday classrooms. For this study, we first created a group on Facebook only for teachers, which was used for planning and discussing how to use the groups with the students (Cunha Jr et al. 2016). Second, the teachers were asked by the first author of this study (from now on, *the researcher*) to create a group on Facebook to work with their students. Those groups were

used as a means to participate in different classroom activities, including the sharing of additional material related to classes, complementing a discussion, and planning activities for a following class (Cunha Jr et al. et al., 2016).

The Brazilian public educational system faces overcrowded classrooms, and lack of material resources, among other issues, which lead to a lack of communication in the school setting. The use of groups on Facebook was proposed by the researcher as a way of improving communication between teachers/students, and as a way of exploring students' potential of becoming collaborative agents in a learning activity that uses their everyday knowledge and tools. Those groups were created by the teachers, together with the researcher. All participants, teachers and students, had the possibility of publishing and commenting the posts, in the most suitable way for the given moment, according to the students' and the teachers' needs.

Facebook groups were chosen because students and teachers were already connected to that particular SNS, and Facebook enables the users to create closed groups, where only members can share files, discuss the posts, and see what is published. In that sense, students can share videos, links, texts, or any other material related to what the teacher works with students during classes. This use of the groups also has an impact on the traditional classroom organization, where the teacher is no longer the only one who owns knowledge. Students can also contribute to a shared knowledge construction on the basis of their own previous knowledge (Freire, 1970).

The present article reports on the interactions inside five groups of teacher-students, with a focus on students' interactions in the online groups. It is important to mention that there are different ways of interacting in Facebook (liking, sharing, commenting), which may lead to collaboration. For this project, we focused on devices privately owned by the students and teachers, like their own mobile phones, computers or tablets, since schools could not provide other technological support. Despite the lack of resources offered by schools, all invited students were able to join the groups.

Procedures and participants

From the group of teachers participating in the larger research project, five authorized the researcher to follow up their groups with students as a group member. The teachers were responsible for choosing and inviting students from one or more classes to participate. Students could also add their peers.

There were 372 students participating in the five groups of teacher-students, aged 14–18 years, which corresponds to the two final years of elementary education and the three first years of secondary education in Brazil. All the participants involved were from public schools: two in the metropolitan area of São Paulo and three from the countryside of Minas Gerais. For this study, the groups were labeled G1-Biology, G2-Sciences, G3-History, G4-English and G5-Portuguese. It is important to highlight that each subject matter has a different weekly curricular workload, varying from one to six classes a week. In the groups considered in this study, the Portuguese teacher had six classes a week, while the others had two. Table 1 provides an overview of the groups.

After the groups were formed, teachers and students started using them in different ways, for instance to make posts about the themes they were discussing in class or about what would be discussed in the following classes (see Cunha Jr et al., 2016). The teachers did not provide students with general rules or guidelines with respect to the frequency of posting, nor to the content of the posts. Students could post anything they considered suitable for a given moment, and comment on what other students posted, as well as being requested by the teachers to conduct a research or to make a post about a specific topic with specific deadlines.

Data sources

Data reported in this study were drawn from two sources: first, from posts of the five groups of teacher-students, and second, from an online survey administered to the students during June 2014.

Table 1. Groups of teacher-students.

Groups	Location of the school	Classes per week	Number of students by group	Number of classrooms in the group	Grade (USA as reference)
G1-Biology	Minas Gerais	2	19	1	10
G2-Sciences	Minas Gerais	2	220	7	8–9
G3-History	Minas Gerais	2	27	1	10
G4-English	São Paulo	2	73	2	12
G5-Portuguese	São Paulo	5	33	1	12

All the information reported in this study was first analyzed in Portuguese. After that, the excerpts used in this article were translated into English by the researcher.

Posts from the groups of teacher-students

The posts were made by the teachers and students from February 2013 to June 2014. All data generated by these posts were saved as a .pdf file every six months for each group by the researcher. From the posts, we analyzed how the students interacted during the research and how they developed collaborative agency in that process of posting and commenting in the groups. In total, we analyzed 238 posts from the five groups. Students were free to choose whether to post or not, and the content discussed on the posts was not used for assessment, since the access to the groups was not mandatory for students.

Online survey

The online survey (Appendix 1) was developed by the researcher and was used to understand students' perspectives on using the groups. The survey was created at freeonlinesurvey.com, and sent to the students as a link in every group of teacher-students. In the first three questions, students could indicate their educational level (primary or secondary), age, and the group they were in (G1, G2, G3, G4 or G5). In the fourth question, they responded how many times a week they access Facebook (on personal basis), and in the fifth they could respond whether using the groups was a good or a bad experience for them. The sixth, seventh and ninth questions were about the perceived benefits, possibilities for improving the groups, and the students' achievements. They comprised multiple responses, in which every student could choose among nine different options.

Students could also add any other relevant information in an open-ended field (other answers) in each question. The eighth question asked the students if they perceived any rise in their final grades. The last two questions were open-ended, and the students could highlight what they liked the most and what they did not like about using the groups. The online survey was responded to by 152 students (out of 372). The responses were automatically generated as a xls report by freeonlinesurvey.com system.

Methods of analysis

Identifying collaborative agency

In our understanding, collaborative agency can be identified in two ways: from linguistic markers and from the outcomes of the activities. To identify the first, we can observe the use of plural pronouns (for instance we, us and our), plural forms of verbs, which are inflected in Portuguese (and nouns, in some cases). In other words, in the beginning of the research process, subjects can be more centered on the "I" (individual) than in the "we/us" (in the collective), and with time this may change, so that the "we/us" becomes stronger. From those linguistic aspects, we can identify how the

subjects collaborate and act with each other. In addition, such linguistic aspects enable us to identify the emergence of collaborative agency as well.

