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The creation of a Terena Mermaid on an Environmental lesson: a case of Teacher Professional Development

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Abstract

In west Brazil an Environmental Programme was established to fulfill environmental requirements as well as to assist vulnerable communities affected by a huge engineering project. The main goal was to mitigate environmental problems resulted by the highway construction. One action accomplished (among many others) was to put through an in-service Teacher Professional Development Programme with a group of indigenous people of Terena Ethnicity. This paper presents the Programme that occurred in a native village in the State of South Mato Grosso and discusses one lesson that arose from it. First we portray the group of Terena teachers who were collaborators on the Programme, then we present the theoretical background that uses two concepts: Culturally Responsive Teaching (Gay, 2000) and Resistance (Adorno, 1980; Benjamin, 1994). After describing the grounds of the Teacher Professional Development Programme we proceed to a more detailed description of the

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This paper is a result of an Environmental Education program implemented by the Technological Institute of Infrastructure and Transportation (ITTI) part of the Department of Transportation at the Federal University of Paraná, Brazil.

creation process of a lesson, the mermaid one. We finish with some considerations and discussion about the professional learning processes.

Key words

Teacher professional Development; Indigenous Education; Environmental lessons; Culturally Responsive Teaching.

La creación de una Sirena Terena en una lección ambiental: un caso de desarrollo profesional docente

Resumen

En el oeste de Brasil se estableció un programa ambiental para cumplir con los requisitos ambientales, así como ayudar a las comunidades vulnerables afectadas por un gran proyecto de ingeniería. El objetivo principal era mitigar los problemas ambientales resultantes de la construcción de una autopista. Una acción realizada (entre muchas otras) consistió en la implementación de un Programa de Desarrollo Profesional de Profesores con un grupo de indígenas de etnia Terena. Este artículo presenta el programa que tuvo lugar en un pueblo nativo del Estado de Mato Grosso do Sul y discute una lección que surgió de ese programa. En primer lugar, describimos el grupo de profesores Terena que colaboraron en el programa: A continuación, se presentan los embases teóricos que utilizan dos conceptos: Enseñanza Culturalmente Sensible (“Culturally Responsive Teaching”) (Gay, 2000) y Resistencia (Adorno, 1980; Benjamin, 1994). Después de describir los fundamentos del Programa de Desarrollo Profesional de Profesores se procede a una descripción más detallada del proceso de creación de una lección sobre la sirena. Terminamos con algunas consideraciones y discusiones acerca de los procesos de aprendizaje profesional.

Palabras clave

Desarrollo profesional de los profesores; educación indígena; lecciones ambientales; enseñanza culturalmente sensible.

The Context of the study

The Pantanal wetland biome: area where the Teacher Professional Development Programme was implemented.

Pantanal is one of the largest continuous extensions of wetlands on the planet. It is in the heart of South America, in the Upper Paraguay River Basin. The wetland has about 250,000 km² (25000000 ha), most of it in west Brazil. The remaining area is in Bolivia and Paraguay. Paraguay River and its tributaries run through Pantanal, forming extensive wetlands that serve as shelter for many fishes, and other animals (Embrapa Pantanal, 2000).

This biome was considered one of the most diverse natural and lush reserves on Earth. Due to its characteristics and importance The United Nations Educational, Scientific and Cultural Organization (UNESCO) recognized Pantanal as a Biosphere Reserve in year 2000. According to UNESCO (n.d.), Pantanal has an amazing diversity of flora and fauna.

Native village on this study belongs to Aquidauana Pantanal which is the higher area less affected by the flood. It is an important fauna aisle. Mountains cut the scenario forming an entrance gate to the plains. Small bays, salt lakes and sand soil are common. Sandy soils support native pastures used for grazing by cattle, introduced by settlers in the region (Siqueira; Spaki, n.d). Considering this fragile environment a road construction took place. Next we present the construction site and its relation to Pantanal.

Construction site

The construction site is a highway that covers 292 km (181,5 mi) in length, from the city of Corumbá (border of Colombia) , passing through the Municipalities of Miranda and Aquidauana and finishing in the city of Anastácio, all located in the state of South Mato Grosso, west Brazil (Catella; Tomás; Mourão, 2010). An Environmental Education program was developed to fulfill the requirements of implementing a mitigation plan regarding this highway construction site as well as assist the vulnerable communities affected by the road construction. It also helps them organize their knowledge and traditional knowledge along with scientific and environmental education.

