

# Collaborating on Facebook: Teachers Exchanging Experiences Through Social Networking Sites

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This study explores the use of Facebook for educational purposes, as a collaborative online space for enabling communication among teachers from different schools. The article describes how a group of 43 teachers on Facebook, from various schools in the southeast region of Brazil used a group on Facebook as a collaborative space for communicating among each other. On the group, these teachers shared experiences about the use of digital technologies in their secondary education classes. This study is based on Cultural Historical Activity Theory, considering the group on Facebook as a tool for mediating communication. The objective of this study is to explore why and how teachers collaborated with each other on Facebook, and to study how communication among them evolved in the process. We examined the posts on that group from 2012 to 2014, and two questionnaires responded online by the teachers in June 2012 and in December 2013. Our findings suggest that teachers tend to critically collaborate in smaller groups and that further online communication evolved outside the group of teachers, with the creation of smaller groups on Facebook inside their schools.

**Keywords:** Online communication, Collaboration, Secondary education, Facebook, Teachers online.

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Education is essentially linked with (multi-modal) communication amongst people. In the course of human history, communication has evolved from oral to written, and more recently, to communication with the help of digital tools. While schools tend to follow these cultural developments, they often experience problems with integrating new tools into their practices. It is expected that the recent innovations in human communication with the help of digital tools will follow the same evolutionary path into schools.

With the popularity of Social Networking Sites (SNS), like Facebook, LinkedIn or Twitter, people are easily connected to each other. The distances between them are reduced and sending or sharing written files, pictures or videos is getting simpler. SNS are also a space to expand the

relations people have, like the academic relations teachers have inside schools, to a virtual space where people relate to others who are in completely different contexts [36]. In addition, the Internet is making possible mass-scale applications of knowledge and knowledge sharing, which are applied to transform the educational contexts [3].

Facebook is nowadays the largest SNS, with more than 1.23 billion users in the world, and more than 90,000,000 users in Brazil [13]. Because of the large number of users, research on digital media has increased in the last years, and there is an increasing interest on its use at schools, especially in emergent countries like Brazil [35]. There is also a growing interest in the use of Facebook for educational purposes [2; 19].

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However, those studies are mostly concerned with undergraduate students, with regards to improving their communication skills [15], evaluating the differences between foreign and domestic students [16], exploring how students perceive the university [18] or monitoring how students use Facebook at home [21]. In addition, they work with pre-service teachers [7] and investigate how they learn to use digital technology with their future students. Some authors also express concerns about the way people are exposed in SNS, saying that this line of communication can open doors to personal lives which neither students nor educators may want exposed [19]. In addition, educators must be aware of how they need to behave in those networks to avoid damage to their credibility [23].

The use of Facebook by teachers can be a new communication channel between teachers and students [32] and a favourable space for promoting learning [17], showing the students that the teacher is aware of the contemporary culture. Thus, that motivated use can have a positive result in the relationship between teacher and students [28] and improve their knowledge of digital technology by working in groups [2; 40]. As a multimodal platform, the use of Facebook has also advantages over specific educational applications, like its adaptability for different uses [6].

However, there is little literature about teachers who are using SNS in other educational levels, such as secondary education, nor about in-service teachers who are also working with SNS, as highlighted by Cunha Jr. et al [8]. Thus, the above mentioned studies do not consider the possibility of collaboration among teachers, in a way that they critically share what they have been doing in relation to the use of those technologies at schools, which for Austin and colleagues is fundamental for engagement with digital collaboration [1]. Shukor [34] also highlights that online collaborative environments allow discussions to occur at a greater depth, allowing people to build new knowledge remotely.

The aim of this study is to describe why and how teachers used a group on Facebook, named Teachers who use Facebook in Classrooms (from now on, TFC) (Professores usando Facebook em sala de aula – in Portuguese), as a collaborative space where they share their experiences on new digital technology inside classrooms with other teachers. Thus, we focus on why and how the teachers collaborated and shared their experiences on using new digital technologies with other teachers in TFC, and how communication among them evolved over time. In order to pursue those objectives, we set up a research project for two years, with teachers and students from different schools in Brazil.

In the following sections we describe the theoretical and methodological background for this study, our results from the discussions in the TFC group and the implications of the use of groups on Facebook among teachers.

### **Activity Theory and Collaboration in Social Networking Sites**

In this study we consider the TFC group as a space where the teachers are engaged in a collaborative activ-

ity, in which they have the opportunity to discuss ways of using activities involving digital tools (media) in class. By interacting with each other and considering the historical context, the teachers are able to use different “old” communicative tools (spoken or written texts) and are able to reflect critically on how to use digital media with their students.

