

# The Monitoring and Evaluation of the Brazilian Digital Inclusion

## Program – GESAC

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### Abstract

*This article has the objective to evaluate the GESAC digital inclusion program in Brazil, from 2005 to 2007. One national survey and 2 operational databases were analyzed. The GESAC Program installed 1,500 telecenters and 2,400 TIC laboratories in public schools without any previous access to internet. From those, 800 telecenters had to be reinstalled due to lack of sustainability and usability. Approximately 800 were open to general public. From the total, 1,500 did not use all TIC resources. The same amount was able to transfer TIC knowledge to the communities. An increased trend was observed of the TIC usability up to their saturation, specially the internet access, as well as social actions and community projects developed by telecenters*

*users. The public schools facilitated training for their own teachers, monitors and civil society's multipliers. Digital inclusion has been an important instrument for social inclusion in Brazil.*

**Keywords:** *Digital inclusion; Informational inclusion; Social inclusion; Indicators; Evaluation of social programs and Information Science.*

### 1. Introduction

In Brazil and in some other developing countries, following a society mobilization to implement digital inclusion projects in the last 5 years, several phases were achieved, such as the development of procedures and methodologies for digital inclusion; knowledge of digital inclusion projects; a national

coordination implementation; and a government polity for digital inclusion.

Several initiatives sought to show the positive impacts of the TIC use in several segments: e-government, health, education, justice, among others. The e-Brazil [1] is a good example. Some organizations, governmental or not, have devoted to mapping out the actions of digital inclusion. The Ministries of Science & Technology and of Planning are developing an observatory for this purpose.

Although evaluation and measurements of digital inclusion are already well developed in several countries [2], in Brazil, the evaluation process is still starting, both in university circles and in government area. That is a clear demonstration to consolidate the initiative, which aims to measure the progress of digital inclusion, given the volume of actions, governmental as well as privates.

Alongside the successful use of TIC, some criticism point out the risk that the networks and telecommunication satellites, specially the TIC, are in few hands, enlarging the profound inequalities that characterize the Brazilian economy and society, similar of what happened in other developing countries.

The authors that proposed the e-Development in Brazil [1] expanded the debate, showing the progress, with qualitative comparison of TIC governance with other successful examples around the world.

On the other hand, some authors are convinced that social inequalities are still prevailing [3], showing that a significant part of population is still poorly assisted, especially among concentrated areas of poverty in large cities and remote areas. Another criticism is that proposals and projects, which aim to bring TIC to less favorable populations, do not always include training and how to mediate the use of technologies. For example, a well-intentioned initiative for equipment delivery, without support for installation and lack of user abilities, brings to community frustrations.

So, it is very important for Brazil to

develop and consolidate methodologies for digital inclusion projects, including planning, execution and evaluation, building indicators that allow identifying expected results. Nevertheless, some factors have delayed the evaluation process in Brazil, such as the telecommunication privatization, with the disappearance of some state enterprises that used a variety of telecommunication indicators, added to a lack of best practice methodologies to assess digital inclusion process [4].

It is important to note that, in the last 10 years, some methodologies and procedures to evaluate and measure have been developed, around the world as well as in Brazil, focusing to measure the social development of people, communities, even if of society, in the use and appropriation of TIC.

Nowadays, the indicators construction moved from technology to users, relations rather than on integrative frameworks and measurements [5]. The indicators should reflect improvement, and not focus only in projects or initiatives. Some organizations are reinforcing the use of indicators, such as the Brazilian Institute for Geography and Statistics (IBGE), together with international agencies, as The Economic Commission for Latin America and the Caribbean, the digital Access Index (DAI), the International Telecommunication Union (ITU), the Center for Information & Society (CIS, from the University of Washington – Seattle/USA).

In Brazil, projects such as Proinfo from the Ministry of Education, Paraná Digital from the Paraná State Govern, Brazil House from the Brazilian Presidency, and Points of culture from the Ministry of Culture, focused in implementing physical and digital resources, with limited training, and very little attention to the process of evaluation and measurement.

## 2. Concepts and Definitions

The concepts and definitions are results of academic efforts and the work of professionals together with public and private organizations, in the solution of their communication problems and information management. Their establishment allows the advance of research besides facilitating communication in society, both in developing public policies as well as in science communication.

The practice, both in science as in real life, takes concepts and definitions more or

less comprehensive, and its use requires to consider both the context and the purpose. Indeed, definitions should not be seen as something isolated and general.

