



Computer Assisted Learning for Marginalized Population in Mexico

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Abstract- *This paper presents the results of a scientific pedagogical research, which goal was to reveal the main features of the computer assisted learning for marginalized population, analyzing the Mexican Care Program for Demand of Adult Education and its instruments: Meeting Points and Community Places. Author finds that the computer assisted learning for marginalized in Mexico is characterized by the following aspects: is relatively recent and has had rapid development; is decentralized; it's effective and achieved significant progress in less than 10 years; is completely free, accessible, flexible and diversified; it proposes the courses for life and job electronically not only in Spanish, but also in 63 languages of the indigenous ethnic groups.*

Keywords- *computer assisted learning; education for marginalized population; Mexican educational system; adults' education.*

I. INTRODUCTION

A. Background of the Study

Currently, digital media, media products and technology are an essential part of everyday life: they are cultural objects serving the communication, the expression, the exploration and the coexistence. On the other hand, the techno-cultural context determines new ways of being in the world, molds the time, the space, the links between people, alters the subjectivities, the boundaries between the public and private sectors. In addition, information and communications technology (ICT) create new identities and forms of inclusion/exclusion: the connected and disconnected people. Is it possible to achieve that ICT are no longer more the instrument of evasion and become mechanism of promoting for the less fortunate? The answer lies in the analysis of educational initiatives that make computer assisted learning the main strategy of inclusion in the productive life of the most marginalized. An example of the use of new technologies by the vulnerable population, are Meeting Points and Community Places (PI@zas Comunitarias) of the Care Program for Demand of Adult Education developed by the Mexican National Institute for Adult Education.

The aim of the research which results are presented in this article was to identify the main features of the computer assisted learning for marginalized population realized by Meeting Points and Community Places under the Care Program for Demand of Adult Education belonging to the Mexican National Institute for Adult Education.

B. Methods

This work is a documentary-bibliographic study, which was performed under the critical-dialectical approach, using research methods of analysis, synthesis, comparison and generalization that were necessary to study the original texts and official documents, organization of the studied material and its exposure.

Thus, the analytical method allows examining the documents governing computer assisted learning for marginalized in Mexico, systematizing its content, in order to visualize the organizational, operational and procedural model of this type of education. The method of systematic-structural analysis facilitated the identification of the specific features of the organization of computer assisted learning for marginalized in Mexico; the method of theoretical generalization provided the tools for the formulation and concretization of the conclusions and substantiation of research perspectives on the issues of the computer assisted learning for marginalized.

II. REVIEW OF RELATED LITERATURE

To the problems of the use of ICT in education are dedicated numerous studies of Latin American researchers: Avila Barrios, 2014; Boude-Figueroa, Ruiz-Quintero, 2008, Cumbreza González, 2007; Eslava-Cobos, Ricaurte-Perdomo, 2007; Figuer Ramírez, Malo Cerrato, Bertran Camats, 2010; Fonseca Pinto, 2013; Iriarte Díazgranados, 2007; Leiva Ramírez, 2015; Malo Cerrato, Figuer Ramírez, 2010; Moral, Arbe, 2013, Riascos-Erazo, Quintero-Calvache, Ávila-Fajardo, 2009, 2011, among others.

The authors deliberate about the ICT in the classroom (Cumbreza González, 2007; Eslava-Cobos, Ricaurte-Perdomo, 2007; Boude-Figueroa, Ruiz-Quintero, 2008; Riascos-Erazo, Quintero-Calvache, Ávila-Fajardo, 2009; Moral, Arbe, 2013) [1]; the society in front of ICT (Iriarte Díazgranados, 2007; Malo Cerrato, Figuer Ramírez, 2010) [2]; the intergenerational relations changes and satisfaction associated to the ICTs use (Figuer Ramírez, Malo Cerrato, Bertran

Camats, 2010) [3]; the impact of ICT on college teaching (Ávila-Fajardo, 2011) [4]; the futurology and the knowledge of the ICT in the SMES (Fonseca Pinto, 2013) [5]; the use of ICT in the context of the Mexican public administration (Avila Barrios, 2014) [6]; the influence of ICT and civic education on the deliberative processes of pluralistic societies (Leiva Ramírez, 2015) [7], among others. However, the issue of the use of ICT in order to support the education of the poor people is not very explored by regional researchers.