All the interactions on TFC group are mediated by speech, which according to Vygotsky is a means of social interaction, a means of expression and understanding. In addition, human speech emerges with the need to interact socially in the labour process, linking one individual with others, leading to new needs for means of social connection [38]. Moreover, Leontiev highlights that behind every activity there is a need. In Leontiev’s definition, activity is a process that is elicited and directed by a motive, in which one or another need is objectivised [24]. Departing from the needs teachers have for using digital tools in their communication with their students, by interacting with each other they are able to raise a shared object, which can be how to better work with their students or how to improve communication with their students by using digital tools, and establish the rules for those activities.

Despite of discussing how and what to do with the students, the teachers among themselves must consider what kind of activity is accomplished inside an online group. In that sense, the teachers are a community, and hence they collaboratively establish rules and division of labour for using the group, like who can make posts or what should one comment. Those elements from society and context – rules, community and division of labour – are essential parts to be considered in an activity system [11]. By starting out from a Cultural Historical Activity Theory (CHAT) approach, we can build deeper understanding of activities involved inside the Facebook platform.

Considering Facebook as a multimodal platform, Vygotsky’s ideas on written communication are very important for this study, since communication between researcher and teachers, and communication among teachers, is mostly written and asynchronous. According to Vygotsky [39], written communication is a more elaborated form of communication, in which we need to consider the receivers’ background in order to be fully understood when writing a message.

From the CHAT-perspective, we also consider the role of collaboration in the development of all the people involved in the process. Collaboration is understood as a process of participating in purposive, tool-mediated discourses and knowledge construction. These discourses potentially provide opportunities for conflicts, and emphasise the importance of collaboration, since it involves the presence of others for the construction and negotiation of new meanings. In a collaborative process, people construct together the rules and the division of labour for a given activity. All the participants are expected to be in a constant learning process and to develop their expertise in collaboration with their partners [26].

When collaborating with others, one would feel oneself stronger and more capable than working alone. According to Magalhães [27], the collaborative process is

essential to raise, share and question the participants' senses about a given topic. The process is shaped through the construction of shared meanings, that is, people bring their initial senses to a discussion, and in this process, new shared meanings can be created through those discussions, in such a way that new senses emerge [38].

In addition, considering the TFC group, the participants should not limit their discussions only to the group: what they consider inside that group has implications for the schools they work in, and the feedback given by other members of the community to the teachers serve as starting point for discussions and possible transformations on the research. This approach follows the CHAT principles and is called critical-collaborative research (CCR). CCR has been widely applied to educational intervention research in Brazil for the last 20 years, and is based on the works of Magalhães and her colleagues [25; 27].

However, different types of collaboration may emerge from a given context. Fullan and Hargreaves [14] point to comfort collaboration, in which people try to collaborate with others in such a way that they do not expose themselves to the risks of being criticized or to comments they would not like to have. Another kind of collaboration is the complementary collaboration, where the work is characterized by a division of labour based on complementary expertise, disciplinary knowledge, roles and temperament [20].

In our case, we are interested in yet another kind of collaboration which promotes the development of critical engagements among the participants during the whole research project as, on a theoretical basis, we expect that this will help the participants to innovate their communicative activities. In our data analysis we mainly concentrate on the changes that occurred along the process in the organization of the community, including its ways of communicating, as a result of teacher's collaboration on Facebook.

## **Research Methods and Methodology: Online Critical Collaborative Research**

### **Set up of the study**

Our longitudinal case-study began in mid-2012 and is part of the research project entitled "Social Networks: integrating new technologies to secondary education in Brazil", involving 43 teachers and more than 1000 students. There is yet not so much known about the long-term dynamics of the integration of digital technologies in secondary education and its effects on the evolution of communicative activity. That is why we decided to explore the situation for two years in a case-study. The first author of this article is the filed researcher in this study. In that group of 43 teachers, members share their experiences on the use of digital technology among themselves, reporting their experiences with their own group of students on Facebook. Within those groups, teachers work in many different ways, using videos, images, texts, so to complement what they are teaching in classes. In order to participate and monitor the discussions, the researcher is also a participant in all the groups.

In that broader research project, we plan to focus on three different issues regarding online critical collaboration: first, in the group of 43 teachers we explore why and how communication evolves and how collaboration emerges from the interactions among teachers; secondly, from the groups of teachers/students we focus on the role of the teachers in those groups and how these teachers perceive changes in their classes when using online groups; thirdly, we explore how students from the groups of teacher/students perceive improvements or changes after using the groups. The present article only reports on the first issue.

### **Recruiting participants for the study**

Initially, the researcher invited some teachers familiar with SNS and already with a profile on Facebook, from schools he worked at before, or teachers he knew from other places. The main objective for this group was to create a critical collaborative group, where teachers presented and discussed all their experiences at schools when using digital technology. The privacy setting of the group is set as secret, such that only the teachers in the group see what is discussed or posted there.

