Some Experiences with One Computer per Student Project in Rondonia, Brazil

Marcelo Pustilnik Vieira¹, Leonir Santos de Souza²

¹Federal University of Santa Maria - UFSM-RS, Brazil

²Federal University of Rondonia - UNIR-RO, Brazil

Abstract

This paper presents partial results of a study that reports the work developed during the execution of the UCA Project, within the One Computer per Student Project (PROUCA) in Rondonia state in the north of Brazil, in a qualification process mediated by UNICAMP, as IES GLOBAL, UNIR as IES LOCAL, qualifiers and tutors of SEDUC and SEMED. MEC's role stands out in the process to establish commitment with SEDUC, and the changes that have happened in the political scenario that directly interfered in the progress of teachers' continued education. It mentions how the initial structures of the qualification modules had to meet the peculiar needs of each school in order to interact with the different players of this project. The entire historical process stands out with the inclusion of mobile technology in the classroom in the pilot-schools, primarily indicating that there was a concern with linear qualification that was gradually overcoming resistance to incorporate the use of laptops in the classroom routine allied with other tools and technologies according to the teacher's needs to teach his/her students, making them feel safe and developing students' autonomy for problem solving. As a result of including mobile computers, the trajectory changed for teachers and students using this resource as a tool to support the teaching and learning process of all the involved players.

1. Introduction

We herein present some results collected during the execution of the One Computer per Student Project (PROUCA) during two years, between 2010 and 2012, implemented by the Brazilian Federal Government and that involved 6,650 teachers in 227 cities, 150,000 computers for students of 300 public schools. In addition to these numbers, the strong point of PROUCA was the articulated use of an extensive network of instructors involving Higher Education Institutions (IES), Municipal and State Departments of Education, an unparalleled experience in the country. We will specifically discuss PROUCA in the State of Rondonia.

A cooperation agreement was signed in 2009 by the Ministry of Education (MEC), the Federal University of Rondonia (UNIR), the Municipal Department of Education (SMED) and the State Department of Education (SEDUC), where the state assumed along with the university, the responsibility to qualify teachers, counting on the staff of the Center for Educational Technologies (NTE) from SMED and SEDUC, through instructors who would support and guide the teachers who would be directly connected to the course participants. The team of researchers of UNIR, also called Local IES, would organize the instructors' qualification, besides managing the program, reporting to MEC and under the supervision of the State University of Campinas (UNICAMP), also called Global IES, see Figure 1. The instructors' qualification process began in August 2010, and in November the course participants' qualification began in the state and municipal schools.

The national qualification structure occurred as in Figure 1.

Figure 1. Qualification Management Structure

A differential of PROUCA in the state of Rondonia was the decision to appoint an UCA Coordinator in each school, whose function would be to monitor the preparation of activities related to using the laptop in the classroom.

2. PROUCA

The One Computer per Student Program started in 2007 with the Pre-Pilot phase with 5 schools in 5 states. In 2010, the Federal Government officially launched the Pilot phase that involved 300 schools in all Brazilian states. With PROUCA, the “Formação Brasil” (Qualification Brazil) was implemented, which aimed to structure a network for qualification, monitoring and support to teaching practices, using the educational laptop in schools. Besides qualifying teachers of the public schools participating in PROUCA to use the educational laptop, its mission was to place in action practices that would favor learning based on cooperative construction of knowledge aligned with specificities of curricular proposals of each of the schools involved.

In August 2010, a first qualification meeting was ministered by Global IES to Local IES and SEDUC, when the purpose of the project and its execution period was informed. In Rondonia, the work began with the SEDUC/UNIR team in mid-September, and in October and November 2010 the official launch of the program happened in the selected schools. However, the teacher qualification process started in November, which was a very troubled school period, because the last bimester of school was in progress, and also at that time elections for governor and president were in their final phase, and in that context, the information we had was that the Plan of Action for PROUCA would end in December 2010, because the new administration that would begin in January 2011 gave no guarantee that PROUCA would continue.