On the other hand, there are numerous studies on the problems of marginalized groups in general and in particular on the need for education of the representatives of these social strata as a strategy for their inclusion in productive work life: Adler-de-Lomnitz, 1993; Alonso, 1987; Attanacio, 1999; Beccaria, 1995; Boltvinik, 2004; Cabrera, 2011; Campero, 2006; Cortés, 2001; Cuéllar, 1990; Damián, 2004; Del-Val, 1997; Dresser, 1997; Duch, 2005; Filgueira, 2001; Galicia, 2005; Galván, 2005; Garibay, 2005; Gordon, 2011; Juárez-Bolaños, 2006; Katzman, 2001; Lechner, 1986; Lerner, 2006; Lustig, 2007; Mathus-Robles, 2009; Negretti, 1987; Osorio, 1993; Pacheco-Silva, 1999; Pieck, 2005; Pizarro, 2001; Rodríguez, 2007; Rosas, 2005; Saraví, 1996; Schulze, 2013; Székely, 2007; Thomsen, 1981; Urdaneta-Carruyo, 2005, among others.

Concerned about the consequences that trigger reproduction of exclusion, marginalization, vulnerability, the authors conduct their studies to understand the underlying causes of these phenomena and propose solutions to its problems. For scholars one possible amendment is inclusive education for marginalized groups.

It is notably, that the subjects of modern studies of Latin American researchers about the socio-economic marginalization (Negretti, Tovar, 1987; Jelin, 1994; Beccaria, López, 1995; Castel, 1998; Wacquant, 2001; Botto, Fenoglio, Moulia, 2002; Boltvinik, 2004; Damian, 2004; Urdaneta-Carruyo, 2005; Juárez-Bolaños, 2005; Cortés, 2006; Schulze, 2013, among others) [8], are the people who appear in the margin of socio-economic relations, who have failed to adapt themselves to the new conditions of scientific and technological progress, of the “knowledge society”, globalization, postindustrial economic, new labor skills. These people became “useless” in the new postindustrial society.

So the analysis of the state of knowledge about the problem of the use of ICT in order to support the education of the marginalized, showed that while exists the interest of researchers in the topics on ICT in education, as well as there are a vast amount of works on the problems of the marginalized, however the material on the use of ICT in education of vulnerable groups will not be visualized. From this consideration this study is justified and its current character states.

III. THE MAIN RESEARCH MATERIAL

The building of Mexican system of computer assisted learning for marginalized population started with the incorporation in the National Education Program 2000-2006 of a subsector program Education for Life and Work. Being both: an approach and a policy, it is proposed to give an education that not only compensates for the delays caused by inequity in access to school education, but also provides a quality education considering various areas of the lives of people and not just academic [9]. It was one of the most important Mexican government’s actions to promote education of vulnerable groups.

As a condition for the implementation of the approach of education for life and work and access to education for disadvantaged sectors are considered actions around lifelong learning. One of the key strategies for the proper functioning of Education for Life and Work was the creation in 2004 of the National Council for Life and Work (CONEVyT) as a coordination mechanism with reasonable base resources and sufficient management capacity.

The CONEVyT’s objectives are to support and coordinate activities among the various agencies that offer this service, promote the implementation of new programs and define national policies in this area by promoting social participation through the use of technology and telecommunications allocating resources to priority programs.

Finally, it was proposed that, as a short-term policy, the CONEVyT achieves joint actions on education and training for work with various entities through a national system. Hence, it was considered necessary to achieve the articulation of institutions that provide education for youth and adults through CONEVyT to form a national system; advance the care of the lag with a quality education; and improve equity of Mexicans through education and training aimed at the population in poverty [10].

The priority subjects of education for life and work in México are: young people (15-24 years without basic education), Indians (five million), workers (three and a half million), workers requiring recognition of labor skills (fifteen million). It’s important to note, that to propose evaluation as an action that takes the CONEVyT, assuming the importance of monitoring and balancing processes to improve the political orientations.

