

# EDUCATION-RESEARCH IN SCHOOLS: PLACES AND AUTHORSHIPS IN QUESTION

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ABSTRACT

This text discusses aspects of education-research in schools in the context of a study that analyzed a public policy for the insertion of mobile technologies in Brazilian schools, the One Laptop per Child program. The shift of knowledge presented by the digital culture in the school and the role of the student-monitor/instructor in different situations investigated is highlighted, and visibility is given to the statements of teachers and students from two primary schools that participated in the study. Finally, the text sought to establish points of connection between different places and authorships in the education process with the use of mobile technologies in schools.

**KEYWORDS:** Research-education of teachers, student monitors, School, digital culture, mobile technologies.

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## Introduction

Over the past 20 years we have accompanied various discussions and studies about the possibilities for new educational approaches based on the incorporation of technologies that are available in various social environments. Within this context, we are interested in investigating how teachers who work in primary schools (re)create educational situations in environments that are increasingly permeated by digital technologies. In this article we present reflections from a study conducted in Brazilian elementary schools that received laptops distributed to all the students and teachers, under a public federal policy known as A Laptop for Every Child Program<sup>1</sup>.

In this article, the interest focused on the teacher education process and on the learnings that are established when students act as instructors: what and how do the teachers and other students learn? How can the authorship of the students be strengthened in their activities as monitors/instructors in the use of mobile technologies in schools and in the dialogs with teachers?

### 1. Education-research in schools

The idea of encouraging school teachers to become involved in research projects is increasingly common, with the supposition that their participation in investigative processes can improve their pedagogical practices (Longarezi; Silva, 2008, p. 4056). These research experiences announce another opportunity to conduct education science, because the researcher, more than discovering problems in the school and among teachers, seeks to work with the education process to discuss certain practices and act in conjunction with teachers and students to resolve the problems identified.

From this perspective, the teachers are subjects and coauthors of the study and education. In this process, the dialog between researcher and teacher is constantly encouraged and the partial devolution of research data takes place during the investigative process, and can assume a systematized form of continuing education.

During the investigative-educational process, the teacher-researchers sought not only to understand the reality and complexity of the educational process but also to share activities in the school environment and intervene in this reality. In the French context studied by Durand, Saury and Veyrunes (2005, p.39) these authors sought to articulate the results of education with the practices of teacher education. The authors highlight that the difficulties in this process are related to an opposition between an “epistemology of knowledge” and an “epistemology of action.” The existing contrasts between these epistemologies illustrate important questions about professional conduct and the education of teachers and their relations with research and its results. For the authors, the symmetry of

1 Research project conducted from 2011-2013, in 21 elementary schools in Santa Catarina and Bahia states, in Brazil.

the difficulties observed in these two epistemologies can be reduced through analysis and involvement in the activities and work situations during the study, given that in most cases these difficulties are “invisible” in these approaches. This article analyzes the results of the involvement of students in educational processes together with teachers and researchers.

## 2. Methodology and research scenarios

In a theoretical-methodological line based on the presumptions of media-education research (Rivotella, 2005), this investigation involved a multiple case study in four of the 21 schools participating in the broader study in two Brazilian states, Bahia (BA) and Santa Catarina (SC). The study was conducted in the 2012 school year and revealed various actions for the insertion of mobile technologies in schools in Brazil’s northeast and Southern regions. The methodology involved various research instruments and subjects: the application of questionnaires to the federal, state and municipal school administrators; participant observation in the schools based on a previously established plan; semi-structured interviews with teachers; focus groups with students; as well as didactic interventions and research-education with teachers and students.

To investigate the pedagogical practices a matrix was constructed for observation and analysis of the competencies and abilities that we expected to find, according to indications found in the literature in the field (Jenkins, 2006, Warschauer, 2006, Lankshear; Knobel, 2007, Unesco, 2008). The competencies defined were: digital culture, digital literacy, multiple languages, logical ability, creativity, sharing and authorship, analyzed from a triple dimension: the activity undertaken, the action of the teacher and the participation of the students. The analyses of the relationship and interaction of the students with their learning were initially conducted using four transversal indicators: attention (interest/motivation); involvement and participation; multiple languages; multi-tasking (distraction or competence).

The focus groups conducted with the students highlighted their perceptions about the laptop and their daily use with it in school and at home. The interviews conducted with the teachers about the possibilities for pedagogical innovation based on the uses of the mobile technologies support the proposals for education developed during the study.