The highway cuts not only the Pantanal Biome but also indigenous lands. In this area there are many indigenous ethnicities since South Mato Grosso State has one of the biggest indigenous populations in the country, our collaborators are the ethnicity of Terenas. Terena ethnicity was chosen because they are the biggest native population in the area.

Considering the fragility of Pantanal and the construction site a Teacher Professional Development Programme with a special focus on environmental education, was designed to develop a broader awareness about conservation to the Terena Native Village of Lagoinha (Little lake). Next we provide some background about Terenas' ethnicity and culture.

Indigenous Ethnicity of Terena: collaborators on this study:

Terenas are an indigenous ethnicity with very large population who maintain intense contact with the local population. Through their intense involvement with the surrounding society,

Terenas are also known as "urban Indians". However, this misleading view may mask their struggle through generations to keep their culture alive.

Terenas began interacting with their surrounding society in the eighteenth century. According to Oliveira (1976, p.26), they crossed Paraguay river and settled between Miranda and Aquidauana rivers. Their population is about 25,000 distributed throughout the state on 25 indigenous lands. There are at least three indigenous lands on the municipality of Aquidauana (Leitão, 2005, p.43). Teachers who participated on this study are limited to Terena ethnicity from one native village located 50 km far from downtown Aquidauana.

Several historical events interfered, decisively, in the Terenas' relationship with the Brazilian society, one of them was the Paraguayan War (from 1864 to 1870). Since then Terenas were called by the Brazilian army to work as soldiers and strengthen the borders defense.

At the beginning of the twentieth century Terenas were reorganized by the Indigenous Protection Service (SPI) of the Brazilian government on indigenous lands, in each village of the land government put at least one school. The demand for schooling made them strength the contact with the surrounding society, and it has opened the doors to Protestantism. German, English and US Protestant missions came along the twentieth century. Carvalho (1995) suggested these missions developed different schooling projects in order to evangelize and provide religious education to them.

In 1936, the first public school was installed on an Indigenous village. The teaching was conducted in Portuguese by non-indigenous teachers. Therefore the first goal of schooling was to integrate the indigenous to the Brazilian society. This goal is very different from what is now recommended on the national guidelines for Indigenous Education in regard of cultural specificities. It is important to note that although schools have been used as an agency of acculturation, paradoxically schools became their instrument of defense, since from there the non-indigenous world and codes could be understood by non-indigenous. It was also vital for the natives to learn Portuguese and the school was the privileged locus for that. Nowadays indigenous schools still have non-indigenous teachers, but it varies depending on the level. Schools on elementary level have majority of indigenous teachers and they have new and very clear requirements. Middle and Secondary schools nowadays operates in three shifts, however, on these levels they still have many non-indigenous teachers.

Mother tongue was described and written only in 1980's by two US protestant missionaries that were also linguists. Nowadays Terenas are still bilingual – using both a "mother" tongue (indigenous) and a "contact" or "adoption" language (Portuguese, in this case). The use of mother tongue differs from one village to another. The inner city village or on a village that most men went to work as sugar cane cutters Terena language is already a second language or they do not speak it anymore at all (Ladeira, 2001). In other villages mother tongue is more preserved and used in a daily base. As for the study village, they are bilingual and use Terena as their language at home or for more private conversations or for elder meetings. In the school they learn most of school disciplines in Portuguese. However, they want to recover mother tongue at school, thus in school curricula there is a course on Terena.

When the highway construction started, we became aware of the proximity of the indigenous lands and villages to the road and we propose cooperation with them to create a Teacher Professional Development Programme, to meet their bids. Next section poses a rationale for the programme based on Terenas' needs and interests.

Theoretical Framework

The ignition of the Teacher Professional Development Programme was the proximity of Terena Indigenous lands and villages to the road and the requirement to develop a mitigation plan on the surrounding area of the road construction. The main idea was to discuss conservation on the uniqueness of the Pantanal Biome, the diversity of animals and plants, flood and dry seasons and two major problems on the area: trampling of wild animals; and also wild animals international traffic. The programme was framed into two major interconnected research fields: Culturally Responsive Teaching and Resistance.

Gay (2000) described culturally responsive teaching as using students' cultural knowledge, to make learning more relevant and appealing to them. Culturally responsive teaching empowers students. Thus teachers foster and validate culture-based education on their planning, pedagogy, and everyday teaching.