The CONEVyT’s projects are operated by the National Institute of Adult Education (INEA) through the State Institutes for Adult Education and delegations of INEA in the states. Considering the education of vulnerable groups, INEA developed the Care Program for Demand of Adult Education with Education Model for Life and Work (MEVyT), which is the basis for computer assisted learning for marginalized population.

The main purpose of Education Model for Life and Work is providing for young and adult marginalized population (who live not only in Mexico but also abroad, mostly in the United States) the basic education related to issues and learning options based on their needs and interests, so that helps them to develop the knowledge and skills necessary to function in better conditions in their personal, family, work and social life, improve quality of their life, raise their self-esteem and the formation of attitudes of respect and responsibility [11].

MEVyT is based in the postulates of Jomtien, agreements of CONFINTEA V, the Regional Framework for Adult Education, resumes constructivism and cognitivism and promotes flexible, diversified and open learning. MEVyT programs focus on the following lines:

- 1) Educational (literacy, post literacy for youth and adults; programs for indigenous);
- 2) The economic survival (agricultural production projects, livestock, fisheries, forestry, etc.);
- 3) Social development (rural, community, sustainable, comprehensive, humane, for sustainable agriculture);
- 4) The organizational aspects (social enterprises, small businesses, cooperatives);
- 5) Legal, accounting and administrative management (marketing, financial services, defense of labor rights) [12].

MEVyT is aimed at adults who have not started or completed their basic education or want to continue learning and allows people to recognize and integrate the experiences and knowledge they already have; enrich their knowledge with new elements that are useful and meaningful to their development; improve their ability to search and manage the information to keep learning; strengthen basic skills of reading, writing, numeracy, oral expression and understanding of the natural and social environment around them; explain in their own words the social and natural phenomena; participate responsibly in the democratic life of the country; strengthen the skills, attitudes and values that enhance and transform their life and their community in a framework of legality, respect and responsibility; take reasoned and responsible decisions, based on their creativity, learning, and application of scientific methods and logical procedures.

All MEVyT's programs are free and allow free and easy access for users: all its contents are located electronically on the official websites of MEVyT: <http://www.conevyt.org.mx>; <http://www.cursosinea.conevyt.org.mx/>; <http://mevytenlinea.inea.gov.mx/inicio/index.html> (see Figure 1).