In order to expand our teachers' network, after being invited the teachers were encouraged to invite other teachers from their schools, or other teachers they knew, who might be interested in such a discussion. Of the 43 teachers of the group, the teachers invited 25. In total, 30 are woman and 13 men. Considering age, 12 teachers are below 30, 15 are from 31–40 and 16 are older than 41 years old. With regard to teaching experience, there are 9 teachers with 3–5 years, 8 with 6–10, 11 with 11–15 and 15 with more than 16 years of experience. The teachers in the group were from Minas Gerais and São Paulo, two states from the Southeast of Brazil, an economically developed region.

### **Procedure**

After the group was formed, the participants of TFC group started the discussions about teachers' experiences of using SNS at schools, on the group's timeline. All the participants, including the researcher, are supposed to be involved actively and creatively in the entire process, evaluating and reconstructing the investigated shared practice according to their needs. The researcher has the role of deepening the discussions and stimulating the participants to interact by asking questions or commenting what is done by the other subjects. Thus, the participants are required to reflect not only on what they are doing, but also on what all the other participants are doing and discuss it, so all the participants are responsible for co-building the research design [30]. By doing so, the best possible practice under the given circumstances is constituted for the researcher to validly answer his research questions. In the group, the participants post and discuss what the colleagues are doing with their students. In addition, they post texts, videos or any other material that might help the other teachers to deal with digital technology at schools.

### **Data-sources**

The data for the study presented here consist of the posts on the TFC group, and two online questionnaires responded to by the teachers at different moments. All

data presented in this article were produced online, with no physical contact among the researcher and the teachers, and translated from Portuguese by the first author. The posts from TFC group were followed from June/2012 to July/2014. Every six months a .pdf file of the discussions inside that group was generated using a .pdf printing software.

The first questionnaire was sent to the teachers as a post on the group's timeline on Facebook, in June/2012, with the purpose of identifying the initial senses teachers had about SNS, and consisted of the following open questions: a) How do you understand Social Networking Sites (SNS)?, b) How do you use SNS?, c) How do you think students use digital communication?, and d) How to make possible the use of such a tool inside classrooms?

The second questionnaire was sent as a private message on Facebook in December/2013 to every teacher in the group. This change of strategy was decided because some teachers (30% of participants) did not reply to the first questionnaire. Thus, the answers had to be returned directly to the researcher. The questionnaire consisted of the following open questions: a) What are the difficulties that you, as a teacher, have about the use of digital technology with your students?, b) How can every teacher contribute to this group of teachers on Facebook?, c) What are students' opinions about using or not using SNS at schools?, and d) How do you believe the use of SNS can contribute on teaching-learning in your area? The response rate was 90%.

### Methods of Analysis

In this study, we analysed the posts from TFC group according to socio-discursive interactionism [5] and from a conversational analysis perspective [22]. Besides, we analysed other multimodal features from the posts. The categories used for analysis are summarized in Table 1.

First we coded who made the post and who commented to the posts (using teachers' names) using Atlas.

ti. Subsequently, the posts were coded by date of occurrence and by the period of the day teachers interacted (morning, afternoon, evening), and the number of participants who saw or liked the posts and comments in the group (seen by #, and like button are displayed below every post on Facebook). For the conversational perspective, the turns were counted and classified in initiative/responsive categories in order to trace who started the discussions or participated on them. These characteristics enabled us to trace the progress of the discussions inside the TFC group and how they evolved in time. After categorizing the posts, we analysed how the group interactions evolved in time. We defined all the comments and discussions triggered by the posts in the TFC group as group interactions.

The responses to the questionnaires were classified according to their thematic content, and analysed in terms of discourse positioning, that is, which person is responsible for what is said. This analysis allowed us to understand how collaboration developed in the TFC group.

### Ethical consideration

In this study, all the participants were volunteers and free to leave the project at any time. Their privacy was ensured by anonymity and no personal information was used in this study. In addition, an informed consent was given by the teachers for research purposes. The research project was also approved by the Ethics Committee of Vrije Universiteit Amsterdam.

## Results

### Results from the questionnaires

From the first questionnaire, when asked how teachers understand SNS, most teachers answered: a place for establishing relationship among friends (26%), followed by interaction among all users (20%), sharing and

Table 1. Categories of data analysis

Posts	
1. Who makes the post	Teachers (by name) or researcher
2. Post commented by	Teachers (by name) or researcher
3. Date and number of occurrence	Posts were classified by date of occurrence, considering also the day of the week, and counted by period
4. Seen by and Likes	The number of people who saw or liked a given post
5. Types of turns	Initiative or responsive. Initiative turns are turns which introduce a new thematic content to a discussion. Responsive turns are turns which respond to a given thematic content
Questionnaires	
6. Thematic content	Thematic content is the main theme that emerges from a given discourse. There were no previous categories established by the researcher.
7. Discourse positioning	The discursive positioning indicates if a person feels himself responsible for the activity or if he transfers the responsibility to another person. By using different pronouns (I/you/he), the speaker takes responsibility for something or transfers the responsibility for what is said to another person.

transmitting information (13,5% each). Teachers also perceived SNS as an extension of real life, a way of facilitating communication, a place for entertainment (7% each), but also as a way of wasting time (5%). In relation to how teachers use SNS, the answers were also related to entertainment and to be in contact with other people.