UNESCO (2003) publicized guidelines for language education with the emphasis on the use of culturally appropriate educational materials. "Education should raise 'awareness of the positive value of cultural diversity' in order to do that curriculum promotes a realistic and positive inclusion of the minority history, culture, language and identity" (p.33). In this paper, we consider indigenous people as the minority.

Castagno & Brayboy (2008) suggested culturally responsive teachers have a role in developing full educational potential through developing an awareness of students' knowledge, values, norms, beliefs and world views. Stephens (2003) also suggested teachers should consider and acknowledge students' beliefs instead of denying and trying to fit them into the dominant culture. Then the challenge is to share practices and understandings within the cultural context in the classroom. McConaghy (2000) emphasizes that to teach in a culturally responsive manner one should overcome the idea of naturalizing the prevailing cultures and anything that divides cultures into good/bad or right/ wrong dualities or that ranks them from more cultured to a/non-cultured.

Resistance was discussed by Adorno (1980) and Benjamin (1994) but is not a concept clearly or systematically stated by them. On the contrary, this concept is subtly related to aspects of contemporary life as the disappearance of experience; diminishing of narratives; the loss of history followed by memory suppression; and the raising of cultural industry. Therefore incorporating indigenous knowledge into a teacher professional development programme can only be an approximation. We understand resistance as a way for individuals not to be transformed as a "thing" or a piece of a gear, or be swallowed by a mass culture. Resistance is a way to emphasize ones' experience, uniqueness and even as a way to reframe and review cultural injustices that have historically and arguably continued to this day to subjugate

indigenous knowledge in teacher education, as well as classroom pedagogies, and students' learning specificities for indigenous people. By using the resistance concept, the intent is to re-examine teacher professional development in the reconstruction of their practices in order to work beyond the established social order and reframe it as a reconceptualization of what can and should be done for schools, students and the local community where the indigenous teachers are from.

Grounded on these two concepts we developed a Professional Development Programme in three moments:

1. *Understand Terena teachers' needs.*
2. *Tackle immediate needs*
3. *Empowering teachers and develop their autonomy*

Teacher Professional Development Programme (Metodology)

1. *Understand Terena teachers' needs.*

Refer to the visits and meetings occurred prior from the program to understand the Terena context; the village management, know stakeholders and raise the priorities to be discussed.

2. *Tackle immediate needs*

To tackle immediate needs first we select a native teacher from the local community to bridge the gap between us the non-natives and the Indigenous teachers. The role of this "local organizers" was: to provide organizational support in terms of arranging dates and place for the month meetings and all the infrastructure needed for them, such as prepare lunch, make invitations and be able to check teacher needs and give feedback for teachers, provide support for discussions / follow ups, be able to hear and understand the worries of the Village head and his counsellors in each and every details that seems important to them.

After selecting the "local organizer" we developed a plan divided into interwoven process based on Howe and Stubbs (2003); Stubbs (2010) broad model of professional development. This model pay attention to personal and social development in addition to content and pedagogy areas and is divided in: readiness; experience and disequilibrium; equilibrium and construction; potencialization.

These interwoven processes are described as follows:

- *Readiness*

Refers to factors that play a significant role in determining if a teacher is ready for the development program. Teachers brought with them a wide range of expertise from their native knowledge, two language knowledge to prior expertise in teaching or content knowledge.

- *Experience and disequilibrium.*

Refers to providing actively engaging and meaningful experiences to participants, in which they stretch their capacities and are challenged by new ways of seeing their world. They may feel anxious or may initially resist accepting new experiences. The program must have flexibility to support people as they reach a state of equilibrium.

- *Equilibrium and construction.*

Refers to providing an environment in which participants are supported as they explore new understandings. Since individual experiences are different, it is important that the program be flexible and able to state of equilibrium and re-envisioning new possibilities for both themselves and their teaching. This is why this model include ongoing support for teachers both professional and technically. The professional development model should be intensive, sustained, involve communication and collaboration, and be integrated into the teachers' daily lives by meeting their curricular and/or personal needs. In this way equilibrium and the construction of new and different ways of teaching can take place for teachers.

- *Potentialization*

Refers to future grow and development. There is a back and forward movement between old and new perspectives as an individual grows and new perspectives are attained. As a person goes through the process of disequilibrium created causes a sensitization to the possibility that other new perspectives and ways of knowing can be found. This allows for future development as individuals become more open to the possibility of future grow.