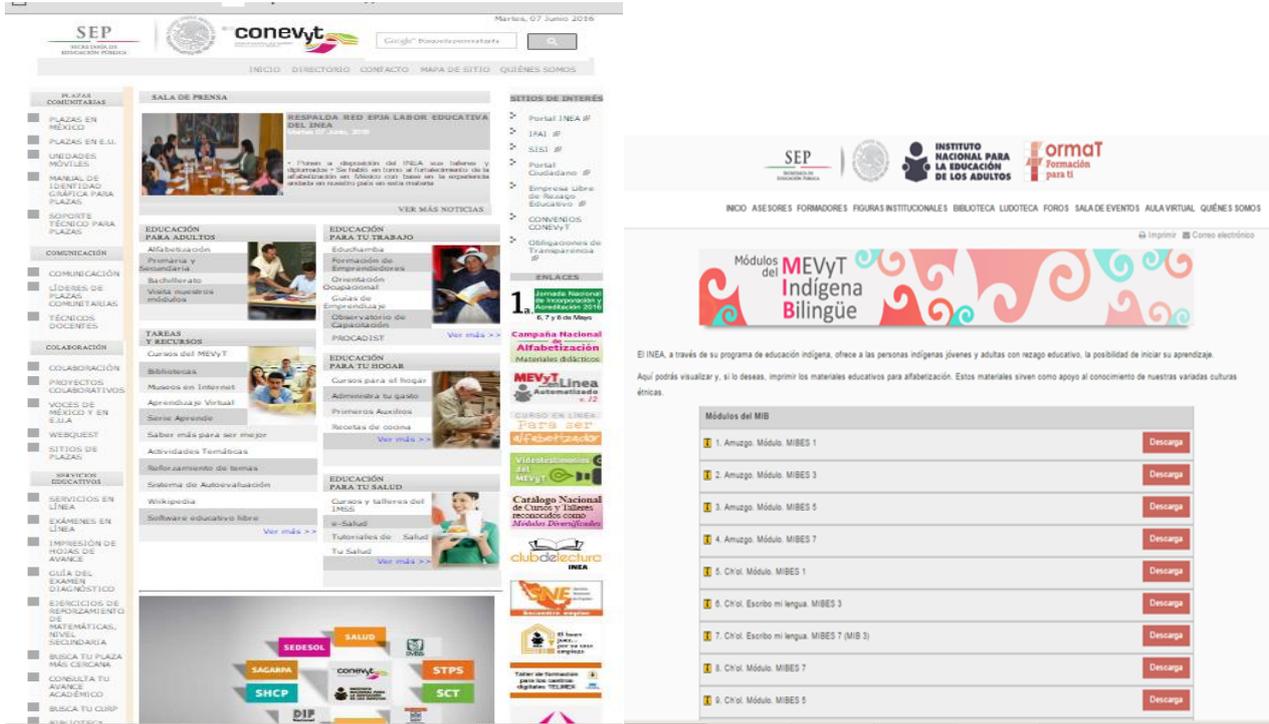


Fig.1. Official websites of MEVyT. Source: <http://www.conevyt.org.mx>; <http://www.cursosinea.conevyt.org.mx/>

It's important to note that the materials for each specific course are found in Spanish (the official language of Mexico); however basic literacy courses are proposed in 63 languages of the indigenous ethnic groups living in this country (see Figure 2).

1. Amuzgo. Módulo. MIBES 1
2. Ch'ol. Módulo. MIBES 1
3. Chatino Santos Reyes Nopala. Módulo. MIBES 1
4. Chatino Tataltepec. Módulo. MIBES 1
5. Chatino Yaitepec. Módulo. MIBES 1
6. Chatino Zenzontepec. Módulo. MIBES 1
7. Chinanteco Ojitlán. Módulo. MIBES 1
8. Chinanteco Usila. Módulo. MIBES 1
9. Chinanteco Valle Nacional. Módulo. MIBES 1
10. Chinanteco del Sureste Medio. Jujmii. Módulo. MIBES 1
11. Cora. Módulo. MIBES 1
12. Cuicateco del Centro. Módulo. MIBES 1
13. Hñahñú. Escribo mi lengua. MIBES 7
14. Huichol. Módulo. MIBES 1
15. Maya. Módulo. MIBES 1
16. Mazahua. Escribo mi lengua. MIBES 7
17. Mazateco Alta. Módulo. MIBES 1.