Considering the student's use of digital communication, the teachers guessed that students only use SNS for leisure and to share pictures or movies. In response to how to make possible the use of SNS at schools, we concluded that some teachers felt it was not a good idea to use them at schools, but most of them saw the space as an opportunity to extend their contacts with students outside schools. For them it would be a space for sending homework, texts, or extra materials related to what they are discussing inside class. Besides fulfilling the institutional need for using digital media, as proposed by the Brazilian National Guidelines [33], teachers found a new motive for using Facebook groups: improving communication with students.

From the second questionnaire, when considering the difficulties about using digital technologies, teachers highlighted that they did not face big problems when talking to the students about its use at schools. However, some teachers indicated that although they knew how to use SNS, they did not know how to explain to the students how to use them. Another problem raised by the teachers from our group on Facebook was that some teachers from their schools were reluctant to accept using digital media with students. There were also technical problems, like instabilities in the network for accessing Internet in some places in Brazil, especially in places in rural areas.

Teachers were also asked how they could contribute to TFC group, and we observed that while most of the teachers (80%) had the idea that they needed to share their experiences with using digital technology in the TFC group, they pointed out that they should interact more with the other teachers, and that they were not doing that in practice.

When asked about their views on students' opinions about using or not using SNS at schools, all the teachers

argued that the students did not know how to make appropriate use of it in schools and that some students were also reluctant to accept rules when using SNS. However, teachers again highlighted that using Facebook would be an opportunity for collaborating and improving communication with students. In relation to how SNS could contribute to teaching-learning, all teachers agreed that the possibility of using other resources, often not available at schools, like links to videos, images or texts, made it easier for students to understand what is taught at school. The teachers also pointed out that the use of SNS with students would be a good opportunity to show the community, that is, students' parents or relatives, what they do at schools.

### Results from the analysis of the posts

Of the posts on TFC group, we considered all 36 posts on the group's timeline. The posts were made by teachers and the researcher, from June/2012 to July/2014.

Our analysis on how the interactions evolved in time revealed a surprising result. After an increase of interactions at the beginning of the research, the number of interactions fell over time. Here we considered also the average of participants following the discussions in every post. In the four periods considered in our timeline, July-December/2012, January-June/2013, July-December/2013 and January-June/2014, we observed an increase in the number of interactions and in the number of posts from Period 1 to 2, and then a decrease from Period 2 to 4. Meanwhile, the views per post was the only feature with a stable number in the first period, but also presenting a decrease in the last two periods (see Figure 1).

Within the 36 posts in the group, we also analysed how the interactions started. The researcher turned out to be the main responsible for initiating the topics, with 44 initiative turns, and the other teachers were responsible for 21 initiative turns. In addition, the researcher had a considerable number of responsive turns (28 turns), against 38 of the other teachers.

It is important to highlight that from a CCR, as described by Magalhães [26], the researcher is also an active participant in the discussions. That is, the researcher is not

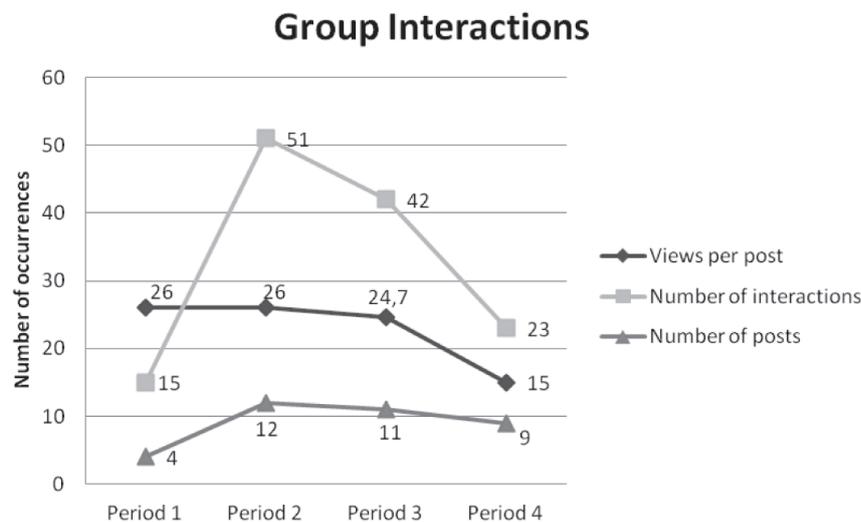


Fig. 1. Progress of interactions in the TFC group over a 2-year period

only an observer (such as an ethnographer), and should be also responsible for triggering new discussions and engaging the other participants into those discussions.