Through language, subjects shape their roles in the interactions, and can assume a more passive or agentive position, using, for example, pronouns (or verbs) that implicate or blame the others in the discourse (Bakhtin, 1952). For Bakhtin (1952), each linguistic utterance is unique and related to a specific person, but determined by a particular sphere of communication. In that sense, when researchers analyze students' discursive actions, which are unique and socially built, there is the possibility of reorganizing relations that are socially and historically mediated, enabling the participants to act in alternative ways (Postma, 2015).

The second way of identifying collaborative agency is from the outcomes of an activity that lead to willfully adopting another collaborative activity that goes beyond the initial situation and personal interests of the actors. That is, those activities are only probable to emerge when all the subjects have the same shared object, the same interest, and are dependent on the level of commitment of all participants.

Analytical techniques and procedures

In this study, we developed an innovative set of analytical procedures, in order to understand how collaboration and engagement of the students evolved over time.

First, the posts from the groups of teacher-students were classified by (1) date and (2) number of posts, and (3) by the number of interactions per post, considering the comments, likes and seen by counter in each post following standard descriptive statistics (Muijs, 2016; Punch & Oancea, 2014). Subsequently, we performed a network analysis (Bailo, 2015), using NodeXL, a plugin for Microsoft Excel. Every student or teacher who posted, commented or liked a post was considered a node in the network. For instance, the student (or teacher) who started a post was placed in one column of the NodeXL table, and all others who replied to that in the other column, so the relationships could be built. Thus, if student A posted, and student B commented, data would be entered B (column 1) → A (column 2); and in case student A reacted to the comment of student B, a new line would be added to the table, this time A → B. From that example, a bi-directional arrow would appear in the graph to represent such relationship.

The discursive aspects of the posts were also considered for analysis (Bronckart, 1999; Kerbrat-Orecchioni, 2006). We coded the posts of the Facebook groups using Atlas.Ti, a software for qualitative analysis, from PDF files generated of every group and from the results of the online survey. A description of the multimodal categories used for the discourse analysis, including examples, can be found in Table 2.

We classified the posts according to a few more dimensions in addition to the aforementioned ones: (4) who initiated the post (student, teacher, researcher), and (5) who responded to the posts (student, teacher, researcher). In addition, we analyzed (6) linguistic markers, such as the use of the pronoun "we" and verbal inflections present at the first-person plural, together with (7) enunciation responsibility (see Table 2). By using the first person plural forms, the enunciator can engage others in his/her speech, potentially leading to another type of activity, beyond the initial aims of the study.

Third, we used the discursive aspects presented in Table 2 (6 and 7) to analyze the reports triggered by the opened-ended questions of the survey. They enabled us to understand how often the participants (as a group) used Facebook, how the students perceived the benefits from using online groups, and the suggestions they provided for improving the use of the groups. In responding to the open-ended questions, students described how they acted or how they were willing to act inside the Facebook groups. The linguistic markers and enunciation responsibility helps us to understand how students act and position themselves. The combination of such analysis enabled us to identify cues of how the groups developed agency over the period studied. Those cues could be observed either in students' utterances or in their actions inside the groups.

Table 2. Categories used for data analysis.

Posts	
1. Date	Date which the post was made, in order to analyze the number of interactions by period
2. Number of occurrence	Total number of posts in each group
3. Number of interactions per post	Number of comments (responses), likes (students who pushed the "like" button, and the "seen by" number in every post made.
Discursive aspects of posts and opened questions	
4. Who initiated the post	Teacher, students or researcher
5. Who responded to the post	Teacher, students or researcher
6. Linguistic markers	Use of 1st person plural (pronoun and verbs[1]) to implicate other students in the activities. Those linguistic markers can be used to identify the emergence of collaborative agency.
7. Enunciation responsibility	Express who takes the responsibility for what is said. If a student says "The teacher is not using the group", he transfers the responsibility of that action to the teacher, although he can be the responsible for not using the group as well.

Ethical considerations

This research was approved by the Ethics Committee of Vrije Universiteit Amsterdam. All the students and teachers voluntarily participated and they were kept anonymous in this study. First, students' and teachers' names were not used in processing, analyzing and reporting the data. Second, the privacy setting of the groups allowed only the participants to see and interact with the published content. In addition, participants were aware of the research purposes of the groups and were free to leave the project at any time. Finally, an informed consent was given by the participants and from the parents of all students under 18-year-old.

To ensure the validity and reliability of our data analysis, a second interpreter was used. The second interpreter was an assistant professor of communication theory, and the coding scheme (Appendix 2) was explained to him via Skype meeting. After returning the coded file, Skype meetings were conducted in order to discuss the cases in which divergences between the researcher and second interpreter occurred, until consensus was reached.

Findings

Students as agents

In order to understand better how students' agency evolved, we considered four periods of time – from February 2013 to July 2014 – as depicted in Figure 1(a, b), dividing the timeline in periods of approximately 4 months. From that, we observed an increase in the number of posts (24 in the first period to 85 in the last, Figure 1(a)) and an increase in the number of comments from the students (22 to 144, Figure 1(b)). In addition, the number of posts initiated by the students surpassed the number of posts initiated by teachers over time.

That increase of posts and comments from students may be a first sign of students' agency, that is, students going from a position of mere observers of the activity to a position of starting to participate on it. Such a positioning can be observed from an example of posts from the first and from the last periods of time (see Figure 2(a, b)). In Figure 2(a)(first period), the teacher made a post and commented on his own post. In the first post, the teacher explained a reading activity and pointed out which aspects students should consider while reading, for instance, gender and oral expressions. After that, he commented on his post with a warning (ATENÇÃO) for the students to remind their peers that they had the online group on Facebook for discussions.