Certainly by the unique connotation, since no one knew how it would be for each student in a school to have a computer connected to the Internet, in addition to the unknown technological problems that were happening, it did not end until December, because the forecast was for six months and not two months as it occurred. With the minimum period to complete five modules at the end of the year, whereas the teacher still did not know how to use the equipment and the team of qualifiers was still in formation, it was expected not to qualify them in such a short period, but the qualification structure itself proved to be inadequate; a point that will be discussed later. It was supposed to continue in 2011, but that was still uncertain.

It is important to point out that in Brazil; the presidential transition period is the same as for governors. In Rondonia, this caused a change in staff at the State Center for Educational Technologies (NTE) with the newly elected governor, because it is he who defines the people that assume positions of trust at all administrative levels of the Department of Education (SEDUC), including the special projects coordinator who manages the NTE, thus changes happened in the SEDUC team that monitored the

qualification, and we needed several adjustments to meet the requirements of the new government.

Another factor that directly interfered in the qualification was that the Department of Distance Education at MEC was extinguished; it was in this department that PROUCA was allocated to. With its extinction, the program temporarily migrated to CAPES (Higher Level Personnel Improvement Coordination) until it was definitely transferred to SEB (Department of Basic Education). In all 2011, the program had no resources to carry out activities, which delayed the resumption of the qualification, whereas SEDUC assumed the expenses of travel with tickets and per diem for the qualifiers who were part of the state staff, to attend the course participants in the state, which corresponded to 6 different cities.

In order to continue the qualification some adjustments were made: the teachers had to live in the city where the qualification took place, and attend another school in the program in the city closest to their hometown, therefore we would have less travel and per diem expenses and we would ensure attendance of the course participants. In this condition, teachers who were SMED employees, due to the lack of resources to attend the municipal schools, ended up leaving the program, and only teachers who were state employees remained.

Throughout the process of completing the project in Rondonia, despite its own goals to qualify the course participants, adjustments were made to suit the peculiarities related to the State, teachers, schools and financial dynamics imposed by the federal government.

2.1. Qualification objectives

Having as a greater purpose to structure a network for the qualification, monitoring and support of pedagogical practices at using educational laptops in schools, it is qualification that happens with action. Aiming to qualify teachers of the public schools participating in the PROUCA pilot to use educational laptops in practices that emphasize learning based on cooperative knowledge construction, aligned with the specificities of the curricular proposals of their schools. It was intended to create a cooperative network culture, within and between schools, using digital technologies, favoring autonomy, deepening and broadening knowledge about the contemporary reality, in order to contribute to build the political-pedagogical proposal of schools, benefiting from the possibilities of educational laptops.

It is important to point out that Qualification Brazil of PROUCA continued the continuous qualification programs that had already been promoting the inclusion of an innovative practice at

using educational technologies in the teachers' initial and continuous qualification programs and courses.

2.2. PROUCA in Rondonia

The state of Rondonia is located in northern Brazil, in the called Amazon Region, Figure 2. It entered PROUCA in 2010, in the second phase of the Program, the Pilot Phase.

Figure 2. Location of Rondonia State

Eight schools in the state were selected to participate, whereas five state and three municipal, distributed among seven cities (see Table 1).

Table 1. Schools by city, administrative level and location

City	Area	State	City
Ariquemes	Urban	X	
Cacaulandia	Urbana		X
Ji-Parana	Rural		X
Ouro Preto do Oeste	Urban	X	
Porto Velho	Rural	X	
Porto Velho	Urban		X
Rolim de Moura	Urban	X	
Vilhena	Urban	X	

The geographical distribution of cities occurs according to the map in Figure 3, where you can realize the large distances between some cities and the state capital, Porto Velho.

Source: Google Maps adapted by the authors

Figure 3. Geographical distribution of cities

The total number of teachers involved in Qualification Brazil in the State of Rondonia was 222 teachers, all active in the participating schools, reaching a total of about 2,900 students in the state.

The Local IES qualification team consists of one Coordinator, one Deputy Coordinator, four researchers, six qualifiers, five teachers and one computer science technician. The staff was distributed regionally to attend the State, and its composition and assignment are shown in Table 2.