Another finding relevant to this study is that the teachers mostly use Facebook in the evening, at night, and during the weekends. Most of the posts on the group were commented on during the weekends, when teachers have free time to answer. This might explain the low number of interactions, since teachers may want to use their free time for other purposes than discussing things related to work. For that reason, the posts published on Fridays were more likely to be seen or commented on by other teachers.

So far we have discussed some general characteristics of the TFC group in a 2-year period on the basis of quantitative descriptors. For a deeper understanding of the process, however, a qualitative analysis of the teachers' interpretations of events and attribution of meanings is needed. We will discuss the data from a qualitative point of view in more detail in the next section.

### Results from qualitative data analysis

The answers to the first questionnaire showed that most teachers were not concerned about the possibility of collaborating with other teachers in the beginning of the intervention project, which actually is the focus of this research. In their answers to the questions of this questionnaire, the teachers expressed their initial senses about SNS. For more than 80% of the teachers, the SNS were spaces for "sharing information in different ways", or "a place for interacting with other people".

From the perspective of the Cultural Historical Activity Theory, those answers express the value of a given object for the person in his everyday life [37]. Those values are expressed through meanings, that is, the personal meanings words have for the person, which may vary according to the social activity people are involved in [29]. By discussing (and collaborating) with other teachers, the teachers attribute new meanings to the activities, which may become (or not) a shared meaning for the group.

In addition, teachers suggested new possibilities for using Facebook. One teacher, for instance, wrote "I believe the use of Facebook would be possible at schools if we [teachers] discuss with the students the ways for using them". Following Magalhães [27], this can be seen as an initial movement toward critical collaboration, since the teachers want to establish the rules for using SNS with the students, and not for or by the students.

From the answers of the second questionnaire, the teachers kept a defensive position, that is, they gave the responsibility of the problems to the other teachers in the group. When one teacher from our group on Facebook wrote "some teachers are reluctant", according to Kerbrat-Orecchioni [22], we can infer two main meanings in that utterance: first, the use of *some* might mean *I* (the teacher), in a way that he/she does not want to work with that; and second, that the problem is the other person. By transferring the responsibility to the other, the teacher exempts himself/herself from being an active participant in the groups, becoming a mere spectator in the activity. From that example we could observe, fol-

lowing Bronckart [5], the distinction between the first person perspective (I and we) and the third person perspective (he or they).

In another example, one of the teachers from the group wrote, "they should share what they are doing". In this case the teacher is concerned with what the others are doing and does not consider what she is doing herself, since this teacher who suggested the others to make more contributions to the group, did not make any suggestions in the group on Facebook.

In this excerpt, one teacher stated "the problem is that students don't accept it [rules]. They [students] like technologies, but they don't accept the rules for using them inside classroom." When teachers use the pronoun they to refer to the students, instead of using I or we, according to Kerbrat-Orecchioni [22], the teachers are keeping distance from the problem, and giving students the responsibility for mistakes or possible failures. Rules, according to Engeström [2], play a fundamental role in the constitution of every activity. In this case, if the rules are not explicitly put, or constructed together with the students, teachers feel they will not succeed in working with technology with their students.

Teachers provided another shared insight when they agreed that the use of SNS is a way of linking the community they live in to the school. One teacher stated "it [Facebook] can be a tool where parents also participate in what is done at school".

The findings related to time of the posts suggest that teachers are working by themselves, at home, since all of them teach in Secondary Education level, which is common in the mornings in Brazil. It also suggests that the teachers do not work together inside schools, where they might discuss and learn about how to use digital media at schools. According to Datnow & Park [10], teachers need a specific time at schools to build such collaborative spaces and to plan, share, evaluate, and construct together with the other teachers of the school opportunities for improving their own skills related to technology.

Considering the interactions inside the TFC group (see Figure 2), during the first year of the study we observed an increasing engagement of the participants. The decrease in the second year is understood in two ways: on the one hand, from post intervention chat messages on Facebook, it turned out that five teachers who stopped following the group had not actually left it. They argued that they did not have time to combine the use of an online platform with the demands they faced at schools, or with any incentive from the schools in which they work to continue in the TFC group. They further agreed that if they had time available for that they would use the online groups more often. On the other hand, three teachers who were not interacting in TFC group reported that they were spending their time with the groups of students, which is another focus of our research project, and two teachers were working with a new group of teachers in their schools.

Another issue about the interactions in TFC to be considered is that the teachers tend to see the researcher as the main collaborator in the group. All the tensions and conflicts posed by the teachers are to be solved by

the researcher. From a critical-collaborative perspective, the teachers need to take the responsibility for enabling the creation of new possibilities for the resolution of the tensions or conflicts among the teachers themselves, without the interference of the researcher.

From post-intervention chat messages with ten teachers, we observed that teachers from two different schools started a group on Facebook for the teachers in their schools, to work with them in a similar way as proposed by our study. According to the teachers, having a group inside the school would be easier for them to exchange their experiences with digital media, since they could combine both online and face-to-face discussions at schools. In addition, the schools provided them part of the mandatory weekly meetings at schools for those teachers to discuss the use of digital technology. One of these schools even created a Facebook page, where parents and students follow up what is done in that school.