However, in this first period students only "saw" the post (*seen by all*) and did not comment. In Figure 2(b) (last period), the teacher posted and the students commented on it. The teacher started
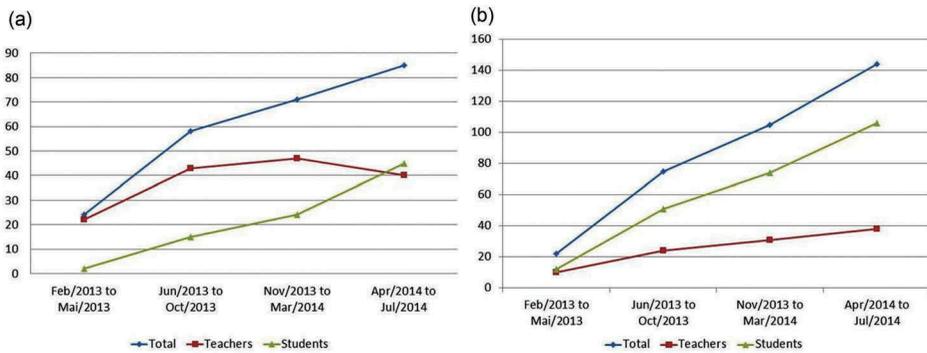
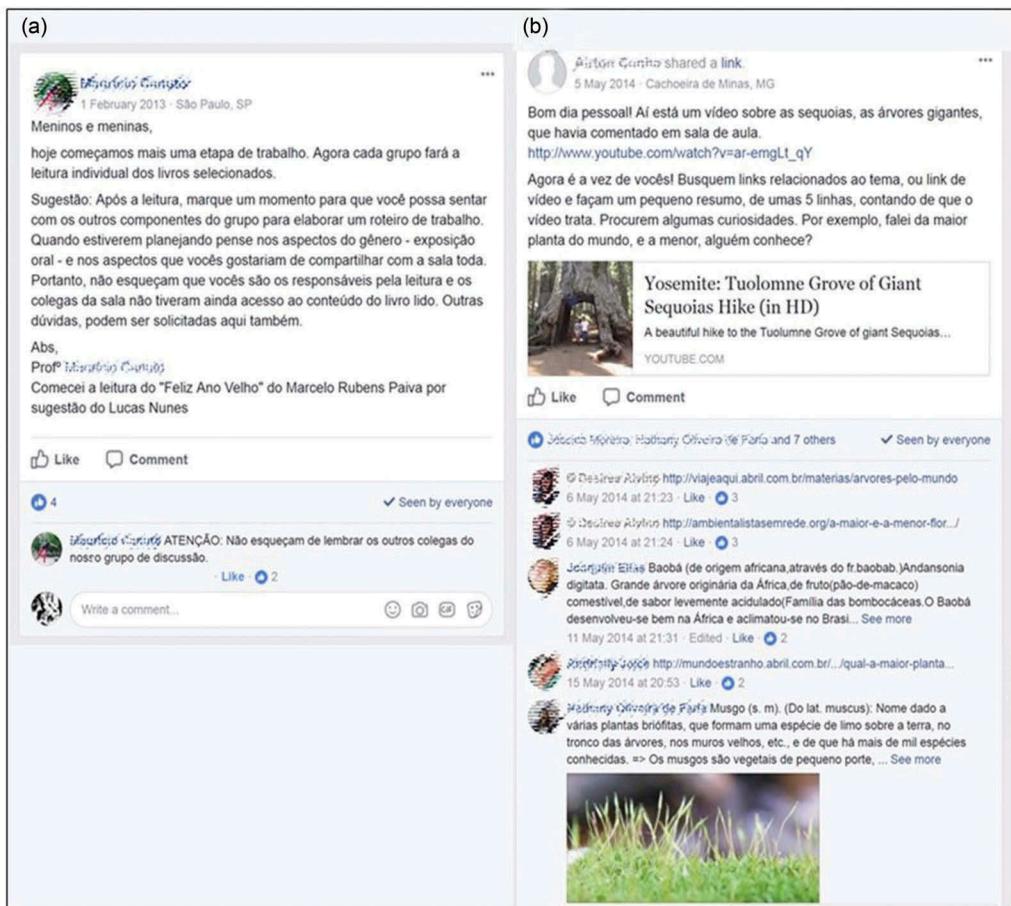Figure 1. (a) Number of posts by period. (b) Number of comments by period.

Figure 2. (a) Post from the first period analysed in this study: teacher posts, comments and students only "see" the post. (b) Post from the last period analysed in this study: teacher posts, students comment, like and see the post.

the post with a video about the Yosemite Park, and asked the students to find other exotic plants. Some students then commented on the post with a short description of a plant and an image (or link) that would provide more information about it.

Besides an increase in the total number of posts and comments, students also reported an increase in engagement: while responding to the online survey, 50% of the students described themselves as more engaged when using the groups. However, the number of students posting or commenting in the groups was still low. In total, there were 68 posts initiated by students and 293 students who commented at least once in the groups. That means that 304 students did not post once and seventy-nine students did not comment at all, showing that over the course of our eighteen-month study not all students became agents by implementing Facebook groups as a complement to classroom practices.