The combination of these instruments and strategies allows expanding the analysis to different realities and assuring the dialog between the research subjects, seeking other types of interaction between “researchers and those researched” and constructing other ties in the investigation process. The crossing of the data obtained with the different tools and their analyses is supported both by the pre-categories listed above as well as on others that emerge during the process.

Among the various situations investigated in the study, the focus chosen to discuss the proposals of this article concern research-education in two schools in Santa Catarina: authorships and the places of teachers and students in the relationships established, based on intentional education about the use of mobile technologies.

The literature about the issue indicated the need for greater involvement in the field and with the subjects in the investigations that focused on the changes generated in pedagogical practices by the use of the current technologies. In this context, as part of the survey and data collection, proposals were developed for continuing education for teachers and students in the schools that participated in the study.

The table below allows visualizing two of the situations investigated based on the data usually used to define a school. Both schools are municipal public schools.

Description	Situation1: School A			Situation 2: School B		
Geographic data	Location	No. residents	Economic sector	Location	No. residents	Economic sector
	Urban	430.000	Services	Urban	156.000	Clothing, textiles, metallurgy and machinery
Structure	No. of students	No. of teachers	No. of classrooms	No. of students	No. of teachers	No. of classrooms
	300	30	10	570	34	22
Socio-economic data	Parents education	Family income	Family occupations	Parents education	Family income	Family occupations
	Elementary school	US\$ 849	Day-workers, general-service assistants, small merchants mechanics, taxi drivers, odd-jobs	High school	US\$ 2,500	Independent professionals, technicians, computing, sales, commerce

**Table I: Data about the two schools in the study**

Divided into two teams the researchers accompanied the activities conducted with the laptops in the two schools once a week and realized various educational programs with teachers and students during the school year (including courses, workshops, and meetings for study, planning and accompaniment). The table below allows visualizing the participants in the education research – both students and teachers – in the two schools.

Schools	Focus groups (no.)	Participating students	Classes	Total no. of students in the classes	Participating teachers
School A	05	35	3rd, 4th, 5th and 8th	75	10
School B	04	26	4th, 5th, 8th and 9th	85	08
<b>Total</b>	<b>09</b>	<b>61</b>	<b>08</b>	<b>160</b>	<b>18</b>

**Table II – Participants in the education research in the two schools**

The differences between the two situations stood out in terms of cultural capital, costs and practices with the use of laptops – in school and out – in the control of Internet content in the school and equipment maintenance, and the involvement of families in the school. These differences created quite distinct situations and solutions that in one school favored greater involvement with curricular uses of laptops and in another a growing sense of non-belonging to the *One Laptop Per Child* program.

### 3. Student instructors in discussion

The idea of participation of students as assistants to the teacher in the teaching process is not new, as revealed by Manacorda (1992) and Giles (1987) in their reports and compilations about education history. There are registers ranging from ancient Greece until proposals from the period of the constitution of public education. One that achieved greater promotion and adoption was known as mutual teaching or the Lancaster method, which had its peak between the late 17th and early 19th centuries. Within this proposal, a teacher taught a lesson to a “group of more mature and intelligent boys.” The students were then divided into small groups and received the “lesson from those to whom the master had taught it” (Eby, 1978, p. 325).

The possibility to reconsider the participation of students in schools and in their learning processes was also emphasized in the 1920s by Dewey and later by Freinet, who proposed socially motivating work in schools, based especially on the use of “free text,” printing, a school newspaper, and a conference of students (Eynard, 2006). In the conference, the student would prepare a text to present to a group of colleagues, with documents to illustrate and or demonstrate the knowledge constructed, a practice that is similar to certain proposals of the student-monitor/instructor, found in the schools in this study.

With the insertion of computers in the public schools, the idea of students who could be “monitors,” of other students in the use of the equipment was reinforced. Nevertheless, there was not a big distinction: the monitors are no longer students who receive the instruction directly from the teacher, who are repassing what they learned to those who know less. Their knowledge does not originate in the school curriculum or in the teacher’s knowledge. In turn, the teacher also needs to learn about the uses of mobile technologies to make viable significant mediations in the pedagogical practice. By considering this paradox in relation to the traditional organization of the work of the teacher this study discusses the experiences of education in the use of mobile technologies in the schools studied.