In the context of digital inclusion processes, the definitions and concepts that will be discussed here are: social inclusion, digital inclusion, multipliers and telecenters, both relevant and controversial.

## **2.1 Social Inclusion**

This concept is still under construction [6]. Usually it is used in a limited way, especially in documents written within government sectors [7], with important limitations, although well intentioned, once individuals are just invited to leave the condition of excluded, even if individuals could be merely classified as totally included or excluded.

Some authors have elaborated the concept of social inclusion as “interdependent social processes mainly linked to income and opportunity distributions” [6]. But, still it is a dual concept once it is analyzed from an opposite concept, the exclusion, and the binomial income distribution and opportunity variables can not be built in opposite and excluding sides, because they are a multidimensional phenomenon extrapolating the poverty dimension.

So, the concept of social inclusion is still under construction, once we do not intend to refer as included or excluded individuals, but as groups in social contexts that search the improvement of life quality through inclusion as a social process, in a broader society, which seeks meet its needs related to quality of life, human development, self-income and equity of opportunities and rights for individuals and social groups, which, in some stage of their lives, are at a disadvantage with respect the other society members [5].

## **2.2 Digital Inclusion**

The concept of digital inclusion, rather than its definition, is used in different and wide contexts, being considered as a transversal action, that involves areas such as education, communication, computer science, and information science [6]. At the same time, that concept is used in the three main areas of economy. In the government as part of public polity; in the private sector as a result of its initiative practices; and in the non-governmental organizations, together with

universities or not. All of them elaborate their own definition and concept, being difficult to find a consensus even if inside same area or sector. The most limited concept of digital inclusion are the ones that use it as a provision of physical resources, such as computers, internet connection for excluded populations, and access to the process of information production. Broader concepts have focus on the democratization resulting from access to TIC [7], as well as understood as universal access to the use of TIC as universal achievement of the benefits brought by these technologies [8], but, sure, still with obvious limitations.

Some reference and research centers have used concepts more complete, such as defining digital inclusion as a provision of all processes of training and improvement of skills, technological means, resources, usability, accessibility and tools, to support social and institutional order to overcome all forms of barriers, guiding the path towards the participation in a informational society [9, 10], although meeting some purpose in certain context, but not all. Other authors have deepened the definition of digital inclusion, analyzing the relationship between Technologies for Information and Communication – TIC, discuss the causality between access to computers/internet and digital inclusion [11], concluding that the ability to access, adapt and create new knowledge through the use of TIC is crucial for social inclusion in the most recent era [7].

## **2.3 Multipliers**

Individuals considered digitally included are those who has access to institutions with resources and training to access, use, produce, and distribute information and knowledge through TIC, allowing them to participate and benefit from knowledge society, irrespective to age, culture, ethnicity or other personal characteristic. For that to happen, it is necessary to form multipliers, considered as fundamental subject in the digital inclusion process. In Brazil, multiplier is a person from community, identified and selected due to he/she better technical-pedagogic profile, to develop, implement and monitor the inclusion actions, giving support to users of a GESAC Point, with emphasis on mediation procedures for TIC use [12], being the soul of inclusion, promoting exchange, mediation and building the virtual side, so that, their training is essential.

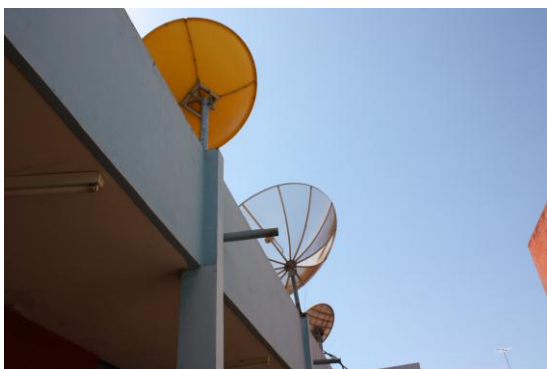
## 2.4 Telecenters/computer laboratories

In a broad definition, Telecenter is a public space where people are able to use microcomputers, internet and other digital technologies, that allow collect information, create, learn and communicate with others while developing digital essential skills to the Century 21 [1], being an area of redemption of citizenship.

The Brazilian Government, when coordinating their efforts, reached a definition for telecenters, such as, places of public access that have equipment connected to internet, facing multiple uses without profit. Their major challenges are their sustainability, expansion of attendance scale and qualification [8,13].