Table 2. Distribution of qualifiers in the cities in 2010

Qualifier's Name	Teacher	City	Number of participants in Qualification Brazil
Elisangela Sales de Lima	Maria Lenilza Gurgel Silva	Ariquemes	36
Marileia Rodrigues Assuncao Simoa		Porto Velho	22
Elisangela Sales de Lima	Adriana Lima Abreu	Porto Velho	19
Marileia Rodrigues Assuncao Simoa		Cacaulandia	21
Celia Teixeira Carneiro	Patricia Prestes	Ji-Parana	31
		Ouro Preto D'oeste	23
Maria Perpetua Ribeiro Lacerda	Maria Madalena Lopes Buscorioli	Rolim de Moura	32
	Mariza Mezabarba Vieira Fidelis	Vilhena	38
		Grand Total	222

3. Qualification and interactions

Qualification of the Local IES team began August 30 and 31, 2010 in Belem in Para State in the 1st Meeting in the North, where a personal meeting was held with Global IES, explaining the government's proposal in PROUCA and the first workshop took place to appropriate the equipment and the Metasys/Linux operational system, developed specifically for this educational laptop. On September 20 and 21, 2010 in Porto Velho, the first meeting with the NTE of SEDUC and SMED with UNIR was held. Starting in October the official launch of the program happened in schools and the qualification process begun. Also in November 2010, the Global IES participated in the 2nd Meeting in the North, along with UNIR, the Federal University of Acre (UFAC) and SEDUC, to share experiences, difficulties and reports on the progress of the program in the state. At that time it was not possible for the Federal University of Para (UFPA) to

participate due to the lack of financial resources, since the university had failed to commit the resources in time to attend the event.

During the school teachers' qualification process in 2010, it was possible to complete Module 1, start Module 2, but not finish it. With the New Year, there was a change of government at federal and state levels. From the federal standpoint, there was a stalemate to continue the program that really harmed the continuity of the qualification at the beginning of classes. At state level, the new government, for being opposition to the previous one, did not recognize the partnership and leaves the program.

After resolving the stalemate at federal level, qualification of the Global IES and Local IES resumed in May 2011, but teachers' qualification in schools was only resumed in August. On the 3rd of that month, the first of several videoconferencing (VC) meetings was held via Skype. Those meetings had two intentions: activity monitoring and qualification. A work plan with weekly contact of at least two hours via VC was elaborated, a training course to use the Proinfo tool which lasted a month and a survey of the situation of each school, rescuing what remained from the qualification that took place in 2010, how many new teachers had entered, how many left and how each school was using the UCA computers early in that year, the first half of 2011.

After defining the Actions, the local qualification team started their qualification phase. There were on average four meetings via Skype per month; two meetings were scheduled via VC using a videoconferencing room, between the Global IES and Local IES teams including some teachers; there was a general VC, with everyone participating, besides local meetings among Qualifiers, Instructors and Teachers of the schools.

Besides these activities, monthly VCs among Global IES and Local IES of UCA-North (Rondonia, Para and Acre) were established. In these meetings, the Local IES presented results of the ongoing qualification in each state, and examples of ongoing experience.

Some considerations about Qualification Brazil and the reality of public schools: First, the virtual teaching tool developed by MEC – e-Proinfo – was used. It is a difficult tool to manage and establish exchanges between participants and the several levels of expertise: Global IES Qualifiers, Local IES Qualifiers, Qualifiers at schools, Teachers and Students. Besides the difficult management, the proposed activities required online use to happen, but this was not possible for most students in the course – school teachers involved in the qualification. Despite the wide spread of the internet in Brazil, access to it is still expensive and not many teachers access it from their homes. The second aspect that was identified in this phase of the process was the reality of teachers' work in public schools in Brazil,

which is not a stable field; the number of teachers who left the schools between 2010 and 2011 was large. The reason this happens is mainly because of weak labor contracts, low pay, among others that are not the point here.