After an increasing number of collaborations, it was gratifying to see that some schools endorsed the use of Facebook after the intervention was finished, thus autonomously expanding the use of Facebook beyond the initial conditions of the intervention. Figure 2 summarizes this process. The vertical line in the middle separates the focus of this study to new events that were triggered by it. As a critical-collaborative research, the use of the group enabled the participants to act in their communities and create new activities based on what was done previously.

## Discussion and Conclusions

### Going beyond TFC group

In this article, we presented an explorative longitudinal case-study about the use of Facebook by teachers. From our first research aim – why on how teachers used the TFC group as a collaborative space – we observed that teachers pointed out that the main need for using groups on Facebook at schools would be to improve

communication with students. Teachers were also aware that they are supposed to use such digital technologies, as described by Brasil [4], but they also pointed out that students are very important in the process of implementing such tools at schools. That concern goes as described by Cunha Jr. [9], who highlights the students as an important stakeholder for the success of a school intervention project.

From the collaborative perspective, the predominant kind of collaboration developed by the teachers is what Fullan and Hargreaves [14] call comfort collaboration, which means that the teachers somehow participate and collaborate with others but avoid taking risks or being criticized by the others. In addition, the possibilities for staying connected to the Internet impacted in the construction of the collaborative process. Moreover, the teachers still see the researcher as the one who is able to solve all the problems in the group. This may explain the biggest number of initiative/responsive turns of the researcher in the discussions inside the group. It was an attempt to make the other teachers engaged in the activity and to give them responsibility to solve a given topic and to avoid the comfort collaboration inside TFC group.

In order to answer the second research aim, regarding the evolution of communication in the TFC group, we conclude that, firstly, the creation of a critical collaborative environment is not a matter of simply connecting teachers online. It demands time from the participants and requires them to be fully engaged in this process, like suggested by Magalhães [26].

In addition, the multiplicity of contexts was quite difficult to be understood by the participants and it suggested that only being connected with other teachers is not a productive strategy by itself. This was corroborated by the findings presented in Figure 1, in which we observed a decrease of interactions after the second period considered in this study. The teachers must have a common shared object to pursue [12] so they really construct something. In the widely connected society we live in, people tend to see the web-based connection as

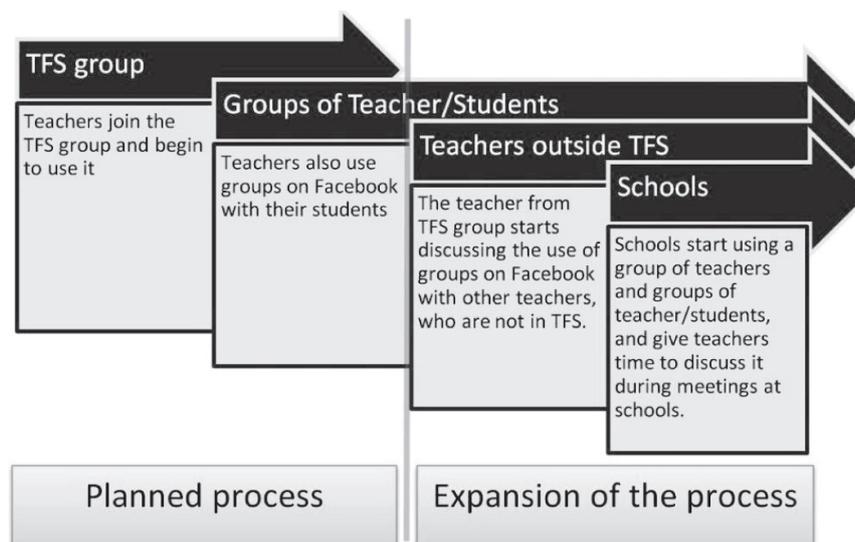


Fig. 2. Evolution of communication in the TFC group

the only way of living, and maybe it is not the only case. We are all connected, but we must learn how to make the proper use of it.

However, we could observe transformations on the communities of the research participants. While the work in the TFC group was not sufficient to create a strong online collaborative work space for teachers, it did enable the teachers to create stronger small groups in their communities to continue their discussions about the use of digital tools at schools. In addition, the changes in the meetings at the schools, and the availability of time for discussing the use of online tools, caused by three teachers from TFC, were a positive result of this study.

Although we could not achieve critical collaboration among teachers, as suggested by Magalhães [27], we suggest that CCR can still be seen as suitable methodology for educational studies, since it enabled some of the participating teachers to create new online groups for discussion in their schools, in which they collaborated critically with each other. This highlights how teachers are strongly influenced by their cultural-historical contexts, and still require face-to-face meetings with the colleagues in order to implement changes in the school settings. The process described in Figure 2 supports this claim: the teachers who worked in the same school were able to create new groups on Facebook and to discuss its practical implications for educational issues either face-to-face or online.