Agents collaborating (for personal purposes)

Besides becoming individual agents, overall students started collaborating more with their peers. This could be observed, first, from the increase in the number of linguistic markers, such as first person plural pronouns and verbs (as described in Table 2) from posts and comments, as already described in the previous section. Second, further support for this finding comes from the network analysis we conducted for each period (Figure 3), on the basis of how centrally or peripherally the participants were organized in each network.

During the first period studied, teachers had a more central position in the networks, which indicated they were posting or commenting more than students were. In the last period, we observed an increasing number of students occupying a more central position, as indicated by the increase in students' posting/commenting. This can also be observed in Figure 3, where the first network of each group is depicted with links between nodes as unidirectional arrows, from students to teachers, while in the last period there are more bidirectional arrows between teacher/students, and from student to student.

A unidirectional arrow means that a person comments (replies) on a post made by someone, while a bidirectional arrow implies one person comments to a post and the person who made the
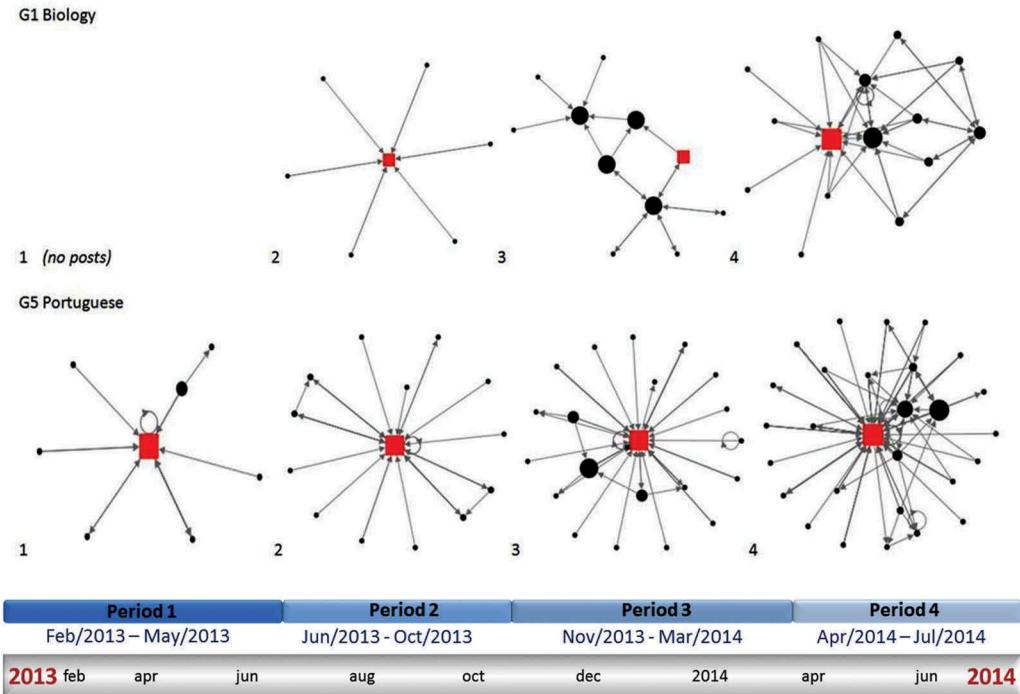

Figure 3. Network analysis from G1-Biology and G5-Portuguese during the four periods described in Figure 1. The squares represent the teachers, and the circles represent students. G1-Biology has no graph for period 1 since the group started later than the other groups. Bigger figures represent the person interacted more inside the network.

post responds to that comment concerning. This can be seen as an indication that students started collaborating more with each other as agents. It is important to highlight that "liking or viewing" a post was not considered as an interaction for the network analysis. In other words, a higher number of bidirectional arrows, and a more central position of students in a network indicate that students gained increased agency.

From the responses to the online survey, we observed that Facebook groups enabled collaboration among students (35% of the students), as described by a student: "if the teacher does not respond, the other peers can answer our questions" (response to question 10 of the online survey). In this example, the plural form of "peers" implicates the other students in the activity, which in our understanding is an indicator of student's agency for collaborating within the group. This type of interaction between students is represented by the bidirectional arrows from the network analysis.

Third, another issue raised by the students in their answers to the online survey was that when they were absent in one class, they could still catch up the discussions which took place in the last class from Facebook groups (32% of the students). With both teachers and students posting videos, links or any other source of media related to what they worked on in class, students could have a constant contact with the content studied in class, thus, enhancing the potential for acting collaboratively and exchanging materials.

Finally, collaboration among students also made the response time faster for them, which according to the students resulted in a better learning (30% of the students): "we learn more when the other students also respond. Sometimes they have a more interesting answer than the teacher!", described another student. In this extent, the group willfully created a space of interaction not only with the teachers, but also with the whole group of students, thus resulting in an enhanced communication among students and teachers, with a potential for changing the traditional teaching model, that is, the banking education, as described by Freire (1970). However, the emphasis is still on the individuals' shared conception of the personal benefits of the collaboration with others.

Although we could observe the increase in collaboration among students, when students were asked in the online survey what needed to be changed in the groups, 44% of them responded that the others (the teachers and students) were responsible for the lack of collaboration in the groups. For example, these students responded that: "*some* students are not using the group," "I do not go to the online group so often because *the people* are not going there, but *if they go, I follow them*," or even "*they* (the students) connect to the internet at different times." According to van Oers (2013), the results of an activity are connected to the level of commitment of the participants. Thus, when a subject is an agent in a group, this subject expects the others to be agents as well.