After the survey conducted in the schools, it was found that on average about 40% of teachers are new and have not participated in qualification in 2010, therefore it was decided that the qualification would start by technological appropriation (Module 1) even though a large number of teachers had participated in qualification in 2010. This procedure was justified by understanding that even those who had participated would benefit from the resuming qualification this year. Another finding, this one positive, was that in practically all schools PROUCA and the use of laptops were continued in the first semester, even without monitoring from the qualification team.

The first actions of the Local IES were to restructure the qualification team. They had many difficulties because the state network NTE (SEDUC) was not involved in the qualification in 2011, removing the technical and pedagogical support they had given in 2010. June and July were all used in this sense – the reorganization of the qualification team. Once the team was structured again, qualification began in August, with a face to face meeting and participation of Global IES qualifiers via VC.

The 2nd Meeting of Qualifiers of Rondonia of the UCA Brazil Qualification Program was held from August 2 to 5, 2011, in Porto Velho. The objectives reached in that meeting were: socialization of experiences at using laptops in the eight schools awarded with the UCA project in Rondonia, besides the study and planning of the qualification modules with UCA coordinators in the awarded schools, of qualifiers and teachers. Representatives from the PROUCA execution team in Rondonia, researchers, qualifiers, teachers and project coordinators attended this meeting. The highlight at this meeting was the fact that students and teachers of the schools resumed using laptops in March 2011, even before the official return of the UCA qualification. During this period, teachers held meetings to plan and develop activities in the classroom, inserting this new pedagogical tool in their practice.

Due to the lack of financial resources, by the absence of SEDUC or by decreased resources offered by MEC, it was decided that the qualifiers' qualification would occur via VC, so the meetings were held on Sep 29 and 30, with the presentation of evaluation criteria of PROUCA. There was another one on Oct 22 with the entire staff, and in November there was a series of classroom visits made by Local IES coordination in each school and with the presence of qualifiers and teachers. In September, teacher qualification began that extended through October, November and December. The September

meeting was held at the Jardim das Pedras School in the city of Ariquemes/RO, where all teachers, pedagogical coordination and managers participated. In November, the forum was held at e-Proinfo to rescue the memory of this qualification process and reports on how it was possible to cover Progitec (Political and Pedagogical Project of the school involving the technological dimension) in schools.

The State Seminar on Education and Technology was held in December, organized and promoted by SEDUC and partnership with UNIR on Dec 13 and 14, 2011, with the following schedule:

Dec 13

Morning: Lecture (2 hours)

Theme: Insertion of New Technology in Everyday School

Audience: Educational Computer Science Laboratory coordinators (LIE), teachers and some students

Afternoon: Free

Dec 14

All day with the UCA/team RO

Morning: PROGITEC Presentation

Afternoon: Exhibition of records elaborated by the schools.

3.1. Difficulties

Several difficulties were encountered during this process. Problems with the Internet, difficulties with teachers' agenda for the personal qualification meetings in some schools (see Table 3).

Table 3. Difficulties encountered during qualification and possible solutions

Difficulty/Problem	Possible solution or forwarding
No UCA/RO Internet (Problem with the GESAC antenna signal)	Use Proinfo's Internet
No availability to dismiss teacher for the personal meeting	Night schedule (exhaustive after a day of work)
Availability to dismiss teachers for the personal meeting	Two meetings in one day makes the entire day for qualification tiring
Battery recharging; black screen, x on screen; screen size, keyboard size, difficulty with the Metasys operational system, change of operational system to Meego and later to Ubuntu.	Adapt the power network at the schools and workshops with technicians to help solve problems with the machine and operational systems, but since the equipment was small, there were always complaints from the teachers and this could not be solved

In addition to the difficulties presented, we can highlight the worst, which was the discontinuity of PROUCA, interruptions of funding and the lack of commitment of public managers. Following an adverse political tradition in Brazil, a new government has no commitment with policies developed by previous governments. This happened

at federal level because PROUCA started with one government and the following was not interested in its continuity, and threatened to undo it in January 2011, early in the administration. It is curious because PROUCA was created by the previous government, who belongs to the same political party as the current government.