It is important to highlight that the professional knowledge of teachers, are “knowledges mobilized and employed in daily practice, knowledge that originates from this, in one way or another” (Tardiff; Raymond, 2000, p. 211). These authors indicated that this knowledge “serves to resolve the working problems of the teachers and to give meaning to the work situations that are particular to them.” To the degree to which they organize this knowledge, the teachers enter a cycle of “routinization” (Giddens, 1987), which can impede them from constructing new knowledge, because the routines “are means for generating the

complexity of the situation of interaction and decreasing the cognitive investment of the teacher in the control of the events” (Tardiff; Raymond, 2000, p. 212). They would be “simplified models for action: they serve to organize the acts through a stable, uniform, repetitive form of acting” (idem).

These “routines” impede the incorporation of changes in practices that can unleash new knowledge. For many scholars of the relationship between technologies and education (Fantin; Rivoltella, 2012) the resistance found among many teachers to the use of more contemporary technologies are permeated by the understanding and organization that they have of their work as teachers. Nevertheless, this study found that the actions triggered by the students/monitors/instructors influence the knowledge of the teachers and can provoke spaces of learning and of construction of new knowledge. These spaces relate to the concept of “shift in knowledge,” suggested by Martín-Barbero (2009, p.27) and that Moles (1971) called: mosaic-knowledge” in one of the first references to the possibilities of hypertext.

There is a practice that does not consider this knowledge(s) and which is responsible for a series of constraints among teachers when they are confronted with questions about this knowledge that is “marginal” to the school. Given the silence and the lack of dialog in this situation, the author confronts the school system with the new communicative system of society and highlights the importance of construction of other schemes for interaction among these subjects, in which the technological mediations reveal their alternative potential and other situations.

Certain practices in the digital culture shift the places of the pedagogical relationship and that of the role of the teacher and the student, placing the knowledge of each one in question. In the educational proposals undertaken in the schools researched, the knowledge required for students to serve as monitors/instructors had little relationship with knowledge constructed in the school space. It was their experience outside the school that was requested in the school context. This knowledge is important and valued, but it is not established as part of the curriculum to be taught, and a shift of place and authorship is required so that it is included among the activities undertaken by the school: the teacher learns and the student teaches. Nevertheless, since it happens to be knowledge derived from extra-school experience, it remains in a transitory relation of power, because it is the curricular knowledge that is important in the school space. Thus, the permanence of the place, authorship and power of the teacher is guaranteed.

These experiences concern other forms of participation and learning of students in schools and most of them involve the use of digital technologies in school projects. Upon discussing the concepts of learning and participation, Rogoff expands the understanding about the cooperative nature of learning that occurs inside and outside the explicit situations of instruction, and highlights the sense of “guided participation.” For her, when children learn and participate, they are also guided by values and practices of their cultural communities (2005, p. 232).

The guided participation highlights the role of the adult as protagonist alongside the notion of the agency of children. This practice can also be related to the understanding of authority proposed by Arendt (1997). Upon distinguishing the authority and the qualification of the teacher, Arendt understands that “although a certain qualification is indispensable for authority, the qualification, as large as

it may be, would never engender authority on its own” (1997, p.239). For Arendt “the qualification of the teacher consists in knowing the world and being capable of instructing others about it, although her authority is based on the responsibility that she assumes towards this world.”(idem).

### 3.1 Experiences with authorship and participation

In this way, to consider the participation of the student-monitor in the educational workshops as we saw in this study can signify a possibility for dialog between tradition and modernity, that is, an acceptance of the new along with the inheritance of tradition. In this contradiction and in this awkward relationship, perhaps knowledge is constructed that overcomes certain generational gaps, given that “it is impossible to determine, through a general rule, where the border between childhood and adulthood lies in each case. It changes frequently, with respect to age, from country to country, from one civilization to another and also from one individual to another individual.” (Arendt, p. 246).

In this respect, it is important to problematize representations about “the student that knows and the teacher who does not know,” as Buckingham warns: “we must be cautious with the easy rhetoric of the so-called ‘digital generation,’ that is, the idea that youth are actively communicating and creating online, given that they have a spontaneous affinity with the technology that older people do not have (2008, p. 9). After all, as Fantin; Rivoltella (2012) question, what do students and teachers know and not know in relation to digital culture? How can they learn from one another? And how can this be worked with in the school curriculum, beyond the proposals for education with technologies?

