Maria Teixeira School

A proposal for innovation in educational technology for social inclusion

Thelma Virginia Rodrigues
PUC MINAS
Belo Horizonte, Brazil
thelma@pucminas.br

Elcie Helena Costa Rodrigues
elcie_helena@yahoo.com

Silvana Patrícia de Vasconcelos
silvanapatricia@uol.com.br

Plinio Soares Paolinelli Maciel
plinio.paolinelli@me.com

This paper presents the work of Maria Teixeira School-MTS as a pedagogical methodology of social and educational inclusion, and making a historical review of its trajectory. MTS is a non-profit institution located in the countryside of Luziânia city, (Brazil), promoting 1st phase of elementary school and youth and adult education. In 2013, offered free and quality educational service for 208 students, among children, teenagers and adults from low-income families in the common and special, under the educational inclusion. About 60 students have some type of disabilities, such as: Down syndrome, autism, mental, physical, auditory deficiencies. The proposal is based on constructivism and educational, technological and social inclusion. Founded in 1994, MTS has worked since its origin with the "pedagogy of respect for differences", understanding difference as richness. Stimulates the development of efficiencies instead of highlighting the deficiencies. Luziânia is considered the 16th most violent city in Brazil, with few opportunities for young people at social risk. MTS adopts the Brazilian Sign Language as a discipline. Everyone learns LIBRAS, not just the deaf students. In addition, LIBRAS is used as an alternative communication to listeners students with difficulty speech, with great results. MTS has an ecological action with recycled material, promoting sustainable productive chain, avoiding waste, generating income with craft workshops from the transformed objects sale. MTS presented their demands to the group of engineers involved in humanitarian technology, being an NGO-partner of the IEEE-SIGHT-PUCMinas because of the need for accessible and assistive technologies appropriate technologies and innovative teaching methodology.

Keywords—Technology, Innovation, Educational Technology, Educational Inclusion, Humanitarian Technology

I. INTRODUCTION

Not uncommon, is unprecedented dream of young volunteers wish to change the world and society. Even knowing to be this a demand that transits between fiction and ingenuity. Many, around the world, leave their comfort zone and launch in this adventure that when elevated to the status of personal life mission can thrive as a very successful action with concrete and relevant results to build a better society to live. In the case discussed in this reflection, the way a group of volunteers wished to launch in the task to change the world has been electing education as dimension to be worked from the construction of a beneficent school: Maria Teixeira School.

This article has main objective to present the work developed by Maria Teixeira School – MTS as a pedagogical methodology of socio-educational inclusion, making a historical review of its trajectory. Inserted in a challenging educational reality, the Maria Teixeira School was born with the mission to contribute with the social rescue of the community by education way. The second section makes a historical retrospective of the foundation and characterization of Maria Teixeira School, bringing information about where it is inserted its creation process and the principal aspects and the principal aspects of regional and Brazilian educational context tracing a wide panorama to portray and to be possible to evaluate the boldness and vanguard of the initiative. The third section presents in a descriptive and illustrated manner the methodology developed by MTS for delineating the pedagogical activities. Without the intent to deepen at the theoretical scenario of current education, the aim is to demonstrate the adopted principles and their intentions. The methodological challenge of the School is leaving the comfortable dimensions of the theoretical discussions, especially when it comes to educational inclusion, to touch the concrete plan of educational actions able to promote in practice educational inclusion, without dichotomizing the binomial theory and practice. The fourth section presents the main innovative projects and some pathways of technological innovation pursuit. Finally, are presented in the fifth section some general considerations on the issues dealt with in this article.

II. MARIA TEIXEIRA SCHOOL AND BRAZILIAN EDUCATIONAL PANORAMA

In 2014, Maria Teixeira School has completed two decades. Created on February 7, 1994, MTS since its origins, was born with the mission to be a "school for all". This slogan goes beyond to demonstrate its beneficent character once that it is a nonprofit educational institution, can be also classified seeing to their social character, according Sampaio [8], as an "Organization of the Third Sector – OTS, whose main objective is the dissemination of policies and practices of social interest".