As for what happened at state level is a little different. There was a change of government to a political opponent, an opposition party to the previous. Even not considering correct the attitude of not continuing the actions of the previous government, this case makes less sense than the first. It just does not make sense to close your eyes to an innovative process that was in progress in the schools, and lose the knowledge generated by this process. Knowledge that is still being tested and developed.

Certainly we have to recognize that a new technological matrix was developed concurrently with this process: the introduction of tablets. These devices, besides being much cheaper than PROUCA's laptops, are more user-friendly and extremely portable. The decision could have been to replace the laptops with tablets, but MEC's decision was to distribute them to teachers in public schools. It is likely that this decision was taken due to the lack of teachers' contact with the technology, which was one of the difficult aspects to implement PROUCA.

3.2. Assessments

During the qualification process, several assessment instruments were applied: Before starting the process, as previous diagnosis of teachers, others at the end of each module (in the Attachment, assessment forms of Modules I and II, already available). The assessment has not yet been tabulated, because the staff of UNIR was practically alone in 2011, and had to tabulate the collected material after the qualification, which should still happen.

4. Considerations for Qualification Brazil and continued teacher qualification

When you think about continued teacher qualification, you have to consider the historical processes that resulted in the negative view of the teacher – involving qualification concepts and conceptions that teachers have no expertise, therefore the qualification view has resulted in a decontextualized view of school reality, practices in the classroom, mostly turned to a distorted need of reality, loaded with qualification ideas or exploitation of the teacher, as if the teacher were not a professional not capable of self-qualification.

Since today the main object of a teacher qualification process is to show real results in students' school history, and that this means, or translates into knowledge measurable by schools' evaluation systems, indicating real improvement of the current low indexes reached by Brazilian education, we must understand that we first need to know what the needs of continued teacher qualification are, which essentially come from who feels it. For this, listening to teachers, knowing their reality, knowing their difficulties, their projects with students, how they realize how their practice and how they understand that they can incorporate new things in their daily school life, so we can understand it is necessary to know and to previously survey the reality of the teachers, including them as a subject in the decision of qualification needs.

In UCA Brazil Qualification, we had worked until the end of 2011 with a top-down qualification structure. Only one qualification for all teachers applied by the Qualifiers and monitored by a system guaranteeing a certificate. This structure was certainly a useful reference to trigger qualification with common identifiers to mark the initial qualification of a same program. However, early on the Global IES team realized the need to do differently, subverting that inflexible and artificial program. The contents were interesting, but not the structure. One of the qualification problems was that it was disconnected from the reality of the classroom. That is when the Scenario (Cenário) activity was created in 2010, which, from two models, one focused on teaching how to use the computer and the other on performing a task within the disciplinary content in progress on the computer. It was exactly this Scenario activity that approached computers in the classroom to the curriculum in progress.

In the Qualification Brazil [1] structure, the qualifiers were responsible for applying a course and certifying the course participants: teachers of the schools involved in PROUCA. But how is the qualifier and his qualification important for the professional development of teachers? Do we believe in the old conception described above? Must the teacher be indifferent to the decisions and the reality of his classroom not be connected to the qualification?

"[...] the role of the teacher qualifier is legitimized given to different education professionals, which requires a proper qualification process and the development of a professional qualifying culture. Otherwise, it will be difficult to overcome the traditional practices of in-service training, which reproduce in turn, the traditional model of initial qualification." (p. 16)

"Although generally we do not take it this way, professional qualification is an adult education process, a process of teaching and learning in which adults learn the contents with adults,

directly or indirectly, to engage in a profession. Therefore, it is not enough to simply transfer the school teaching and learning models to teachers' qualification, for as good as they may be. It is not enough to treat teachers as students who learn contents whose use is not immediate or contextualized. It is not enough to organize actions exclusively supported by theoretical information on pedagogical practice. You cannot take the practice of teaching as an application and manage a set of techniques, because teachers' performance is complex and unique. You need to recreate the conventional teaching and learning ways to make them suitable to the peculiarities of teacher qualification. You need to consider the characteristics of both the subject of the qualification activities – the real teacher – as the profession he is engaged in and the contexts in which professional practice takes place, with the possibilities and difficulties of their own. From this perspective, the questions regarding teacher qualification are also peculiar to qualify the teacher qualifiers." (p. 13)

We hope that with these guidelines, not only teachers are attended in connection with their realities, knowledge and practices, but more than that, that they also attend the educators who are taking on the challenge to coordinate the qualification groups, i.e.: the qualifiers. That the triggered qualification process is continuous for all and that results closer to the reality in classrooms be possible, reaching students with new possibilities and processes more adequate to their reality.