18. Mazateco Media Módulo. MIBES 1
19. Mixe Alta/Media. Escribo mi lengua. MIBES 7 (MIB 3)
20. Mixe Baja. Módulo. MIBES 1
21. Mixteco Alta 1. Módulo. MIBES 1
22. Mixteco Baja 1. Módulo. MIBES 1
23. Mixteco Costa 1. Módulo. MIBES 1
24. Mixteco de Guerrero. Módulo. MIBES 1
25. Nahuatl del sur (Zaragoza). Módulo. MIBES 1
26. Nahuatl del sur (Mecayapan). Módulo. MIBES 1
27. Nahuatl del sur (Pajapan). Módulo. MIBES 1
28. Náhuatl Sierra Nororiental (Cuetzalan). Módulo. MIBES 1
29. Náhuatl de Chicontepec. Escribo mi lengua. MIBES 7
30. Náhuatl de Guerrero. Módulo. MIBES 1
31. Náhuatl de la Huasteca. Módulo. MIBES 1 (segunda edición)
32. Náhuatl Sierra Negra/Zongolica. Escribo mi lengua. MIBES 7 (MIB 3)
33. Náhuatl Sierra Nororiental (Cuetzalan). Módulo. MIBES 3
34. Náhuatl Sierra Norte. MIBES 1 (M y A)
35. O'dam (Tepehuano del sur). Escribo mi lengua. MIBES 7
36. Odami (Tepehuano del norte). Módulo. MIBES 1
37. Ombeayüts (Huave del Oeste). Módulo. MIBES 1
38. P'urhépecha. Módulo. MIBES 7
39. Popoluca. Módulo. MIBES 1
40. Rarámuri (Tarahumara). Escribo mi lengua. MIBES 7 (MIB 3)
41. Tenek (Huasteco). Módulo. MIBES 1
42. Tlapaneco. Módulo. MIBES 1 (segunda edición)
43. Tojolabal. Escribo mi lengua. MIBES 7
44. Totonaco. Escribo mi lengua. MIBES 7 (MIB 3)
45. Totonaco. Variante Cuetzalan. Módulo. MIBES 1
46. Totonaco. Variante Espinal. Escribo mi lengua. MIBES 7
47. Triqui Chicahuaxtla. Módulo. MIBES 1
48. Triqui Copala. Módulo. MIBES 1
49. Tseltal. Escribo mi lengua. MIBES 7
50. Tsotsil. Escribo mi lengua. MIBES 7 (MIB 3)
51. Xi'iu (Pame). Módulo. MIBES 1
52. Yokot'an Central. Módulo. MIBES 1
53. Yokot'an del Este. Módulo. MIBES 1
54. Yokot'an del Sureste. Módulo. MIBES 1
55. Zapoteco Costa NE. Módulo. MIBES 1
56. Zapoteco de la Sierra Sur/CO. Módulo. MIBES 1
57. Zapoteco Sierra Juárez. Módulo. MIBES 3
58. Zapoteco Sierra Norte. Módulo. MIBES 1
59. Zapoteco Sierra Sur/Central. Módulo. MIBES 1
60. Zapoteco Sierra Sur/NEA. Módulo. MIBES 1
61. Zapoteco Sierra Sur/Suroeste Alto Ditsè. Módulo. MIBES 1
62. Zapoteco Valles/Este Central. Módulo. MIBES 1
63. Zoque. Escribo mi lengua. MIBES 7 (MIB 3)

Fig. 2. List of basic literacy courses proposed in indigenous ethnic groups' languages by the Mexican system of computer assisted learning for marginalized

Source: own elaboration based on: <http://mevytenlinea.inea.gob.mx/inicio/index.html>

This educational model of computer assisted learning for marginalized operates through Meeting Points and Community Places (PI@zas Comunitarias). First, are places provided by the community, including schools, churches, ejido houses, etc., where people gather, form study groups and obtain a comprehensive education service. The Meeting Points are coordinated by a headline who incorporates voluntary consultants and organizes educational attention for learners.

The Community Places are an operating strategy of MEVyT and a program in itself. As a strategy, they are defined as educational spaces open to the community, have computers and collections of printed materials, videos, CDs and other learning resources. The Community Places are installed in all states and municipalities in Mexico and in most states of the United States (see Figure 3), in addition, exist Mobile Community Places. It are supported by the Service Center for Community Places, connected with wireless and iron resonant regulators and provided in every place the following computer and communication equipment: Computer software (Office); Computer equipment (1 server and 15 Lap tops); LAN (802.11b wireless network); Outboard (1 Multifunctional, 1 Projector, 1 Intelligent Blackboard, 1 DVD and VHS Reproductive, 1 Camera webcam, microphone and consumables) [11].