Its slogan translates a strong message of social inclusion, but above all educational inclusion. The MTS is a legally constituted school that offers elementary school from kindergarten to 5th year, as well as promotes Education for

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Youth and Adults - EJA. The school works with the Special and Regular Education in a harmonious and integrated manner. Within the attendances of Special Education, the school receives students with special educational needs, in its many deficiencies, namely: Down syndrome, autism, mental, physical, auditory and visual disabilities, learning disability, to name a few. The students profile has as important characteristic, the fact that they are family of the poorer classes of the population, being in social vulnerability. Some families transit on extreme poverty as ranks the Federal Government. According to a study by the Brazilian Institute of Geography and Statistics (IBGE) by tracing the profile of Poverty in Brazil, families are living with R $ 70 real per capita, per month. The same study highlights that 46.7% of the 16.27 million Brazilians, who live in extreme poverty are located in rural areas. It is noteworthy yet that some students live in a shelter partner of the school due to the absence of their families, which imposes another reality to them. (IBGE, 2014).[3].

In few words, the School was the translation of desire from a group of motivated friends to contribute pragmatically to build a better world with the poor community in rural area of Luziânia, Goias in central-western Brazil, distant about 50 km of the federal capital, Brasilia. Under the aegis of modern thought of social promotion: "Teach to fish is better than simply giving the fish" we sought to invest in promoting the emancipation of persons through education, seeking their autonomy, as social actors and protagonists of their citizenship. Throughout these 20 years, the maintenance has been consummated through some main pillars: group of monthly donors denominated godfathers; which can be individuals and corporations. Other source is the realization of frequent bazaars, with used products result of donations in general that the institution collects permanently or even bazaars of new products, result of specific processes along with tributaries official agencies, providing goods seized for sales at benefit bazaars. Another strategy is the implementation of various events: gastronomic, artistic, cultural, etc., which the sale of tickets and products are reverted to funds for maintenance. There is an agreement with the City of Luziânia, that enables school transport for students and staff and part of school meals. Stands out, too, the income generated by sales of handmade products from recycled materials, which are produced by the Pedagogical Workshop and Craftwork composed by students, mothers and alumni. Other distinct sources of resources happen in a special way and sporadic, which, many times, involve specific procedures for its realization, such as endowments for construction and improvements of physical infrastructure cash donations, via Fund for Children of the Municipal Council of Child and Adolescent of Luziânia city, among others.

The motto to be "a school for all" brought the nickname of inclusion brought the brand of inclusion in all aspects of human dimension. In the first line, social inclusion was explicitly fetched, offering free education in rural areas for low-income people, as previously described. In this panorama, it should be remembered that Luziânia is considered the 16th most violent locality in Brazil, with few opportunities for young people at social risk, registering high rates of violence. It is indicated as one of causes the lack of opportunities for locals in consequence of the little State presence, in the provision of social services guaranteed by the constitution as health, safety, recreation and education. Although still insufficient both in quantity and in quality, it is fact that education in Brazil has received more attention by the government in the last decades. Became ensured by dint of State Policy the funds supply increasingly significant. Between 2000 and 2010, Brazil's investment in education grew from 3.5% to 5.6% of GDP (gross domestic product) data revealed by the study developed by the OECD , (Education at a Glance – 2013: OECD Indicators). The study depicts that this level already compares or even surpasses called developed countries as Austria that invested the same percentage and exceeds the U.S. that invested 5.1% of GDP, but is still far from countries like Denmark who dedicated 7.6% of its GDP and Norway, 7.5%. (OECD, 2014).