Upon considering the distance between the school curriculum and knowledge from the daily use of digital media, Tufte and Christensen find that different generations develop different abilities and competencies: “the cultural and media competencies of children and youth are obtained during their free time, and the absence of a critical approach to the use of media, as well as the lack of critical competencies are obvious” (2009, p.101). Thus, to shift the places of knowledge in the school only makes sense with practices that can transform the school culture by assuring both practical knowledge as well as perspectives for analysis, which are fundamental for a cultural understanding of the possibilities of media-education.

In this framework, it is one thing to identify experiences and practices of student-monitors, which are recurrent in various situations investigated, and it is another to involve student/monitors in the proposals for school education realized in this study. To consider that the students have media and digital knowledge and competencies that are different from many teachers means recognizing their previous knowledge and giving value to learning as dialog and mediation. That is, it recognizes and minimizes both the *gaps* of participation, of language, of knowledge and of culture that Rivoltella highlights (2013 p. 17), as well as the distance between students and teachers.

As much as it is common sense to emphasize the capacity and speed of the students in the learning and use of technologies, considering them to be “self-literate,” the reflexive mediation perspective questions this assumption. The in-

version of roles that reveals a command of the machine on one hand (among students) and the need for reflection (teachers) on the other, challenges the places and possibilities for learning in schools, and this needs to be problematized from the point of view of education (Fantin, 2013).

Despite the reservations demonstrated about differences in knowledge in relation to the use of technologies, the teachers recognize the gaps in their knowledge: *"in the beginning there was that fear, right? The student will be able to know more than you!"* But the teacher seeks to identify knowledge in other places and neutralize the need for new strategies: *"The route that the student uses is quite different than the route that the teacher uses."* There is the recognition that students more easily or quickly appropriate the technologies because they are more contemporary to them: *"we adults have more difficulties in learning than the children. In a workshop you pick up a bit. Then you don't recall details and practice and try to do it alone and don't get anywhere."* In parallel, there is a constant attempt to use different technologies and keep more in touch with current times: *"the teacher constructs the knowledge with the student, the student seeks the knowledge, constructs his knowledge with this additional tool, considerably facilitates the work...but does not substitute the book, the written manual, reading."*

The need to preserve the professional knowledge constructed with the exercise of the profession makes it very important to create a tie between past and present action: *"you did not have command of many things, then you had to learn together. What is cool is that you learn together with the student. You do not know, the student does not know, it was easier to exchange ideas."* It was found that the idea of exchange is very strong and appears in all the statements. In some of them the hierarchy of the school – *"the teacher knows, the student learns"* – is still a problem and has repercussions for the possibility of taking advantage of the moments of education organized around the knowledge of the students: *"it is difficult to accept and say: 'I don't know, I need help.' There is still that thing that the teacher has the knowledge and the student does not know, must learn. The issue of exchange is difficult to assume"*. One teacher described her experience of trying to control the knowledge: *"I prepared the class, studied, studied, to get to class and explain how to work the slides on the laptop. When I got there, when I was speaking, the students [would say]: go 'to the next, go, you can go. They already knew, so they were helping"*.

The statements also reveal the surprises and contentment of the teachers at finding that the students do not know everything about the technologies: *"the student does not know how to use technology, he simply knows how to enter MSN, and see things. Now if you ask him to do research, he does not know."* Thus, the teacher's knowledge appears to be guaranteed: *"there is not much of this problem of 'ah, the students know more.' No. Because the student knows how to work that, but the content part, this is for the teacher."*

This issue requires greater discussion and research: on one hand there is a consensus that children and youth are totally fascinated by technologies and dominate them with capacity and creativity, on the other, there are those who believe that the children and youth are left increasingly stupefied by the time spent on and uses made of the technologies. For Selwyn (2008) the use of digital technology in schools led to an over emphasis on the digital competencies of the

students and these generalizations led to the creation of a myth that youth are more competent than they really are because of the fact that they are active online citizens. These considerations corroborate the analyses of Buckingham (2008) about the need to conduct studies with other questions and perspectives about the relationship between adults/teachers and children/students.

The comments and suggestions of the students in the broader context of the study underwrite the potential of the proposals for shared education. These practices can reduce certain gaps that separate the educational system from the experiences of children and youth in the construction of another model of school communication, one that is more in tune with the communicative dynamics of society and approximates the educational and cultural practices without requiring that “the students leave their body and soul outside the school, or their sensibility, their experiences and their cultures, whether they are audio, visual, musical, narrative or written” (Martín-Barbero, 2009, p. 23).