According to Magalhães [26], research conducted under the CCR approach would result in transformations of the activities, in a way that all participants work collectively. However, Parrilla [31] argues that every transformation in an educational setting is slow and takes time, so they do not immediately create expressive tensions in the school context. Thus, still according to Parrilla, it would be necessary to set up a longer follow-up period to analyse the possible transformations in this given virtual context as a result of the interventions.

### References

1. Austin R., Smyth J., Rickard A., Quirk-Bolt N., and Metcalfe N. Collaborative Digital Learning in Schools: Teacher Perceptions of Purpose and Effectiveness. *Technology, Pedagogy and Education*, 2010. Vol. 19, pp. 327–343.
2. Baskerville D. Integrating On-Line Technology into Teaching Activities to Enhance Student and Teacher Learning in a New Zealand Primary School. *Technology, Pedagogy and Education*, 2012. Vol. 21, pp. 119–135.
3. Bentley T. Innovation and Diffusion as a Theory of Change. In Hargreaves A. (eds.) *Second International Handbook of Educational Change*. Springer, 2009, pp. 29–46.
4. Brasil M. Parâmetros Curriculares Nacionais [National Curricular Guidelines]. Brasília: Ministério da Educação e Cultura, 2000. 109 p.
5. Bronckart J.-P. Atividade de linguagem, textos e discursos [Language activity, texts and discourses], 2ª ed. São Paulo: Educ, 1999. 358 p.
6. Cayton—Hodges G., Feng G., and Pan X. Tablet-Based Math Assessment: What Can We Learn from Math Apps? *Educational Technology & Society*, 2015. Vol. 18, pp. 3–20.
7. Charlton P., Magoulas G., and Laurillard D. Enabling Creative Learning Design through Semantic Technologies.

On the basis of this study, we tentatively list some requirements that teachers, and all school personnel, should consider when working with SNS groups:

- Be committed and engaged in the group;
- Have a time to discuss with the colleagues;
- Plan, apply, evaluate and reconstruct the digital activities based on feedback from students and other teachers;
- Expose what they are doing to the other teachers in the school;
- Criticize the other's comments.

Our study has, however, some limitations too. Since this study was undertaken in two of the most economically developed states in Brazil, we cannot generalize our findings. Even in this scenario, it was hard to conduct this study. Considering that there is a lack of resources in most of schools in Brazil, especially in the north and northwest regions, it will take time until a massive online connection between teachers/students take place.

Another limitation can be observed from the small number of interactions inside the TFC group. According to Senge [33], it takes time and commitment to really reach a level of collaboration among the participants. Senge also argues that teaching is among the most individualistic professions, which leads to a lack of commitment in collaborative activities. Nonetheless, we observed collaborative patterns emerging in posts with more than five initiative/responsive turns.

In our study it turned out that teachers and students from public schools are trying to implement new uses of digital technology, even in underprivileged contexts. Our results suggest that it is plausible to assume that the online interactions between teachers and students are of high relevance for educational innovation and research. More attention should be paid to it in the years to come.

8. Cunha Jr.F.R, van Oers B., and van Kruistum C. Teachers and Facebook: Using Online Groups to Improve Students' Communication and Engagement. *Communication Teacher*, 2016. Vol. 30.
9. Cunha Jr.F.R. Student training for promoting collaborative agency: the monitoring activities. *Ponte*, 2016. Vol. 72, pp. 170–187.
10. Datnow A. and Park V. Large-Scale Reform in the Era of Accountability: The System Role in Supporting Data-Driven Decision Making. In Hargreaves A. (eds.) *Second International Handbook of Educational Change*. London & New York: Springer, 2009. Vol. 23, pp. 209–220.
11. Engeström Y. Activity theory and the social construction of knowledge: a story of four umpires. San Diego: University of California, 1999.
12. Engeström Y. Learning by expanding: an activity-theoretical approach to developmental research, 2 ed. Cambridge: Cambridge University Press, 2015. 338 p.
13. Facebook. 45% da população brasileira acessa o Facebook mensalmente [45% of Brazilians access Facebook every month]. 2015. Available at: <https://www.facebook.com/business/news/BR-45-da-populacao-brasileira>