It was noted in the same period also a quest for improvement of programmatic conditions and proficiency levels beyond the concern, to meet groups historically excluded socially and educationally. The Brazilian Ministry of Education began measuring student performance from the application of proof to all steps, in order to evaluate the level of public and private education. So it started to measure from indexes created as is the case of IDEB (Index of Basic Education Development) establishing educational parameters for the initial series. Likewise, it was perceived an effort to prioritize strategic actions of "educational inclusion" of people with disabilities. With the promulgation of LDB 9394/96, (Law of Directives and Bases of National Education), inspired by the proposal of Letter from Salamanca 1994, of which Brazil is a signatory, the Special Education began to be seen in the country with a different view. Started a strong promotion in favor of inclusion. As affirmative action was adopted the expression "people with special educational needs" instead of expressions "not school age" or "deficient", to combat the stigma. Another position was avoid the idea of special school as the exclusive place for special education. So the regular teaching school has added the responsibility to act effectively in teaching process of the special student. A special school is seen as a complement to the specialized pedagogical action. This guideline was gradually gaining strength and as public policy was reaffirmed in several official documents at all levels of government. In the recent National Education Plan (PNE), voted in 2013, was intense discussion about the limits of this understanding. The Goal 4 congregated the debate when defended the use of the term "preferentially" instead of "exclusively" as regards the obligation to include special students in regular classes in common schools. The adoption of the concept of "preference", in the final analysis has guaranteed the opportunity of the education sector in general (public and private) organize and promote various specialized cares types (BRAZIL, 2014).

However, it is noteworthy, increasing pressure for inclusion, which often appears not obey pedagogical criteria, assume that the special groups can really learn. The justification that permeates this scenario is the importance of including, mainly promoting the socialization. In practice, there are reports of exclusion when the student is only of "present body" standing out the age parameter as great indicator for

students in their respective classes and not in their special needs. It is not the intention of this article reflect on the official policy of special education and its contradictions. It is emphasized, however that the Maria Teixeira School for being a third sector organization, private and nonprofit is autonomous and even in accordance with the laws proposes a methodology of inclusion very own. Its major premise is to stimulate and improve efficiencies and no evidence faults and deficiencies. The Maria Teixeira School has developed what is called the "pedagogy of respect for differences", where difference is understood as a source of wealth. In the framework of city of Luziânia, the MTS was considered inclusion model and inspired the Municipal Policy on Special Education.

III. Methodology of Social and Educational Inclusion

Maria Teixeira School takes seriously its mission to be a sustainable school and for all. t means to say, that within the theoretical mosaic adopted as educational approach, the inclusion is considered a foundational pillar the basis of all other methodological aspects. Constructivism is one of the approaches in everyday school life. The idea is to build knowledge shared by the actors of the process, teacher-student, from the social reality of the involved subjects. The physical space also reveals the intention and functions as a strategy for inclusion. The classrooms are individual houses, painted in different colors. The idea is that the school as an institution must also be seen as a home. The house brings the representation of welcome and belonging. The different colors remind that each difference brings its beauty and wealth. The set of houses form a village that in addition to reinforcing the conception of cohabitation with the different refers to a small country town of bucolic feature remembering the fact that is located in the countryside. The school is located on a farm surrounded by a Brazilian savannah grove, with vegetable garden, fruit trees, among other characteristics.