We hope that the contradictions between the didactic procedures outlined herein, to use in qualification, and those effectively adopted with them during qualification are minimized and that teachers practice this experiment with their students. The importance of surveying students' prior knowledge to help them in their learning is known, but this needs to be done with the course participants, i.e., qualifiers must find out how much these teachers already know about using technology in education, technological field, the conceptions of educational methodologies, assessment of the relationship between culture and education as a first step to start the qualification process. We educators in general, are too conditioned to structured qualification formats, often giving content disconnected from practice, even when the practices are good, they are passed during qualification as theoretical concepts. We forget that what changes reality are actions and not ideas. I understand that there is good will, effort, knowledge, but what we want is to draw attention here is that the qualification itself (or qualifier) needs to create dynamic practices applicable in the classroom, not dichotomizing: you study here and you apply there. I understand that a great effort has been made so that learning by doing is practiced in education, i.e., using the four pillars of Jacques Delors [2]: learning to know, learning to do,

learning to live together and learning to be. My teaser is that the qualification team resists to the temptation of making didactic, an error that we believe has caused Qualification Brazil to fall in the module inflexibility.

By starting from the reality of the teachers and their professional practice – the classroom, the result is indifferent to have or not taken any technological appropriation course before, or not, since all the course participants will be treated as being all in the same process, however not disregarding the experience of each and their initial or continued qualification. This approach brings everyone to a solidarity movement of precious exchanges, certainly valuable support will happen.

We realize, therefore, that qualifiers need to know well the proposals that will emerge from the course participants. Whenever any question appears about a real, specific case of a particular classroom, the qualifiers need to know what to do. According to Rigolon [3], this has been a major problem in continued qualification courses for teachers. In his research he indicates that “Asked about the role of the qualifier, all interviewees felt there was no consistency between what he said and what he did.”

“We conclude that the construction activity for learning requires a contingent educational interaction to be effective, ensuring an internal movement of the knowledge construction process that underlies all learning. However, we must point out the need of objectivity facing a differentiated educational intervention, clearly describing the intentionality linked to action.” [4].

Therefore, starting from knowing the teachers’ reality, a qualification process can be built, thus ensuring that their students can “put their knowledge into dialogue with what the teacher sought to teach them at all costs” [5].

5. Good Practices

Several were the good experiences carried out by students and teachers in the many schools involved in PROUCA. We will present briefly some of these experiences along with reflections to locate them pedagogically.

5.1. Experiment 1

We begin with some considerations of the interdisciplinary project “Natural and cultural features of the African continent”, developed with students from 1st to 5th year at the State Elementary School Joaquim Nabuco in the city of Ouro Preto D'Oeste. The origin of this project was made because the school community identifies a number of problems stemming from racial prejudice. Thus the activity was developed taking the historical survey of Afro-Brazilian culture, considering the technologies

of agriculture, process of cultivation and transformation of the natural landscape. The use of available resources in the school for the production of the research is important from the early grades, besides the UCA open possibilities for students to work with technology in research support, mediated by teachers. The project involves the whole school community and resulted an open public activity with other schools consequently.

In the division of activities the following tasks were developed for each school year:

1st grade (aged 6 years) - Make a collection of images of important black singers, composers, writers, artists and craftsmen.

2nd grade (aged 7 years) - Search for music produced by black musicians and make a collection of songs.

3rd grade (aged 8 years) - Search for major black names who participated in the construction of Brazil and the conquest of their human rights, making a video and audio collection.

4th grade (aged 9 years) - Conduct research on the culture, architecture, writing, agriculture and medicine in Africa. To compare the Internet research with data obtained in the books.