If the digital inclusion process happens inside schools, the places are called Computer Laboratories. These areas remain very similar about technology, because as the telecenters, they are environments equipped with computers and digital resources, including in their scope a Political Educational Project, built by the Ministry of Education. So that, the Computer Laboratories are a public space where students of a school can use digital technologies to collect information, create, learn, and communicate with others while developing digital skills [14].

## 3. The Brazilian Program - GESAC



By the beginning of the present decade was marked by the concern of the Brazilian government, followed by other sectors of the Brazilian society, with the impacts and benefits of the use of information technologies

– IT by citizens, as well as the convergence between telecommunications and IT. These concerns are one of the many determinants for the provision of resources from the National Treasury, focused on digital inclusion actions. On other words, forced the federal government to act, directly with other sectors, to minimize the growing process of social exclusion in Brazil.

In that ambience, the GESAC Program was created. At the beginning, the physical resources, mainly computers and connectivity, were the major targets. As the same of other initiatives, efforts directed to human being, the element that was able to think in the process, have suffered delays due to lack of managers and multipliers.

The assisted communities received first physical resources, followed by the solutions for training and mediation, something that is repeated so far among the underdeveloped countries [6]. The government actions tried to deliver citizenship to the less assisted individuals, living far away from the major centers, thereby providing better social and economic conditions for the excluded, giving access to a portion of our society to a world they seemed very distant.

The GESAC Program, created in 2002 [15], is coordinated by the Brazilian Ministry of communications, as a structuring program, designed to interfere directly and quickly in the process of providing information technology and internet access, as well as its consequent effect of literacy in information and communication. Thus, step-by-step, it was consolidated a public policy for digital inclusion in Brazil, as the same as in several countries.

Researching about GESAC, Mendonça (2008) stressed that it was the first concrete action with the objective to disseminate means allowing the access universal to electronic government information and services, being innovative and complex, with positive results among the institutions involved [13]. On the other hand, the author expressed that, although it was expected a immediately favorable scenario to the exercise of citizenship, the agility in providing fabulous results and statistics in a short term are still to come [7, 12].

The Program aims to provide the technical infrastructure, TIC services, technical assistance and support, to communities attended by GESAC, as well as being a

structuring action for other governmental programs, projects and initiative for digital inclusion, in the federal, state and municipal levels.

Besides incredulous thoughts due to the unpreparedness of the country to recover its delay in relation to other more developed countries, such as Spain and Portugal, something happened after 5 years, when digital inclusion has moved to a high top position in the government agenda [12].

Under the Ministry of Communication, the GESAC Program has surpassed its structural challenges, overcoming part of the government bureaucracy [13], and its internal and external dynamics and conditions led to distinguish four phases: bidding and contracting a telecommunication company (2002); restructuring the program and development of 3,200 Points of Presence (2003); bidding and contracting facilities such as teleconference and VoIP, adding new inclusion facilities, services and equipment for communities (2004). The last one is centered in the second restructuring, implementation of Alternative Projects, and the expansion of Points of Presence (2006).

To better describe the third phase, the expansion, organization and structure of GESAC, the National coordination was composed of three teams of specialists, located in the country capital, Brasília, with responsibilities of relationship with communities, technological support, information and communication, together with the management team of the Ministry of Communication. The logistic strategy for development and institutionalization of management was consolidated through the coordination of the Ministry of Communication in join action with other partners, such as the Ministries of Education and of Culture, for example.

Some difficulties were present in the formalization of partnerships with states and municipalities, both regards the allocation of personal for essential tasks, as the absence of a pedagogical model. The establishment of networks for public techno-social sustainability of Points of Presence was not possible immediately, forcing the reallocation of resources and facilities, which are being overcome in recent years.

The learning curve and training if intellectual resources in the management and implementation of projects and programs for

digital inclusion in the Ministry of Communications, associated with political will, bring the emergence of new actions, such as the implementation of pilot projects of digital cities, as well as the distribution or donation of infrastructure and equipment kits among telecenters located in the Brazilian municipalities [19], contributing to consolidating the initiative to focus on digital inclusion of GESAC.

The year of 2008 is seen as the beginning of a new phase, characterized by the expansion of 3,540 Points GESAC (PG), and the increment in nature or utility. The Program will contribute to implement PG for schools, for partnerships with governmental and non-governmental institution, and for municipalities to develop their e-government and digital inclusion, covering the whole country, besides consolidating the digital city projects. The Ministry of Communication has become the main provider of connectivity in regions where the physical network did not reach the poor. For the next two years, it is expected to expand up to 20,000 PG.