Students as collaborative agents (collective purpose)

The first indicator of collaborative agency could be observed from the use of linguistic markers such as the pronouns *we/our/us* or verbal inflections from students' interactions, which students started using after the third period described in this study (corresponding to what was depicted in Figure 1 (a, b)). In an increasing number of posts students commented using such linguistic markers (sixteen in the third period and thirty-five in the last). Furthermore, those markers were present in the responses to the open-questions of the online survey (see appendix 1, items 10 and 11). Students could express what they liked and did not like about using the groups, such as in the following statements: "*we* can see videos that help *us* outside school," "*we* can solve *our* doubts with the teachers or with other students," or "*we* did not like students posted only a few times."

In the cases in which the students increased their participation in the groups and collaborated more with each other (according to 42% of the students), they gained the possibility to envision how to use the groups beyond what they were already using. This is exemplified in the answer of one of the students: "it [the group] is very useful because we can use it at any time." For that reason, the students themselves willfully decided to use the group on Facebook with other teachers who were not part of the research project, consequently expanding to other settings the initial purpose of using

Facebook groups. In two of the studied groups, the students themselves decided collaboratively to invite other teachers to participate in the same group that they were already using, while in the three other groups the students created new groups to work with other (new) teachers. In our interpretation, these steps can be seen as outcomes of their engagement in the Facebook activities, and their beliefs in the usefulness of the use of Facebook groups in different contexts.

This can be understood as an example of emergence of collaborative agency: first, there was an increase of engaged individual participation, then an increase in collaboration for personal benefits, and finally, by working together, there was an expansion of the activity to a different setting. In both cases – inviting other teachers or creating other groups – the agency of all the participants involved was necessary in order to have a successful expansion of the activity to a new activity-setting. This was an initiative from the students, with no interference from the researcher or from the teachers who were already participating in the groups. This expansion of the activity demonstrated how students adopted collective new goals, and appropriated the use of a tool for another context, different from the initial one.

Discussion

In this article, we explored how the use of Facebook groups within an educational setting in Brazil affected students' agency over time. Over the course of eighteen months, we observed a gradual increase in the number of posts and online interactions, which suggest students became more engaged with the online groups. This was in line with the students' answers to our online survey, in which they stated they were more engaged with the groups in the final period of the study. We can understand this development as a process in which the subjects become *agents*, as suggested by previous literature (Haapasaari & Kerosuo, 2015; Hilppö et al., 2015; Sannino, 2015).

Secondly, the increase in the number of posts from students was accompanied by a decrease in the posts from the teachers (Figure 1(a)). This, too, shows reorganization in the activity inside the groups, in which students developed from individual agents to agents collaborating with each other. According to Brailas and his colleagues (Brailas, Koskinas, Dafermos, & Alexias, 2015), the possibility for collaboration in online environments requires the adaptation of the existing rules or even the creation of new rules to address the demands of using the online tools. Those changes were possible since the students had some freedom to act (which is a basic potential in all human activities, as suggested by van Oers (2012)). Using this potential makes it more likely for them to act upon evolving needs and be more engaged in the activities. At the same time, the content students shared on Facebook enabled them to critically reflect on what they were sharing online, while discussing the subject matters in the classrooms, as suggested by Cunha Jr (2016).

Because of students became more and more engaged in the online communication and interaction with peers, one could observe the emergence of *collaborative agency*. First, students used more utterances that referred to the collective (we, our, us). Second, students set up, on their own initiative, Facebook groups with other teachers who were not participating in the study. If only one student were an agent, it would have been much harder for him to persuade the other teachers to become part of the groups. In this case, collaborative agency from the students was essential for the expansion of the Facebook-based activities to other contexts.

In sum, the collaborative environment for the activities analyzed in this study enabled the evolution of agency – from *agents*, to *agents collaborating* for personal benefits, to *collaborative agency* for the achievement of collective goals. From a CHAT perspective, this was possible because Facebook groups acted as a meaningful tool for the students for some of the school activities, as proposed by Vygotsky (1998), thereby providing the participants with new learning opportunities. The Facebook groups enabled students to deliberately have an extension of the classroom in an online environment, with more possibilities for exploring what was discussed during the classes in new settings, including online groups, other classrooms and other teachers.

In other words, the collaborative approach we adopted in this study enabled transformations of the teaching-learning practices beyond the concrete settings of our research, as also proposed by Lemos

(2014). Magalhães ([2011](#)) suggests that the outcomes of an intervention like ours are heavily dependent on the level of engagement of the participants (and on their agency). By deliberately and willfully increasing the number of interactions with the teacher and with the classmates in the online groups, the students could first engage more with the discussions; and secondly, by collaborating with their peers, they could transpose the activities to other curricular components.

It is interesting, though, to highlight that, by giving students the opportunity and support to become agents, to collaborate with each other, and to become collaborative agents inside online groups, the transformations that took place in the school context did not only impact on the work within Facebook groups. Students also have the potential to become collaborative agents in other types of school activities. This enables them to both gain ownership in the learning process as well as to share that ownership with other students

Although this study was limited to five groups of students on Facebook, our findings suggest that students' agency can be influenced by the use of online groups, and participation in such online groups can be integrated in the everyday lives of the students. Even though the findings presented by this study are dependent on socio-cultural and economic aspects, and attempting to replicate it in other contexts may lead to different results, the use of groups on Facebook for educational purposes demonstrated a potential to increase collaboration inside schools and to enhance students' agency. Another limitation observed is the difficulty of combining CHAT with descriptive statistical features to analyze the communicative activity on Facebook. We hope that more efficient ways of processing and analyzing online data could be further developed in future studies.