Since each person begins at a different point, the process is neither linear nor unidirectional the outcome of the developmental process will not be the same for everyone. Thus a teacher may remain at a point as long as the teacher feels it is needed. A teacher decides which level of the program is appropriate for them to begin with and they can take the same level many times. Potential outcomes for individuals may include an increase in effective actions taken; development of new, revised and alternative ideas, insights and perspectives; and motion from one developmental stage to a higher stage. The goal for all participants is to foster and participate in the processes of leadership in their communities.

3. *Empowering teachers and develop their autonomy.*

The third step refers to changes, improvement, reconstruction or deconstruction of material. Teachers getting more independent to analyze and criticize their own constructions and perceive the need to go further by themselves. Fading the role of an advisor/ instructor and creating their own pathways to new and interesting materials.

To exemplify the model now we present the results of the case of Mermaid Lesson.

Results and Discussion of the case of Mermaid Lesson

Step 1: Understand Terena Teachers' needs.

In order to do that we first visited the local education board that was quite refractory to our proposal. Thus with the help of one person who is a sympathizer to the Indigenous cause, she organized a meeting with the principal and teachers at school on Lagoinha Native village. During the meeting on the village we talked to the school Principal and all the teachers in a meeting. We explained the construction mitigation plan requirements and they talked to us about the need of a teaching material in Terena language and we agreed that a teacher professional development program could be done for them to develop the materials. We also talked to the Village head (Cacique) who gave us support to be inside the village as long as we need. From the visits we learned the following:

Communication and timing: This village is 11 km far away from the construction site and 50 km from downtown Aquidauana. All the secondary roads are unsealed and some are partially flooded during rainy season. None of the streets on the village is paved. Cell phone towers are rare and do not work properly there. The village has only one public phone in front of the school. Many teachers work in more than one school and sometimes three shifts on the same day. The Terenas have their own timing and this must be considered when asking for activities, deadlines and so on.

Leadership and decision-making: the main leader is the head of the village (Cacique); who should be heard and should be the first one to be contacted about all activities and intents. He wants his village counsellors and village stakeholders to read and approve all the materials produced on the program. The Cacique makes the final decision about village priorities and gives permits to hold any activity in the village.

Considering the constraints of communication and timing, we decided it was better to have a one-day workshop every month starting in May 2013 and finishing in October 2014. In July 2013 we had a one week meeting. Meetings had different. To communicate we had to develop a menu of alternative ways and find a connection inside the village authorized by the head. The greatest concern about the impact of building the highway was that the fauna would get run over, thereby killing small animals such as armadillos and all sorts of birds as well as big animals like tapirs; capybaras; caimans, Pantanal deers; guara wolfs; ant eaters; and even jaguars, on the highway.

From the talks with the head of Lagoinha village; the principal of Elementary school; teachers and community we realized that the Terenas were willing to have more teaching and learning materials in their own language. They have some texts translated to literacy level but very few books, especially the ones to connect their culture and world to environmental issues.

Step 2: Tackle immediate needs.

- *Readiness*

In order to determine if the teachers were ready for the development program, we discussed some constraints with them. These refer to an environmental based program, thus (a) all the lessons should be connected in one way or another to environmental issues important to the village; (b) lessons should be written for elementary school since we were working with elementary teachers; (c) lessons should be written in Terena language since a textbook in Terena is their major need. Teachers were then very afraid of writing any lesson in Terena because Terena is for them a second language and they are trying to recover it. Terena was described only in 1980's thus there are many non-solved issues of the way one word or another should be written. Besides this in more traditional villages the language structure is a little different from Lagoinha village. Because of the contact of non-Indians the structure of language is now getting closer to Portuguese. Some teachers decided to try writing in Terena and others prefer writing in Portuguese and asking a colleague or a member of the family to translate it.

One lesson prepared caught my attention because it refers to a mermaid. Then I asked the teacher if Mermaid was a Terena fairy-tail.

The first answer was YES, it is a Terena fairy-tail, then other teachers discuss the Mermaid and then they realized that there were at least two comprehensions of mermaid on the group. One was a woman half fish and the other one was a snake. The lesson itself was very simple and traditional focusing on using accents in words of the text and separate syllables on the words of the text. The lesson was very similar to old texts of 1960's literacy textbooks.

Because there was a doubt of having or not a fairy-tail on Mermaids we asked them to contact the elders and check the information.