That initiative contributes to digital inclusion actions to become efficient, such as maximizing the physical resources use (equipment and connectivity), digital resources (language and content) for population, in websites and digital libraries, associated with the provision of human resources with better training and grater level of interaction within the concept of creating social networks [11, 16].

That new GESAC phase requires, with grater emphasis, the use of mechanisms and indicators that allow to measure and to know the direct results of digital inclusion promoted by GESAC, the measurement of the level of community ownership of technologies and knowledge generated by the Program, its impact on socio-economic growth, in improving life quality, and in removal of geographical, political and cultural boundaries that isolate our communities.

#### **4. Monitoring, Evaluation and Delimitation Analysis**

In Brazil, the telecommunication sector has been in the process of development and consolidation of public policies, and social and



economic indicators have been of great relevance, and the society now is able to follow these indicators, since the Brazilian National Institute for Geography and Statistics has included in its household surveys questions about computer ownership and Internet access.



Once those statistics and indicators have been publicly available, they have received attention from the market and from government, constituting themselves into strategic tools for proposed action formulations of electronic government and digital inclusion policy. Following that trend, some surveys have been promoted on access to TIC, to internet, the acquisition and use of computers [17].

Although the barriers to access to these technologies still continue to be the possession of equipment in homes (78%) followed by the cost of internet access (58%), one information draws the attention: one of the main reasons which leads Brazilians not to use internet is lack of skill (55%). That means the emergence of a large demand for capacity and training in the use of technology, confirming that the possession of equipment is not a use prerequisite, and that the barriers to using internet in Brazil are approaching more issues related to individual education and empowerment than the access cost [17].

In GESAC evaluation should assess the need to monitor, to search the results, and the learning process, raising the basic questions, such as what and how should it be evaluated? The answer for the first question is everything. Answering the second question requires some backgrounds defined by principles and goals governed by time and space from which needs are obtained through an initial diagnosis [22]. Through GESAC Program, the amount of computer labs in schools, telecenters implemented in public organizations, military

units, trade unions, NGO and indigenous villages surpassed the amount of 3,200 points of digital inclusion, and, since its beginning, the need to monitor and evaluate the quality levels and availability of satellite network.

One of the objectives of the present article is to follow up the results of infrastructure provision and digital resources, of multipliers training to provide digital inclusion, and to evaluate the agent of digital inclusion work through their visits, presence and remote consultations, and workshops offered to communities (see Table 1).

The GESAC Program ([www.idbrasil.gov.br](http://www.idbrasil.gov.br)) has been an action for structuring projects, such as Proinfo (Ministry of Education), Ministry of Defense, Points and Cultures (Ministry of Culture), Telecenters of Fisheries (SEAP), Telecenters of Bank of Brazil and its Foundation, Brazil House [23], Zero Hunger Governmental Program and Citizen.Net (Ministry of Social Development), Telecenters of Information Business, among other partners. GESAC uses forms of specific mediation with digital inclusion process and differentiated management model towards its target population. It has been a challenge to use indicators to compose an overall assessment for GESAC Program.

Those partners are part of the management model, being called Responsible Institution – RI, in the formal structure of the Program [9], generally through a cooperative agreement. Each project has its own monitoring and evaluation methods. A third component of the management structure is the Beneficiary Institution – BI, where the formalization happens through a commitment term. Some of these institutions (38%) are located far away from urban centers, usually lacking resource material and staff of digital inclusion, where the only way of communication is through internet provided by GESAC.

As the vast majority of those communities are located in regions without fixed telecommunication networks, the automatic tracking is provided within the Program network, monitored by the presence of social implementers, as well as GESAC inspectors, with tasks to provide literacy information, through mediation, monitoring and evaluation, providing also technical support.

Although the Program Points receive computers from several sponsors, the actual

picture is 15% with equipment with defects and 26% without internet connection.

The Program uses, nowadays, satellite communication technology, star-shaped, to overcome the natural difficulties of reaching those remote points, as well as allowing centralized monitoring and evaluation of infrastructure use.

To evaluate digital inclusion has been more complex, and two actions have been proposed, such as assessment of GESAC network from a sample of Presence Points, and to formulate ideals indicators able to identify impact actions of digital inclusion [12].