Conclusions

In our study, we emphasize the need for considering agency in a collective/collaborative perspective. Our findings demonstrate that students' agency may evolve in a collaborative online environment. First, students become *agents* at a personal level, that is, students become willfully engaged in the activities. Second, while interactions increase, students deliberately start collaborating more with each other as they realize that they might benefit from this collaboration. That is, they become *agents collaborating*, but remain focused on achieving personal goals. Third, by collaborating more with their peers, there are moments in which *collaborative agency* arises, including shared goals and rules, and a collective drive to change their environment for the benefit of others. In such instances, students envision new uses for Facebook groups and expand their use to other contexts.

Considering the evolution of agency as seen from the group's perspective, being an agent is a precondition for collaborating, which in turn enables the emergence of collaborative agency. However, since not all students become agents in the groups, for instance by commenting or by making a post, collaboration among agents is not always achieved in its full potential.

As we demonstrated in this article, a student may first feel responsible for oneself and expect the others to be responsible for themselves (agency level), too; the teacher may then become the link between students in supporting their engagement across online and offline spaces so that the students establish strong forms of long-term collaboration with each other. Teachers are essential for fostering group climate in the classroom, as well as online, so that each student feels responsible for oneself as well as for one's peers.

Note

1. In Portuguese, verbs can be used without a pronoun, since they all have different inflections according to the person (1st, 2nd and 3rd singular or plural).

Disclosure statement

Funding

ORCID

Fernando Rezende da Cunha Júnior ⓘD http://orcid.org/0000-0003-3134-436X
Claudia van Kruistum ⓘD http://orcid.org/0000-0002-2042-7269
Michalis Kontopodis ⓘD http://orcid.org/0000-0003-3948-2265
Bert van Oers ⓘD http://orcid.org/0000-0001-9371-9126

References

Aaen, J., & Dalsgaard, C. (2016). Students' Facebook groups as a third space: Between social life and schoolwork. *Learning, Media and Technology*, *41*(1), 160–186. doi:10.1080/17439884.2015.1111241

Archer, A. (2005). Access and resistance: Challenges of using on-line environments to teach academic discursive practices. *Education as Change*, *9*(2), 74–95. doi:10.1080/16823200509487117

Bailo, F. (2015). Mapping online political talks through network analysis: A case study of the website of Italy's Five Star Movement. *Policy Studies*, *36*(6), 550–572. doi:10.1080/01442872.2015.1095282

Bakhtin, M. (1952). The problem of speech genre. In *Speech genres and other late essays*. Ed. Caryl Emerson & Michael Holquist. Austin, Texas: University of Texas Press.

Brailas, A., Koskinas, K., Dafermos, M., & Alexias, G. (2015). Wikipedia in education: Acculturation and learning in virtual communities. *Learning, Culture and Social Interaction*, *7*, 59–70. doi:10.1016/j.lcsi.2015.07.002

Bronckart, J.-P. (1999). *Atividade de linguagem, textos e discursos [Language activity, texts and discourses] (2ª)*. São Paulo, Brazil: Educ.

Cunha Jr., F. R. (2016). Student training for promoting collaborative agency: The monitoring activities. *Ponte*, *72*(7), 170–187. doi:10.21506/j.ponte.2016.7.13

Cunha Jr., F. R. (2017). Monitoring activities: A possibility for classroom development. *Educação E Pesquisa*, *43*(3), 681–694. doi:10.1590/S1517-9702201707154754

Cunha Jr., F. R., van Kruistum, C., & van Oers, B. (2016). Teachers and Facebook: Using online groups to improve students' communication and engagement in education. *Communication Teacher*, *30*(4), 228–241. doi:10.1080/17404622.2016.1219039

Cunha Jr., F. R., Van Oers, B., & Kontopodis, M. (2016). Collaborating on Facebook: Teachers exchanging experiences through social networking sites. *Cultural-Historical Psychology*, *12*(3), 290–309. doi:10.17759/chp.2016120318

Ebrahim, H. (2011). Children as agents in early childhood education. *Education as Change*, *15*(1), 121–131. doi:10.1080/16823206.2011.568947

Engeström, Y. (2006). Development, movement and agency: Breaking away into mycorrhizae activities. 1, 1–46. Retrieved from http://lchc.ucsd.edu/mca/Mail/xmcam. In K. Yamazumi (Ed.), *Building activity theory in practice: Toward the next generation* (Vol. 1, pp. 1–43). Osaka: Kansai University Press. Retrieved from http://lchc.ucsd.edu/mca/Mail/xmcamail.2008_12.dir/att-0247/Yrjo.dev.pdf

Engeström, Y. (2015). *Learning by expanding: An activity-theoretical approach to developmental research* (2nd ed.). Cambridge: Cambridge University Press.

Exame. (2015, March). Número de smartphones supera o de computadores no Brasil [Number of smartphones surpasses the number of computers in Brasil]. *Revista Exame*. Retrieved from http://exame.abril.com.br/tecnologia/noticias/numero-de-smartphones-supera-o-de-computadores-no-brasil

Facebook. (2015). 45% da população brasileira acessa o Facebook mensalmente [45% of Brazilians access Facebook every month]. *Facebook*. Retrieved from https://www.facebook.com/business/news/BR-45-da-populacao-brasileira-acessa-o-Facebook-pelo-menos-uma-vez-ao-mes

Freire, P. (1967). *Educação como prática da liberdade [Education as liberty practice]*. Rio de Janeiro, Brazil: Paz e Terra.

Freire, P. (1970). *Pedagogy of the oppressed*. New York, NY: Herder and Herder.

Freire, P. (2011). *Pedagogia da esperança: Um reencontro com a pedagogia do oprimido [Pedagogy of hope: A reencounter with the pedagogy of the opressed]* (17th ed.). Rio de Janeiro, Brazil: Paz e Terra.