Upon reaffirming the agency of the students, their suggestions about the uses of technology in school are highlighted: *“they [the teachers] should work more with the laptop in the classroom.”* Some statements reveal a desire for greater use of the devices in the didactics proposed and also suggested activities: *“for her [the teacher] to work more with stories;”* *“one week with games and another with research.”* Or even, *“one day of study and one day of play.”* These statements indicate an approximation between space outside of the school with the needs and school knowledge. The statements suggest activities that reproduce the gratification systems found in games in the context of school activities. They also emphasize the need for a more significant school curriculum along with a perception of the place of the teacher: *“who presents more interesting things.”*

The students also find that their teachers have difficulty using the technologies in a ludic manner and suggest: *“for them to play more, enter more in social networks, Facebook, Twitter, (...) do something”.* And reinforce this need: *“the teacher can increase the knowledge with the computer, use the chat site, promote online conversations, use some games, something like this.”* They also perceive gaps in the repertoire and digital competencies of the teachers: *“the teacher said that she doesn’t like to use it, but how is she going to know if she likes it or not if she never uses it?”* This suggestion reveals a perspective that seeks to approximate their experiences with school activities, that is, to approximate the communicative dynamics of society and the school.

Upon criticizing the technologies a bit, the students emphasize the need for the school to perceive that it needs to be more in touch with the current cultural contexts: *“I suggested the teacher use Face and also bring other things, stay in touch with what is happening and bring it as a classroom activity, because it has other things that we learn.”* In this way, they reveal the need to interpret the world outside of school bringing their fortuitous knowledge, which comes from the media and youth culture, to the school space, minimizing the sense of loss of control when this culture enters the school, given that “the new digital divisor (...) reflects a broader historic disjunction between the common leisure culture of youth and the school culture”. (Buckingham, 2008, p. 10).

In the specificity of the participation of students/monitors in the educational workshops mentioned, the recognition is highlighted of this approximation in the evaluation of the teachers about these educational activities. The adminis-

trator of one of the schools in the study said that intense use was made with the presence of the students/instructors: *"in these workshops, in two hours, a universe was constructed."* Although there was a lack of initial confidence about the potential of knowledge of the students, this idea was resignified in the statement of the teacher: *"Not only by the experiences that they have with the school radio but for us to learn to value (...) the technical issue plus the pedagogical content of each teacher and student"*.

Upon analyzing the statements of these students it is understood that their work goes far beyond technical help as revealed by the statement of a monitor/instructor who reported what she did in the classroom: *"we do a lot of work with slides. For example, for one project about contraceptive methods we are using slides. The teacher asks us to do research, and put it on slides. And we do this in group or individually. And we do this in class, for them to be close and see our process"*. And she concludes: *"It is technical help but also of content."* It is interesting to highlight the reason for the student's involvement in the training of colleagues and teachers. The arguments are similar and are echoed in the discussions raised here about the shift of place and of authorship of knowledge in the school space with the use of digital technologies: *"we teach and learn! With the friendships, with the small [students] and with the big [ones]!"*. Perceptions like these indicate the potential for small changes in the educational processes in the school.

## Some considerations

This article highlighted an investigative route about mobile technologies in schools from the perspective of education-research conducted in different situations. Based on the identification of projects with student-monitors, proposals for education were constructed that gave visibility to the knowledge of these students and allowed other forms of dialog between formal and informal knowledge that would allow revealing the construction of digital competencies of a more instrumental character on one hand and the need for reflection on the other.

The experience of education with student/instructors revealed the importance of valorizing the cultures that the students bring, as an opportunity to understand what they do and know and discuss how the teachers can also learn with them. As Serres (2013, p.11) affirms: *"before teaching whatever it may be to someone, it is necessary, at least, to know this someone. Who is it today who goes to school, to elementary school, to the university?"*

Although there is still a long way to go to assure other forms of participation in digital culture, some strategies for the construction of media and digital competencies in the school can be strengthened with pedagogical and investigative practices. The proposal for shared education reveals the importance of mediation in the ethical and aesthetic use of technologies in school and outside it, and of reflection about the places and authorships of knowledge in school. In this process, we reiterate the challenge made by Serres: what, to whom and how to transmit knowledge...

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