5th grade (aged 10 years) – Search for the main characteristics of black culture that have been incorporated by Brazilian society as a regional behavior, cuisine, fights, language and social movements. Developing texts.

The activities were supervising the training team that supported teachers with proposals that were beyond the discipline, based on transdisciplinarity.

The Manifest of Transdisciplinarity, to establish a deep critique of knowledge fragmentation process, suggests approaches grounded in the understanding of the multiple dimensions of reality. Thus, when designing a new conception of the world and life, transdisciplinarity seeking to challenge the false dualities between “subject / object, subjectivity / objectivity, matter / consciousness, nature / divine, simplicity / complexity, reductionism / holism, diversity / unit, with the recognition of complex pluralities in the world of life. [6]

The interdisciplinary practices [7], unlike proposed by its thinkers do not provide overcoming the dichotomy and fragmentation of disciplines, which has caused a malformation of the students. The disciplinary fragmentation is part of an old paradigm proposed by Machiavelli: “divide and conquer”. When we fragment knowledge we weaken teachers, confuse students, not providing the development of a citizen with ability to understand the complexity of the world and find solutions for their reality. Developing someone who always depends on another one to tell you what to do. The generator theme “prejudice”, could not be limited to a methodology that keeps fragmenting knowledge, as the activity includes several curriculum components:

*History
Science*

Geography
Portuguese Language

Could not leave out others who certainly were part of the studies:

Mathematics (quantifying, selecting, dividing, sorting etc.)

Music / Arts (by itself researched themes)

Philosophy (ethics, inclusion, solidarity, sharing, etc.)

Sociology (social, racial, gender, etc.)

Physical Education (dance, body use, athletes and sports activities etc.)

Foreign language (the result itself demonstrated this)

As it can be perceived, when we look through the school activities by transdisciplinary way [8] we can perceive how life is complex and that reality forms a big web, connected, apparently confused, but have an occult order. In addition to develop autonomy, such proposal connect the subjects studied with the reality experienced, giving meaning and significance to the theoretical and abstract subjects.

Certainly the idea of integrating the various series is a very good practice, beneficial for the process of becoming a citizen and personal development. The children learn that they can always cooperate and participate, breaking the hierarchy by age, as negatively is presented at schools.

5.2. Experiment 2

In 2012, the school under the coordination of supervisory and UCA coordinating school prepared a project entitled: "The environment we want ...", involving the disciplines of Portuguese Language, Mathematics, Science, History, Geography and Art, but with a focus on science education.

Each class in the morning and afternoon of each scholar year chose the title scrolling, so each group could work with different themes of science, like garbage, recycling, bio-piracy, among other themes that emerged from the choice of the children along with the teachers.

The fact that the school carries out projects with the use of technology and other resources for teaching science in an interdisciplinary way, reflects changes resulting from the ongoing training of the teachers and the students initiative driven by the opportunity to have access to mobile communications technology of the educational laptops. These proposal did not include the transdisciplinary dimension, as it was limited to an area of knowledge, although certainly it uses other areas for support.

The school Paulo Freire's project happened to work for the Week of the Environment, there was a preparation for making a public display inside the school to present the produced material.

As an initiative to choose the subject, students had the opportunity along with teachers to search on the internet topics chosen by the group, with the

possibility to change the theme, if there was no affinity with the chosen one. However, as the research took place, classes were getting stronger within their chosen subjects, resulting in no change.

The students were more aware as new information on the subjects came to the classroom. Using the text editor, the Kword, it was possible to organize the tasks of each, texts, poems, specific information on issues such as recycling, bio-piracy, it helped at the time of presentation for the public and the search for other materials required for exhibition.

In November the school made a presentation to the general public and parents. A non-formal organization of many of the works presented demonstrated how this new educational context and communication between teachers, students and technology has opened a new way of dealing with education and learning in school.

5.3. Experiment 3

The experience with UCA computers, in João Ribeiro Soares School, starts by the features and demonstration. After teaching the teachers to use interactive simulations, which are an efficient mechanism to deliver scientific concepts, and to contribute so that they become, both teachers and students, self-employed in the process of teaching and learning.