To translate into practice the inclusion precepts can highlight some other affirmative action. The classes are named of nature elements without hierarchy of importance or prejudiced designations. All beings of nature are equally relevant, namely: Class Seed (Infantile Education), Strawberry (1st year). Star (2nd year), Sun (3rd year), Moon (4th year), Rainbow (5th year), Finch (Learning Disability - 1st year), Hummingbird (Learning Disability - 3rd year), Cloud (class Exclusive Deaf multi-graded), Flower (class of partial inclusion). Butterfly (Class Exclusive - Intellectual Deficit 2), Sky (Special EJA multi-graded - with blind inclusion), Hope (EJA Special multi-graded - with deaf adults included) this name is the one exception of the set, that translates a sense of persistence because is a class of adults studying outside the typical school age. Other piece of this theoretical mosaic is experiential approach, which highlights the importance of concrete experience of the student from daily situations. The contents are extracted from experienced moments permeating all educational process of the disciplines. In practice is to make "practice" of conceptual information. In this set of theoretical visions, it is worth mentioning that all teacher activity is channeled to the proposal called "projects methodology", converging the programmatic content around generator themes from interdisciplinary activities. The apex of the project is translated into culminating moments in which the results are presented of every path traversed in the development of projects. Finally, stands out still multisensory approach. This is generating diverse stimulations on the senses of students. It means, for example, that for a dyslexic, blind or deaf student manipulate the letters of play dough aids in internalization of the alphabet in the initial phase of literacy. In short, the summation of these approaches without delimit an influence where it begins or ends, composes the pedagogical action promoted by the School.

In view of the great clamor in favor of the inclusion in the current scenario of Brazilian education and global, is important to point out that the MTS is placed as a messenger and advocate for inclusive education wanting more than just "socializing" people with educational or socio-cultural deficiencies. The School goes beyond wants to offer content adapted for each ability level and integral education aiming perceive in practice behavioral changes of the student has learned. From this, each student regular or special will be more independent critical and subject of his history front of the social group. To this end, school applies a systematic that translates into concrete field a flowchart with a modus operandi of pedagogical action that receives all students and seeks to decipher them to know how best to welcome them and promote their learning. The essence and originality of the pedagogical work consist precisely in the fact of discovering and to develop efficiencies of each. Understand the student as an integral being with cognition, affect, expectations and socio-cultural heritage to unveil their weaknesses and their potential and encourage them in the adventure of knowledge and self-knowledge. The vision is on the process, but clearly intends to achieve a result, which is quality education.

IV. Educational Technology in Maria Teixeira and Search for Innovation

Being a typical educational institution of countryside result of the driving force of enthusiasm, underpinned on solidarity. However, it is not excluded two fundamental catalysts to the achievement of the project: the passion for education and as a consequence, the search for the art and science of teaching that presumes a lot of research, study and experimentation. So it is correct to assert, that Maria Teixeira School is resulted of a pedagogical praxis, with clear use of alternative educational technologies, committed to finding new solutions to old questions. The fact of dealing with scarce resources confers on the process of pedagogical and administrative management as well as maintenance a creative performance in its diverse aspects. Under the motto “doing more with less”, the act of turning things, procedures and people is recursive.

In this context, is important to analyze the understanding of the meaning of "technology". There is consensus among the various authors that no exists a single, simplified concept for technology. However, it is possible to approach an understanding considering some relevant aspects. It is possible to understand technology from the word etymology. Veraszto at al (2008, p. 62) explains that "the word technology comes from a junction of the term ‘techno’ from Greek ‘techne’, which is know-how, and logia, from Greek ‘logus’, reason.

Therefore, technology means the reason to know-how". Another perspective inspired by the reflections of Gaston Bachelard (2001), in his book "The New Scientific Spirit" relates science and technology. When it resolves problems it produces knowledge and if this solution is effective it can be applied to other similar situations, then arises the conception of technology. Thus, the technology is associated with the idea to seek solutions to problems and which may be replicated in the like problems. On the other hand “problem” in view of Veraszto at al (2008) it is more of scientific knowledge character, for technology the appropriate term is "need". In the intention to develop a concept, Veraszto at al (2008) proposes that it is essential to make a historical review both science and technology, seeking to define similarities to make distinctions. As a result, the author identifies different conceptions of technology, present in the popular imagery, but "often present in scientific disclosures and proposals implicitly by many experts (p. 67)." According Veraszto at al (2008), it is possible to identify the following seven visions of technology, namely: intellectualist conception, derived from scientific theoretical knowledge; utilitarian conception, which considers the technology as being synonymous with the art; conception of technology as synonymous with science, which includes technology as natural science and mathematics, with the same logic and the same production methods and concept; instrumentalist conception (as artifacts), predominantly on common sense, which understands technology as simple tools or artifacts built for a variety of tasks; conception of neutrality, which argues that technology is free of any particular type of interest; conception of technological determinism, which considers technology as being autonomous, self-evolutionary, following, its own logic of development, devoid of the control of human beings, and finally, conception of universality, that understands technology as something universal, which can appear anywhere and therefore be useful in any context.