Giddens, A. (1986). *The constitution of society. Outline of the theory of structuration*. Los Angeles, CA: University of California Press.

Giroux, H. A. (1988). *Teachers as intellectuals: Toward a critical pedagogy of learning*. Westport, Connecticut: Bergin & Garvey Publishers Inc. doi:10.2307/2074233

Goodband, J. H., Solomon, Y., Samuels, P. C., Lawson, D., & Bhakta, R. (2012). Limits and potentials of social networking in academia: Case study of the evolution of a mathematics Facebook community. *Learning, Media and Technology*, 37(3), 236–252. doi:10.1080/17439884.2011.587435

Goodman, J. F., & Eren, N. S. (2013). Student agency: Success, failure, and lessons learned. *Ethics and Education*, 8(2), 123–139. doi:10.1080/17449642.2013.843360

Haapasaari, A., Engeström, Y., & Kerosuo, H. (2016). The emergence of learners' transformative agency in a Change Laboratory intervention. *Journal of Education and Work*, 29(2), 232–262. doi:10.1080/13639080.2014.900168

Haapasaari, A., & Kerosuo, H. (2015). Transformative agency: The challenges of sustainability in a long chain of double stimulation. *Learning, Culture and Social Interaction*, 4, 37–47. doi:10.1016/j.lcsi.2014.07.006

Hilppö, J., Lipponen, L., Kumpulainen, K., & Virlander, M. (2015). Sense of agency and everyday life: Children's perspective. *Learning, Culture and Social Interaction*. doi:10.1016/j.lcsi.2015.10.001

Ishtaiwa, F. F., & Aburezeq, I. M. (2015). The impact of Google Docs on student collaboration: A UAE case study. *Learning, Culture and Social Interaction*, 7, 85–96. doi:10.1016/j.lcsi.2015.07.004

Kerbrat-Orecchioni, C. (2006). *Análise da conversação: Princípios e métodos [Conversational analysis: Principles and methods]*. São Paulo, Brazil: Parábola.

Kontopodis, M., Varvantakis, C., & Wulf, C. (Eds.). (2017). *Global youth in digital trajectories*. London, UK: Routledge.

Laitinen, A., Sannino, A., & Engeström, Y. (2016). From controlled experiments to formative interventions in studies of agency: Methodological considerations. *Educação*, 39(4), 14. doi:10.15448/1981-2582.2016.s.24321

Lemos, M. (2017). Collaborative agency in educational management: A joint object for school and community transformation. *RAE; Revista De Administração De Empresas*, 57(6), 555–566. doi:10.1590/S0034-759020170604

Lemos, M. F. (2014). *Concept formation in educational management*. Helsinki: Helsinki University Print. Retrieved from https://helda.helsinki.fi/bitstream/handle/10138/42679/monica_lemos_wp_1_2014.pdf?sequence=1. Uusimaa, Finland

Leontiev, A. N. (1978). *Activity, consciousness and personality*. Englewood Cliffs, NJ: Prentice Hall. Retrieved from http://www.marxists.org_archive_leontev_works_activity-consciousness

Liberali, F. C. (2009). Creative Chain in the process of becoming a totality. *Bakhtiniana: Revista De Estudos Do Discurso*, 2, 1–25.

Lindgren, R., & McDaniel, R. (2012). Transforming online learning through narrative and student agency. *Educational Technology & Society*, 15(4), 344–355.

Magalhães, M. C. C. (1998). Projetos de formação continua de educadores para uma prática crítica [Teacher education projects towards a critical praxis]. *The ESPecialist*, 19(2), 169–184.

Magalhães, M. C. C. (2011). Theoretical-methodological choices in AL research: Critical research of collaboration in teacher education. *Inter Fainc*, 1(1), 34–45.

Mäkitalo, Å. (2016). On the notion of agency in studies of interaction and learning. *Learning, Culture and Social Interaction*, 10, 64–67. doi:10.1016/j.lcsi.2016.07.003

McLaren, P. (1995). *Critical pedagogy and predatory culture*. London, UK: Routledge.

Miettinen, R. (2010). Creative encounters and the emergence of object-oriented collaborative agency. In *European group of organizational studies*. Lisbon, Portugal: EGOS.

Miettinen, R. (2013). Creative encounters and collaborative agency in science, technology and innovation. In K. Thomas & J. Chan (Eds.), *Handbook of research on creativity* (pp. 435–449). Cheltenham, UK: Edward Elgar Publishing.

Muijs, D. (2016). *Doing quantitative research in education with SPSS*. London: Sage.

OECD. (2014). *OECD factbook - economic, environmental and social statistics*. doi:10.187/factbook-2014-en

Postma, D. (2015). Critical educational research. *Education as Change*, 19(1), 1–9. doi:10.1080/16823206.2015.1036628

Prescott, J., Wilson, S., & Becket, G. (2013). Facebook use in the learning environment: Do students want this? *Learning, Media and Technology*, 38(3), 345–350. doi:10.1080/17439884.2013.788027

Punch, K., & Oancea, A. (2014). *Introduction to research methods in education* (2nd ed.). London, UK: Sage.