- *Experience and disequilibrium.*

After contacting elders, head of village and his counselors, teachers realized that on the Terena tradition there is no mermaid fairy-tail. The traditional story is about a snake that protects the environment and lived in the small lake of the village. After the entrance of non-Indians on the area, they started to cut the trees and it seems that the snake became very angry and showed it with a sound similar to a thunder. After that the small lake dried completely and the elders said the snake is no longer there to protect them. The village is in fact called Lagoinha (small lake) because if this water, however nowadays it is only a name there is no lake there.

Knowing the difference between the traditional story and the mermaid story they all teachers together had to decide if they keep the lesson or throw it away. There was a sad impression of not knowing their traditional stories. They were criticizing the mixture of non-indians and native stories on the book. However, at the end they decided to keep it and make a way to discuss traditional and non-traditional stories. They even created a name for mermaid in Terena, because there was no word for that in such language. The name was “Seno mayane Hôe” which means women half fish.

This idea could stretch their capacities of understanding differences between mermaid as non-indian tradition and their own stories challenging them by new ways of seeing their world.

- *Equilibrium and construction.*

Since individual experiences were different, the idea was to be flexible for them to be able to state of equilibrium and re-envisioning new possibilities for both themselves and their teaching. In order to do that we suggested them to create an interdisciplinary lesson plan going beyond literacy (specially the technical issues of finding the correct place to accents and separation of syllabus). Then we started a new level, discussing lesson plans and class sequences that were much more than one hour lesson. They searched mermaid portraits and stories, that included mermaid drawings, discussion of legend type of text, discuss the process of animation construction watching little mermaid, develop the characteristics of a local mermaid, create a small piece of music and presentation to the local mermaid.

After doing all that they realized how intense, sustained, and collaborative this process was. One teacher created a mermaid costume to her daughter for us to take a picture of her close to a lake, however since the village has no longer a lake they had to travel to another village to take the picture. In this way equilibrium and the construction of new and different ways of teaching could take place.

The goal of analyzing different versions of the mermaid was to deconstruct (Deleuze and Guattari, 1992) conceptions that fairy-tail could be described in only one version and that different ideas could be added bringing new folds and reconstructions, shifting senses already pre-determined (Derrida, 1972) for these stories, and emphasize that environmental education can bring contributions to prepare the reader and develop critical thinking. Especially because the only version that discusses environmental issues is the snake one of the Terena tradition that is not a mermaid.

The final idea of creating a Terena mermaid, its costumes and find a place to photograph was to develop the ideas of photography as a personal selection of the frame (Barthes, 1984, Cartier-Bresson, 1968), thus teachers’ background knowledge and world view would play a strong role in this case. We wanted the teachers to have a rationale for taking the picture. They photographed what they considered important to characterize mermaid as a Terena version and discussed why it was important based on their traditional knowledge. With the

area photographed teachers would discuss their selection and connection with own knowledge and traditional knowledge.

Hence we wanted to use the teachers' traditional knowledge as a core part of the information that provided the focus, rationale. The subsequent discussions considered the many possibilities for adapting the photographs and knowledge to classroom activities.

- *Potentialization*

The potentialization was a didactic intervention on the school where teachers collected drawings on mermaid and they discuss differences on mermaid stories and the snake traditional stories. Teachers seized and adapted aspects from the activities discussed during the meetings and applied the ideas to their planning. After that we visited the school and discussed their doubts and connections between traditional and environmental knowledge, asked questions and observed the teachers' "translation" (Saramago, N. D).

The idea of translation in its various forms (Saramago, SD) during classroom interventions was core to the development of self-confidence of the teachers and helped with the empowerment and development of teacher autonomy. During classroom interventions it became obvious that interdisciplinary work created a new fabric for the environmental theme. This interdisciplinary work included aspects of literature and traditional knowledge, environmental problems, writing, geography, geology, and photography. Furthermore, the teachers' traditional knowledge as the basis of all of these subject areas was discussed.

In other lessons some teachers did the exact same activity of they planned, some limited their work to fairy-tail whereas others related to traditional knowledge and how these tails can discuss changes on the environ. One teachers used a mapping activity to discuss the changes on the landscape of the area. Traditional knowledge was discussed related to the change on the water source of the village, students talked about it, asked the elders wrote it down, and shared it with everybody. The goal was to give voice to teachers and appreciate the work done in schools throughout this moment.