## 5. Possible indicators for GESAC Program

While the mechanisms of control and monitoring were always part of GESAC Program, they were quite simple at the beginning, although enough to manage a satellite computer network. On the other hand, the implementation of progress indicators of digital inclusion was always postponed, identified in other projects [19], with a clear limitation of intellectual action absence to make the link between the parameters which include measures related to access to technology and elements indicators of informational competence. In this article, the authors seek to move forward with indicators beyond infrastructure and usability, such as infoinclusion, knowledge and accessibility.

### 5.1 Proposed Control Indicators [9]

a) GESAC Points Coverage rate – defined as the ratio between the number of municipalities with GESAC Points and the total number of municipalities in the area. Although it adds little information, it is used for planning purpose.

b) Attended municipalities with low Human Development Index (HDI) rate – defined as the ratio between the number of Brazilian municipalities attended by GESAC with  $HDI < 0.66$ , and the total number of municipalities with the same HDI in the defined area [7].

c) The use of GESAC Program rate – defined as the ratio between the number of bytes used daily by GESAC Point and the maximum quality of usable bytes, being 1

megabyte/day as the minimum value.

d) Availability of Public Internet Access Services – defined as the percentage of time/month where the service remain in normal operation, including all elements of hardware and/or software. Also, very well used for administrative purpose.

## 5.2 Usual Indicators (GESAC Program historical series)

Table 1 presents the usual indicators for operational and management of GESAC. These indicators, such as the historical series, also show the stages through which GESAC has passed [25], at the same time the progress and the futures needs in term of guidelines, goals and targets [9].

## 5.3 Indicators for Operational Performance and Digital Inclusion Monitoring.

In 2005 and 2006, the Ministry of Communications held a survey to record the GESAC Points all around the country. Out of 3,400, 3,042 were recorded, together with the following parameters: the Points identification; people responsible (administrator and monitors); if available for community (days and hours open to general public); physical area; physical and logic infrastructure; access to internet; number of computers; free software use; service quality; usability; and use of resources.

From that survey, some indicators are highlighted: lack of trained monitor (38%); Points not open to general public (28%); User registration – electronic (143), complete (139), simple (1365), not existent (1303). The average access in 2006 was 256,526 people. The use of services such as hosting homepages or lists of e-mails was low, calling the attention for the publication of messages in GESAC site ([www.idbrasil.org.br](http://www.idbrasil.org.br)). Figure 1 displays the GESAC users interest.

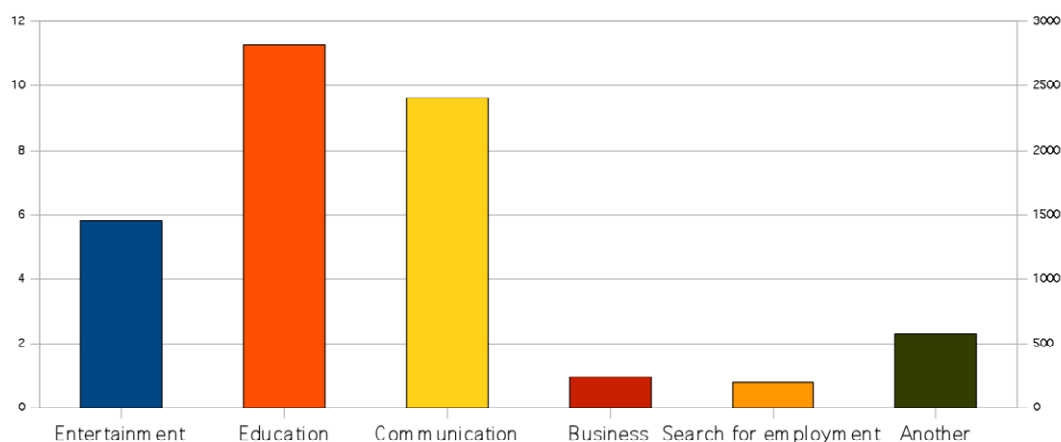
## 5.4 Inspection

Inspection Program verifies the services contracted and their access by the community, besides reporting the context and ownership of technologies by citizens through a specific form. The survey included the Presence Point identification, equipment, localization, usability, permissibility, and accessibility.