- acessa-o-Facebook-pelo-menos-uma-vez-ao-mes (Accessed 25.07.2016)
14. Fullan M. and Hargreaves A. A escola como organização aprendente. Buscando uma educação de qualidade [The school as a learning organization. Seeking a quality education], 2 ed. Porto Alegre: Artmed, 2000. 402 p.
15. Goodband J.H., Solomon Y., Samuels P.C., Lawson D., and Bhakta R. Limits and potentials of social networking in academia: case study of the evolution of a mathematics Facebook community. *Learning, Media and Technology*, 2012. Vol. 37, pp. 236–252.
16. Gray K., Chang S., and Kennedy G. Use of Social Web Technologies by International and Domestic Undergraduate Students: Implications for Internationalising Learning and Teaching in Australian Universities. *Technology, Pedagogy and Education*, 2010. Vol. 19, pp. 31–46.
17. Heo G.M. and Lee R. Blogs and Social Network Sites as Activity Systems: Exploring Adult Informal Learning Process through Activity Theory Framework. *Educational Technology & Society*, 2013. Vol. 16, pp. 133–145.
18. Hewitt A. and Forte A. Crossing boundaries: Identity management and student/faculty relationships on the Facebook. Poster presented at CSCW, Banff, Alberta, 2006, pp. 1–2.
19. Hutchens J.S., Hayes T. In your facebook: examining Facebook usage as misbehavior on perceived teacher credibility. *Education and Information Technologies*, 2014. Vol. 19, pp. 5–20.
20. John-Steiner V. Creative collaboration. New York: Oxford University Press, 2000. 288 p.
21. Junco R. iSpy: seeing what students really do online. *Learning, Media and Technology*, 2014. Vol. 39, pp. 75–89.
22. Kerbrat-Orecchioni C. Análise da conversação: princípios e métodos [Conversational analysis: principles and methods]: Parábola, 2006. 143 p.
23. Kimmons R. and Veletsianos G. The fragmented educator 2.0: Social networking sites, acceptable identity fragments, and the identity constellation. *Computers & Education*, 2014. Vol. 72, pp. 292–301.
24. Leontiev A. N. Activity, consciousness and personality. Englewood Cliffs, NJ: Prentice Hall, 1978. 196 p.
25. Liberali F. C. Creative Chain in the Process of Becoming a Totality [A cadeia criativa no processo de tornar-se totalidade]. *Bakhtiniana*, 2009. Vol. 1, pp. 100–124.
26. Magalhães M. C.C. Projetos de formação continua de educadores para uma prática crítica [Teacher education projects towards a critical praxis]. *The ESPecialist*, 1998. Vol. 19, pp. 169–184.
27. Magalhães M.C.C. Theoretical-Methodological Choices in AL Research: Critical Research of Collaboration in Teacher Education. *Inter Fainc.*, 2011. Vol. 1, pp. 34–45.
28. Mazer J., Murphy R., and Simonds C. I'll See You On Facebook: The Effects of Computer-Mediated Teacher Self-Disclosure on Student Motivation, Affective Learning, and Classroom Climate. *Communication Education*, 2007. Vol. 56, pp. 1–17.
29. Newman F. and Holzman L. Lev Vygotsky, um cientista revolucionário [Vygotsky, a revolutionary scientist]. São Paulo: Edições Loyola, 2004. 241 p.
30. Ninin M.O.G. Da pergunta como ato monológico avaliativo à pergunta como espaço para expansão dialógica [From question as a monological evaluative act to question as a dialogic expansion space], 1 ed. São Carlos: Pedro & João Editores, 2013. 183 p.
31. Parrilla A. Os grupos de apoio entre professores no contexto espanhol: origem, sentido e justificativa [Support groups among teachers in the Spanish context: origin, meaning and justification], In Daniels H. (ed.) *Criação e desenvolvimento de grupos de apoio entre professores*. São Paulo: Edições Loyola, 2004. 226 p.
32. Savvidou C. 'Thanks for sharing your story': the role of the teacher in facilitating social presence in online discussion. *Technology, Pedagogy and Education*, 2013. Vol. 22, pp. 193–211.
33. Senge P.M. Education for an Interdependent World. In Hargreaves A. (eds.) *Second International Handbook of Educational Change*. London & New York: Springer, 2009. Vol. 23, pp. 131–151.
34. Shukor N., Tasir Z., van der Meijden H., and Harun J. Exploring Students' Knowledge Construction Strategies in Computer-Supported Collaborative Learning Discussions Using Sequential Analysis. *Educational Technology & Society*, 2014. Vol. 17, pp. 216–228.
35. Unesco. Teaching and learning: achieving quality for all. UNESCO, 2013. 481 p.
36. van Dijk J. The network society, 2 ed. London: SAGE Publications, 2006. 336 p.
37. van Oers B. Developmental Education: Reflections on a CHAT-Research Program in the Netherlands. *Learning, Culture and Social Interaction*. 2012. Vol. 1, pp. 57–65.
38. Vygotsky L.S. The Collected Works of L.S. Vygotsky: Problems of General Psychology. New York and London: Plenum Press, 1999. 396 p.
39. Vygotsky L.S. Thought and Language. Cambridge: MIT Press, 2012. 307 p.
40. Wang Q. and Lu Z. A Case Study of Using an Online Community of Practice for Teachers' Professional Development at a Secondary School in China. *Learning, Media and Technology*, 2012. Vol. 37, pp. 429–446.