Each of these views presents weaknesses and limitations; however, it is possible to accept parts of their proposals. In sum, there is no way to dissociate the existence of technology without observing its historical and cultural dimension. Technology is distinct from science, although enjoy the accumulation and knowledge produced by it. The technology is not limited to construction of artificial products manufactured by humanity and their production processes, its machinery and manufacturing resources. It likewise encompasses methodologies, skills, abilities and knowledge necessary to execute the productive tasks, and own use of these products inserted into a socio-cultural context. (VERASZTO at AL, 2008). Thus, from these analyzes, Veraszto at al (2008, p.78) defines that "technology is a set of knowledge inherent in the development and conception of instruments (artifacts, systems, processes and surroundings) created by man throughout history to satisfy their needs and personal and collective requests". Other perspective is offered by Pierre Levy (1992), which argues that own emergence of language should be also considered as one of the first techniques developed. After all, as the fire has allowed the development and important materials transformation, the word has allowed the interior domain of the acts and thoughts of the human being. The author subdivides the language in primary orality, being verbally speech that transmits your knowledge. The secondary orality is the writing that is able to promote the accumulation of knowledge, perpetuate it in time and spread it in space.

In this scenario, on the various conceptions cited one can say that Maria Teixeira School has limited access and uses little technology understood as employment instrumented techniques and equipment use. But presents different contributions of procedures in the educational field developing and applying specific methodologies in the teaching-learning process. It is inferred that MTS develops and employs its own educational technology. In this context, highlights that "educational technology, notoriously, not limited to the use of means. It necessarily needs to be an instrument mediator between man and the world, man and education, serving as a mechanism through which education appropriates of a knowledge rediscovering and reconstructing the knowledge "[6]. In search of a conceptual understanding, it is emphasized that educational technology is based on three distinct pillars: media, understood as the means; mediation, comprehended as the mediating action predominantly occupied by the teacher and pedagogical making; and publications that congregate content and programs [2].

The MTS has challenging financial conditions because financial resources are scarce and unstable, as well as its location in a rural area make it difficult or even hinder access to the various media and technological resources such as: fixed telephony, networks, cable internet or via telephone, electric power quality, just to name a few technologies. Other unusual issue also contributes to this internal scene, is the issue of insecurity, influencing decisively in preference by not owning a computer laboratory and more sophisticated equipment for risk to attract the incidence of robberies and invasions, once the region is considered dangerous, as has been said. Thus, the Maria Teixeira School has adopted the "simplicity" as an institutional trademark and landmark protection. On the other hand, institution receives numerous and distinct donations, including technological equipment, mostly used and obsolete, but many in use condition, which creates an interesting context. In diverse situations, it is possible to use these technologies more overtaken as: appliances VCR with VHS tapes, stereos overtaken, dot matrix printers, etc., in times of digital technologies. The School has a computerized school administration with adequate software developed by a volunteer programmer, attending to administrative demands. The broad network of existing mobile telephony in the region allowed the school to have access to mobile and mobile Internet, however with low speed and data transmission capacity, because of an insufficient signal result of being poorly served location of cellular antennas.