As for the immediate needs we have created a textbook and a lesson book for teachers (Figure 1). One of them is only in Terena, the other one for teachers have all the lessons and suggestions in Portuguese. Printed books are not ready yet since the project finished.

After finishing the second step and having the draft version of the textbooks, some teachers asked for a meeting to discuss Terena Language and their own professional development.

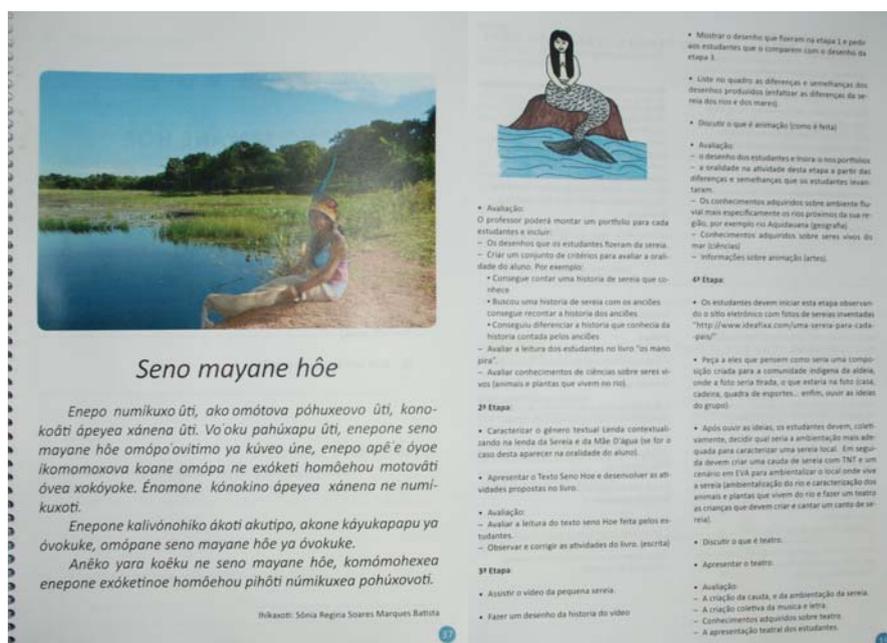


Figure 1: Shows the two books. On the left the textbook (draft) written in Terena. On the right the lesson plan book following the textbook that includes all the lessons plans.

Source: ITTI, 2016.

Step 3: Empowering teachers and develop their autonomy.

The third step started when the teachers asked for the meeting. They wanted to discuss their own language. Terena language is not completely described in that each village has its own dialect and way of writing. We leveraged this moment to discuss their language and to create an agreement about how to write certain words. Thus we organized meetings among different village teachers to decide how to write the language. Furthermore, they decided the book could create a bond between the elders because their culture would be embraced and if it included written traditional knowledge, it was a way of enduring that this knowledge was not lost but preserved and respected. They held a series of meetings;

Teachers were very satisfied realizing that they could include their way of life, culture and language to teach regular content at school, not only environment but other subjects too. Thus the ideas of resistance (Adorno, 1980; Benjamin, 1994) and culturally responsive teaching (Gay, 2000; Castagno & Brayboy, 2008; Stephens, 2003) were empowering these teachers to let them discuss their culture without losing school content.

After that some Native teachers came to discuss their continuous education on graduate level programs. They want to go on and continue their professional development based on what they already achieved.

The Professional Development Model we constructed with them was spiral, since the third step led us to another and different discussion that will go to another cycle of Teacher education. The second step also included Howe and Stubbs (2003); Stubbs (2010) broad model of professional development with attention to personal and social development in addition to content and pedagogy areas.

Some considerations

This is a work in progress and probably will be for some years since the third step is leading us toward another cycle of Teacher Professional Development that requires different knowledge and requirements.

It is important to know that the Programme we created for Teacher Development for this situation was not fully developed in advance. Some things were discussed during the process and along the way. At the end we realized the full cycle and hence the model cannot be seen as finished or frozen as it will probably be modified in different situations.

The Terena teachers' autonomy is growing and there is a long way for them to go. We are still giving them support and feedback but the most important issue is that they feel their culture and knowledge is being respected, kept and is useful in their everyday lives. This is quite different from what they thought years ago when, as children, they were instructed not to talk in their own language or to discuss their knowledge otherwise they would have no chance in a non-indigenous world. Now time is against us to recover a little piece of the humongous damage we as non-indigenous did to Terenas' culture.

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