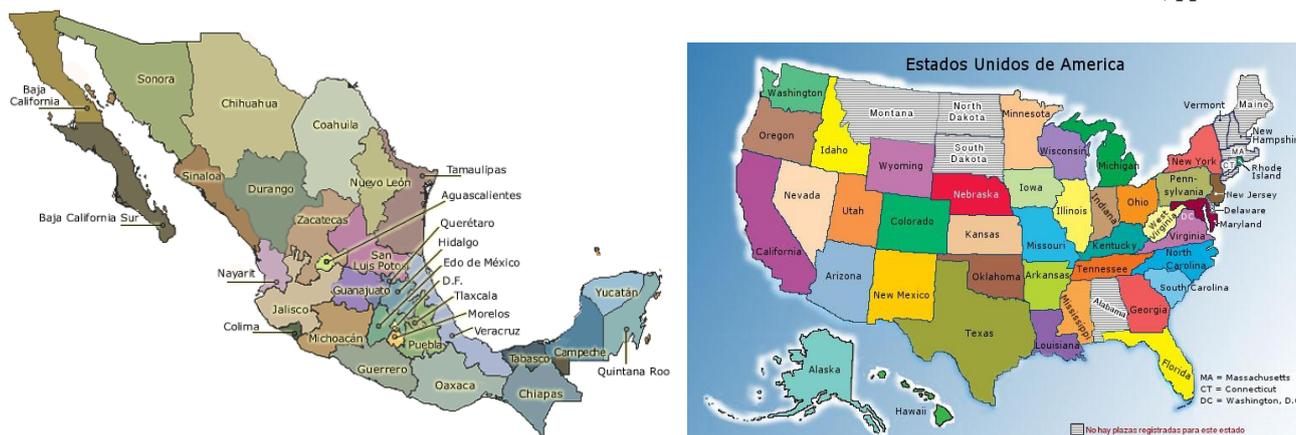


Fig. 3. National System of Community Places and Community Places in United States. Source: <http://www.conevyt.org.mx>

In fact, the Meeting Points and Community Places represent the space in which it is assumed as relevant the use of new technologies by the vulnerable population.

MEVyT curricular structure is modular and is organized in basic and diversified modules. The first address the basic learning needs and its instrumental aspects, and are grouped around three themes: language and communication, mathematics and science. Diversified modules develop themes and specific skills aimed at different sectors of the population. It highlights that within these are preparatory modules to high school, with which it supports those who want to continue studying, and also features alternative modules, which develop the same skills that some basic modules and can replace it, depending on the interests and needs of people [12].

Worth mentioning, MEVyT's program includes three levels: beginner, intermediate and advanced, which give a framework for accreditation and certification process so that the initial and intermediate levels allow certify the primary, while the advanced secondary school credits. The important thing is that, while providing this option diversifies training modules aimed at relevant issues so that young people and adults can build their own "routes" of study or training.

The teaching method is based on working with learning situations and is organized in three stages: recovery of knowledge and experience of students in the item through activities such as stories, anecdotes, questions, etc.; search and analysis of information, reflection and confrontation with what is already known through exchange activities, reading, inquiry into various materials and sources; closure, conclusion and application of learning, based on conclusions development activities, reading, writing texts, etc. [13].

In 2013, the education of marginalized adults nationwide constituted 4.6% of the total population served at different educational levels (see Figure 4). In total, in the 2012-2013 school year they were attended by MEVyT 1,241,742 people. Thanks to MEVyT, the national system of education of marginalized adults has achieved in 2012-2015 to reduce the educational backwardness by 2%, including decreased the illiteracy among indigenous groups by 4.5% [14].

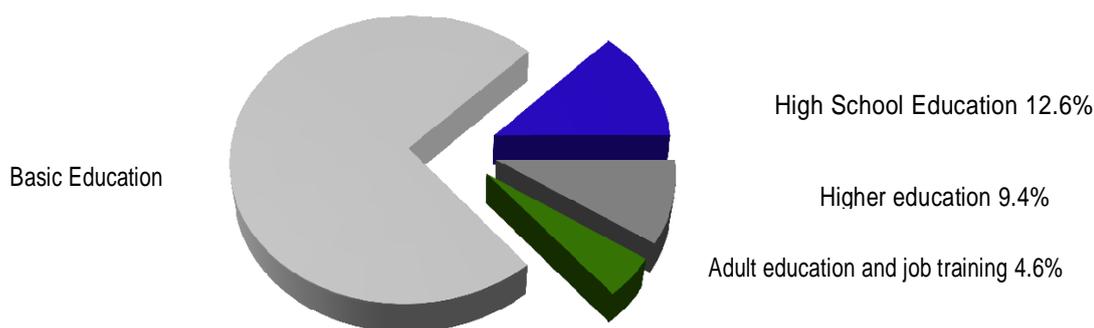


Fig. 4. Statistics of the Mexican national education system 2012-2013.

Source: SEP (2014). *Principales cifras del sistema educativo nacional 2012-2013*, México, SEP.

The MEVyT's variants serving the most vulnerable groups (indigenous and agricultural workers) are the Care Program for Migrant Farm Workers and Bilingual Indigenous Program.