Sannino, A. (2015). The emergence of transformative agency and double stimulation: Activity-based studies in the Vygotskian tradition. *Learning, Culture and Social Interaction*, 4, 1–3. doi:10.1016/j.lcsi.2014.07.001

Sannino, A., Engeström, Y., & Lemos, M. (2016). Formative interventions for expansive learning and transformative agency. *Journal of the Learning Sciences*, 25(4), 599–633. doi:10.1080/10508406.2016.1204547

Siry, C., Wilmes, S. E. D., & Haus, J. M. (2016). Examining children's agency within participatory structures in primary science investigations. *Learning, Culture and Social Interaction*, 10, 4–16. doi:10.1016/j.lcsi.2016.01.001

Sumuer, E., Esfer, S., & Yildirim, S. (2014). Teachers' Facebook use: Their use habits, intensity, self-disclosure, privacy settings, and activities on Facebook. *Educational Studies*, 40(5), 537–553. doi:10.1080/03055698.2014.952713

van Oers, B. (2012). Meaningful cultural learning by immitative participation: The case of abstract thinking in primary school. *Human Development*, (55), 136–158. doi:10.1159/000339293

van Oers, B. (2013). Educational innovation between freedom and fixation: The cultural-political construction of innovations in early childhood education in the Netherlands. *International Journal of Early Years Education*, 21(2–3), 178–191. doi:10.1080/09669760.2013.832949

Vygotsky, L. S. (1998). *The collected works of L. S. Vygotsky: Child psychology* (Vol. 5). New york, NY: Springer.

Appendix 1 Translation – Online survey

1. What is your school level?
° Elementary
° Secondary

2. How old are you?
° ≤13
° 14
° 15
° 16
° 17
° 18
° 18+

3. Choose your group
° G1 Biology
° G2 History
° G3 Sciences
° G4 English
° G5 Portuguese

4. How often do you access Facebook?
° Everyday
° 5 or 6 times a week
° 3 or 4 times a week
° 1 or 2 times a week

5. Was it a good experience using Facebook groups with the teachers?
° Yes
° No

6. If yes, why? (you can choose more than one alternative)
° It was easier to understand the content
° For reviewing the content before tests
° It was a complement to what was discussed in class
° Our classmates posted interesting things
° The teacher could answer to a question outside the classroom
° Communication between teacher and students was easier
° The teacher learned how to use digital tools and used them more often
° The teacher allowed the use of mobile phones for some activities
° It was a way of keeping contact with the teacher outside the school
° Other reasons (type here)

7. What could be done to change the use of groups on Facebook by teachers and students?
° The teacher could use them more often
° Students could use them more often
° The teacher could make it mandatory for students
° Internet connection at school
° More rooms with computers at school
° All teachers should use groups with students
° It should be graded
° No way to improve
° Other reasons (type here)

8. Did you improve your grades after using the groups on Facebook?
° Yes
° No

9. Did you improve in any of the following items? (you can choose more than one alternative)
° Behavior
° Collaborate more with the classmates

° You are more engaged
° You ask more questions during the classes
° You do your homework more often
° Any other changes you perceived. (type here)

10. What did you like most about using Facebook group with your teacher?

11. What did you dislike about the groups

Appendix 2 Coding example

The following example illustrates how the posts were coded using the previously presented codes. The numbers indicate the location of every piece of information needed for coding, and the codes used in the given post.

Examples of posts (in Portuguese)	Coding
	1. Period 4 2. (numbered in the total of posts) 3. 2 comments/8 likes/Seen by 186 4. Teacher 5. Student 5/Student 7 6. Not applicable 7. Not applicable
	1. Period 3 2. (numbered in the total of posts) 3. 10 comments/8 likes/Seen by all 4. Teacher Note: Codes 5, 6 and 7 are for every comment of a post

5	6	7
Researcher	Plural	N/A
Student 1	Plural	Enunciator
Student 2	Plural	Enunciator
Teacher	N/A*	N/A
Student 3	Plural	Enunciator
Student 4	N/A	A/Person**
Student 4	N/A	Enunciator
Student 4	Plural	Enunciator
Student 4	N/A	N/A
Student 5	Plural	A/Person

*Not applicable **Another person

Appendix 3

Translation of Figure 2(a, b) – Chapter 4.

Figure 2(a)

Boys and girls,

today we begin another stage of work. Now each group will individually read the selected books.

Tip: After reading, set a time so that you can sit down with the other members of the group to work out a road map. When you are planning, think about aspects of the genre – oral presentation – and the aspects you would like to share with the entire room. Therefore, do not forget that you are responsible for reading and your classmates have not yet had access to the contents of the book read. Further questions can be requested here as well.

Hugs,

Prof. Maurício Canuto

I started reading the "Happy New Year" of Marcelo Rubens Paiva at the suggestion of Lucas Nunes

Comment from the teacher: ATTENTION: Do not forget to remind the other colleagues in our discussion group

Figure 2(b)

Good morning people! Here is a video about the sequoias, the giant trees, which I had commented on in the classroom. http://www.youtube.com/watch?v=ar-emgLt_qY

Now it's your turn! Look for links related to the topic, or video link and make a short summary of about 5 lines, counting on what the video is about. Look for some curiosities. For example, I spoke of the largest plant in the world, and the smallest, does anyone know?

Comments from students

Student 1. http://viajeaqui.abril.com.br/materias/arvores-pelo-mundo

Student 1. http://ambientalistasemrede.org/a-maior-e-en-menor-flor … /

Student 2. Baobá (of African origin, through the fr.baobab.) Andansonia digitata. A large tree native of Africa with edible (applesauce) fruit, with a slightly acidic taste. (Family of Bombocáceas. Baobá has developed well in Africa and acclimatized in Brazil. It is a deep root and root tree The trunk is of soft wood, usually looser than high. (see more).

Student 3. http://mundoestranho.abril.com.br/ … /which-the-biggest-plant …

Student 4. Moss (s. M). (From the lat. Muscus): Name given to several bryophyte plants, which form a kind of slime on the earth, on the trunk of the trees, on the old walls, etc., and of which there are more than a thousand known species. (see more)