In this sense we present Animations PhET [9] using a Laptop UCA and a data-show. Knowing the difficulties faced by municipal school in some educational areas, then think of simulations in Mathematics, in Sciences and Portuguese. For math and science simulations were as: arithmetic, proportions, estimation, maze game, constructing of electric circuits, solar system, natural selection, eating and exercising, greenhouse effect, riding atom, building molecules. As for the discipline Portuguese language work with the site of Ludotech [10], where we found related games for the discipline of the subject.

We also present some strategies to complement the ones the teacher's uses with their students. One was using the expositive classes because simulations can be used as demonstrations in these classes, the main contribution is to the student to visualize abstract concepts such as estimation, arithmetic operations, greenhouse, atoms, etc. In addition, some simulations allow to built graphics in real time as the teacher explains students can interact with them. Another strategy recommended to teachers was the use of preliminary issues, in order to work alternative conceptions of the content in question. We recommend using groups' activity for better exploitation, performing simulations in pairs, directly in the classroom. These activities in pairs

was possible in this school because that all student had their Laptop UCA. The main idea in this case was submit each pair of students a structured roadmap to capacitate them to investigate the phenomena exploring the full potential of simulation and all the possible relationships between the variables of the phenomenon. It has been suggested that teachers would use homework strategies, through which the students could revisit the simulation freely or from another script proposed by the teacher. We emphasize that homework can also be used for both, it would introduce a new topic or as a deepening of the content discussed in the classroom, thus offering the opportunity so that the student will explore the simulation after class at home, since they can take the laptop with them.

A feature that added a lot in educational work using the laptop was the Virtual Science Lab. As the Municipal School of Education Elementary João Ribeiro Soares today does not have a science laboratory, essential resource for the realization of experimental activities, and knowing that the school's science teachers highlights the importance of conducting such experiments activities, it was proposed to used virtual simulations. This became an applausive alternative to bypass limitation and enables production of the experiment several times, exploring various combinations of parameters. Certainly that "to watch" the virtual experiments (atoms, electrons, photons, greenhouse, estimates etc.) presents in the simulations facilitate understanding and the interaction between teachers and students.

5.4. Our reflection

The use of the laptop and the Internet leverages the work because the hypertext structures [11] that the computer allows, helps in disciplinary transgression or linear limitation imposed by the textbook. All this helps in creating a dynamic environment of knowledge production and not only the old and dull method of transmitting knowledge, which we already know to be inappropriate.

Certainly several other learning experiences mediated by the computer were performed in PROUCA, some successful and significant, others helped to understand what it means to have one computer per student and not just a computer in the classroom. Some experiments have failed in the process and had to be rethought, but what remains is the result of learning and it has been trying to find new ways in the confrontation between the old practices of knowledge transmission and the new possibility of developing autonomy in students learning, by research and the exchange of experiences.

6. Conclusions

As positive aspects we point out the presence of laptops in schools provoked teachers to find a way of possibilities to use this resource in their classrooms. Experience showed that by using laptops, students were more interested, managed to improve their participation and self-assessed themselves better. Teachers, who were critical in the beginning, even promoting rejection, in late November of the first year said they were totally mistaken: that using laptops made a difference at school and in the classroom.

Considering that historically the number of new teachers in schools is always large, this indicates that, indeed, some of them have not gone through qualification in 2010. Considering that the support for the pedagogical aspects have been shown to be an effective and necessary way for the smooth progress of the experience with using laptops within the curriculum, being present in the curriculum of subjects and not as an attachment to scheduled didactic activities, we believe that continued qualification would be extremely beneficial to the entire effort made so far, would suffered no discontinuity process, which ended up happening.

Finally, it would be necessary to guarantee broadband access for schools, but the contracts were fragile and Brazilian law at the time protected service providers, who were privileged, with a gimmick of being obliged to deliver only 10% of the contracted bandwidth. This created problems in the links resulting in low accessibility to the Internet, hindering the work and development of the project.

We regret that PROUCA was discontinued. This damaged the beautiful experience in progress, preventing to know in fact, the impacts that this form of technology insertion causes both in the education and learning processes.

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