The Care Program for Migrant Farm Workers develops from a consideration about the migrant agricultural day laborers as a disadvantaged group. It also provides resources for training, updating and gratifying service providers in camps, hostels, informal settlements and communities of origin of the ejector locations in this population. It is a project that performs actions with the support of other agencies through the project Foster and Improve Intercultural Education for Migrants which began operations in 2003. It uses the pedagogical model MEVyT and is accompanied by actions for teaching Spanish as a second language [10].

Another variation of MEVyT serving the most vulnerable groups, who speak an indigenous language, whether in the home communities or agricultural or urban concentration, is the Bilingual Indigenous Program (MIB). Since it is

possible that the agricultural or urban concentrations don't count with speaker advisors specific for the languages required, regular educational consultants can improve care by incorporating beside the figure of an interpreter a solidarity auxiliary indigenous language speaker and in the localities of origin they can support learning assistants with an interpreter who speaks fluent Spanish [11].

The Bilingual Indigenous Program addresses populations speaking different indigenous languages (see Figure 2), taking into account the linguistic characteristics of learners, especially for literacy or initial educational level. The MIB is characterized by performing literacy in the mother tongue, in order to make it easier to transfer that ability, and promotes a bilingual learning considering Spanish as a second language. Therefore, there are the educational services performed by local bilingual counselors, from literacy to high school. As the population of indigenous origin may have various linguistic characteristics in relation to its handling of Spanish (monolingual or receptive bilingualism, incipient or coordinated bilingualism), at the start of training applicants apply an initial interview. Subsequently, the person registers indicating its linguistic situation and specific native language, based on the catalog of National Registration System (SASA). This allows having an electronic control of incorporation, accreditation, academic progress and certification of adults [11].

IV. CONCLUSIONS AND RESEARCH PERSPECTIVES

Succinct, it can be stated that the main features of the computer assisted learning for marginalized population realized by Meeting Points and Community Places under the Care Program for Demand of Adult Education in Mexico are:

1. Its relatively recent emergence (2000-2004) from the incorporation in the National Education Program 2000-2006 of a subsector program Education for Life and Work and creation of the National Council for Life and Work (2004);
2. Its rapid development: in 2015 it has been achieved total (100%) coverage of the program in 52 states of Mexican Republic, also were opened the Community Places (instrument of deployment of computer assisted learning for marginalized population) in almost every state of the United States;
3. Its decentralization; budgets and government actions at national and local levels; educational cooperation with non-governmental organizations as well as private institutions and NGOs, both domestic and foreign; influence of civil organizations and their organization in networks; diversity of educational programs;
4. Achieving significant progress in less than 10 years: in 2013 the education of marginalized adults nationwide constituted 4.6% of the total population served at different educational levels; in total, in the 2012-2013 school year they were attended 1,241,742 people; reduction of the educational backwardness by 2%, including decreased the illiteracy among indigenous groups by 4.5%;
5. Its purpose is represented in three major areas: encourage self-responsibility and the process of self-realization of the individual, appropriate cultural and vocational training; promote and raise the cultural, professional and social status of the marginalized population; training to enable higher levels of efficient production and increase the corresponding income to raise the standard of living and a fair distribution of goods.
6. Attainment of building of a completely free system of computer assisted learning for marginalized population, accessible to anybody and which enables easy access via internet;
7. Reaching that all materials for each specific course for life and job are found electronically in Spanish (the official language of Mexico), in addition, the basic literacy courses are proposed in 63 languages of the indigenous ethnic groups living in this country;
8. Getting a flexible and diversified system of computer assisted learning for marginalized population: each user study at his/her own pace and according to his/her possibilities and interests; he/she can always count on the support of volunteer adviser, who is always present and available in the Community Places; when he/she feel ready, he/she can electronically file exams and get the official certificate of conducted studies (primary or secondary school or professional certification).

It is considered appropriate to devote future research about the computer assisted learning for marginalized population in México, realizing the quantitative and qualitative empirical studies of the actual situation in this educational model, for example, if it cares less for the most vulnerable population in terms of their productive insertion; if the marginalized with less schooling appear as an underserved group; if the programs are designed really taking into account specific needs of marginalized.

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