So, it can be deduce that the Maria Teixeira School is an institution with very little technological support. At two moments, press observers have reported, "In school, technology is substituted for affection and creativity". Technology understood as instrumentation and equipment. Amplifying this conception is possible to establish that the permanent exercise of finding solutions to problems of teaching and learning, to some extent, defines the pedagogical practice of the MTS as an institution permeated by posture proposed by Bachelard, describing the scientific spirit and the extent that seeks to bring the solutions and applying them to

similar cases and so developing and employing educational technology. To promote inclusive education requires the construction of bridges. Therefore, is a challenge of special education. Attending "different" students that are outside the normal standards also requires "different" pedagogical solutions. In this context, it is necessary to bring in this reflection another concept: the innovation. The innovation must be considered as a means of transforming educational systems a process and not an "event". It must be defined as a process of multiple forms able to transform the environment where it is inserted and to promote their self-transformation. [5]. With reference to innovation, it may be inferred that MTS adopts an attitude of permanent re-creation, employing multiple modes of promote learning. A example is that beyond common disciplines, the School has three different disciplines: Sign Language, Ethics of Love and Respect to the Nature. The "Brazilian Sign Language (Libras)" is taught to all students. However, the deaf students of the “class cloud " receive training in Libras as first language and receive the others contents taught directly in LIBRAS by the regent teacher. The discipline "Ethics of Love" brings contents that reinforce behaviors and desired attitudes in the life in society. Respect for differences and solidarity are the basis of this discipline, contributing to building a peace culture at the School and in a community so undermined by violence. Finally, it has discipline "Respect for the Nature" that develops in practice content relating to the environment and caring for nature. The topics covered go from the waste management to the study of biomes and fauna. Another example is the use of LIBRAS as alternative communication tool even listeners students with speech difficulties. Insofar as these students learn this new form of communication that is visual promotes additional acquisitions from neurocognitive exercises with the movement of the hands in space respecting the intent of the gestures to produce signs that represent words bringing specific information. These listeners are beginning to be understood and increase their possibilities of social integration after all, can communicate with other listeners and also with deaf people.

It can be inferred, that MTS is a educator sustainable space through educational and socio-environmental practices. This it is confirmed by an ecological action based on the recycling of reusable materials based on the recycling of reusable materials, waste management and environmental preservation. It is possible to draw a sustainable productive chain that is underpinned combat to wastage and processing of materials used in various ways. Some directly employed in pedagogical practice: use the back of the paper that has already been used on the obverse; employment of old magazines and newspapers used as repertoires of letters, pictures and words; use of objects transformed for other purposes as in furniture, in infrastructure in general pedagogic mockups, etc. Another direct use of recycled material both the result of donations as discarded waste generated by the School functioning as raw material for the educational workshop and handicraft. This material will transform into handcrafted products that will later be commercialized, generating work and income for the participants and for the MTS.

V. FINAL CONSIDERATIONS

Finally, it should be noted that the MTS, in addition to promote specific pedagogical methodologies and innovative procedures, has specific needs in relation to technology. The education as a throughout and the promotion of accessibility are fertile fields of demands in the pursuit to promote inclusion.

Some arrangements are already contributing to adapt the conditions for the realization of pedagogical activities. Procedures such as enlargement of letters, and lighting improvements of school spaces for people with visual disabilities have demonstrated effectively that adjustments to the instruments and artifacts are necessary. The construction of access ramps and other architectural adaptations for students with physical disabilities are also concrete and essential demands. In this sense, the MTS presented their demands to the engineers group involved in humanitarian technology being an NGO (non-governmental organization) partner of IEEE - SIGHT – PUC Minas (Institute of Electrical and Electronics Engineers - Special Interest Group on Humanitarian Technology - Pontifical Catholic University of Minas Gerais) because the need for accessible assistive technologies and appropriate technologies to ensure an innovative pedagogical methodology. This group created last November is the first in the Brazil. This partnership is possible because the MTS recognizes that only through innovation focused on humanitarian vision be viable to transform the lives their students and consequently the planet beginning of the surroundings, acting locally, but thinking globally. The MTS has a permanent commitment to present innovation in the pedagogical practices, promoting the diffusion and multiplication of knowledge, stimulating a social and productive participation in the society.

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