**Table 1. Usual indicators for operational and management of GESAC. Brazil, 2003-2007.**

Indicator	2003	2004	2005	2006	2007	Obs.
<b>GESAC Points</b>	2800	3200	3200	3400	3500	-1
<b>Exchanged Points</b>	0	0	96	402	315	2
<b>Visited Points</b>	0	0	349	1333	225	3
<b>Inspected Points</b>	0	10	10	10	10	-4
<b>Trained Monitors</b>	0	100	100	100	100	-5
<b>People Trained during Workshop</b>	0	0	100	586	297	-5

Possible limit of 4,440 GESAC Points. (2) Almost 20% of GESAC Points are exchanged due to lack of sustainability. (3) Bellow 60% of the total. (4) Bellow 20% of the total. (5) Number of trained monitors and users extremely low.



**Figure 1. Distribution of GESAC users by interest.**

From 2005 to 2007, the amount recorded increased from 74 to 373. The main objective of that survey was to collect qualitative indicators that included interviews with inspectors.

The qualitative analysis has shown that there is great user age variability depending if the Point is located in schools or for adult community; the attendants use very little of

Program resources available. Few projects are Community Projects as well as social actions and content production. There is one successful Point in five surveyed.

## 5.5 Social Implementers

The fieldwork of the social



implementers was studied by Mendonça (2008) [11]. They are responsible to visit and to carry out workshops in the Presence Points under their responsibility. In 2007, 60% of 3,281 Points were visited, when a specific form was filled out. In the present article, only qualitative information will be provided. The use of internet tools is very low, being schooling homework as the first task; the presence of Point Management Committee is insignificant, mainly depending on the Responsible Institution. The charge to use the services is prohibited although few services still charge to provide access. Points located outside schools have difficulties to find financial support. The existence of very few projects that are sustainable is an important issue.

## 6. Discussion

The level of indicators reviewed here is below the expected, resulting that the objectives of GESAC are not yet achieved, although some progress was made in social inclusion comparing with the beginning of the Program GESAC. On the other hand, it reinforces the necessity of more actions and technical and social efforts. It should be called the attention that despite the lack of agreement among the Government areas, of monitoring and evaluation policies, its intent appears to be favorable to a hyper-modern scenario for the digital inclusion future in the country [21].

The next GESAC stages are challenging, requiring coordination with other governmental programs and projects, as well as with other partners from different sectors of society. The training issue of educators/multipliers should be a major focus [12].

However, if levels of infrastructure and usability are high [21], encouraging the continuation and expansion of digital inclusion process, only the presence of internet and digital resources do not represent success in digital inclusion. The absence of digital resources (content and language), followed by the small amount of people working with training and mediation, without a pedagogical model, undermined the inclusion process conduction [11].

The difficulties to capacitate monitors and administrators in telecenters and public

schools throughout the country, together with the incipient construction of contents for students and communities, reflect the restricted use of methodologies. It is the beginning of model consolidation of inclusion for GESAC and other programs of national scope [9, 19, 23, 24]. It is important to stress that many cases of success represent good practices in GESAC points.

The proposition of evaluation tools, that stimulate the production and insertion of content on digital inclusion programs, is worthy of attention.

## 7. Conclusion

The strong presence of telecommunications in Brazil, notably the use of mobile phone, compared with the low level of personal computers in schools and homes of different socioeconomic status [17], together with the low use of internet among the less favored population, as well as the great demand for training of multipliers, capable to empower the communities in the use of TIC, demonstrate the low position of Brazil in the use of TIC, as shown by international community. The Brazilian population should suffer a delay in the process of entering into the information society.

Digital inclusion programs or projects attend only 6% of Brazilian population. Even if, actions of a national coordination are an environment conducive to implement practical assessment.

The countries of Latin America are maturing their coordination models in policies for digital inclusion, together with methodologies of digital inclusion quality. In the last two years, there is a strong movement toward the establishment of indicators of progress.

The present article shows the procedure development for the construction of digital inclusion indicators for GESAC Program, where limits and progress were identified, such as few advance of communities in digital inclusion actions, and, in general, lack of social changes.

On the other hand, the indicators demonstrated that greater access to information contribute to achieve the users

citizenship. The development of community projects allow more representativeness of individuals in the social group to which he/she belongs.

The efforts and resources for training of multipliers do not attend the demand, and digital resources are not in great movement on social networks.

With the decision to increase the number of GESAC Points up to 20,000, for the next coming years, it is necessary to deepen researches in monitoring and evaluation, defining indicators more sensible able to assess the accessibility, affordability, socio-demographic factors, and usability, to review practices, processes, and public policies of digital inclusion in Brazil.

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