

DIGITAL BREACH IN ECUADORIAN'S EDUCATION

BRECHA DIGITAL EN LA EDUCACIÓN ECUATORIANA

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Abstract

The tenacity of this inquiry is to give a high scientific value to a problem that has been happening in Ecuador during the COVID 19. Many Institutes and Colleges had not all the support and the physical structure of digital resources. There are also students in Ecuador that cannot pay for their studies, thus, many foundations and ONG's provides financial aid for the poor young people. The problem acquires greater relevance when it affects higher education because that also affects directly in the formation of new professionals, since the costs of equipment, supplies and materials have a high cost, also the theories and teaching material almost always depends on foreign publishers. There are many universities in Ecuador that offer many careers, in which the teaching task not only depends on a structure and optimal supplies but also creativity and the contribution in knowledge of the students, so they also can feedback and apply tools "ICT" for viable a learning of two way that is constructivist and assertive.

Keywords: *design thinking; digital breach; multimedia; social media; technological breach; TIC.*

Resumen

La tenacidad de esta indagación es darle un alto valor científico a un problema que viene ocurriendo en el Ecuador durante la pandemia del COVID 19. Muchos Institutos y Colegios no contaban con todo el soporte

y la estructura física de los recursos digitales. También hay estudiantes en Ecuador que no pueden pagar sus estudios, por lo que muchas fundaciones y ONG brindan ayuda financiera a los jóvenes pobres. El problema adquiere mayor relevancia cuando afecta a la educación superior porque eso también incide directamente en la formación de nuevos profesionales, ya que los costos de equipos, insumos y materiales tienen un alto costo, además las teorías y material didáctico casi siempre depende de editoriales extranjeras. Existen muchas universidades en el Ecuador que ofrecen muchas carreras, en las que el quehacer docente no solo depende de una estructura y oferta óptima sino también de la creatividad y el aporte en conocimientos de los estudiantes, para que también puedan retroalimentar y aplicar herramientas “TIC” para viabilizar un aprendizaje de dos vías que sea constructivista y asertivo.

Palabras Claves: *Aprendizaje digital; brecha digital; multimedia; medios de comunicación social; brecha tecnológica; TIC.*

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Introduction

Digital breach it's known as gap digital to the separation that exists in the society, between individuals, communities and countries. to the access of the information and for different technologies that is apply on it. Life daily and to them too, people that do not know how make use of information, taking their resources to do it (Alkureishi et al., 2021). Nowadays the technology and communication go hand in hand in the implementation of new theories and trends that can be apply in education and vocational training of students (Ertl, 2020; Khasanova, 2021).

Is so currently, the digital breach can be defined in terms of the inequality of them possibilities that exists for access to the information, to the knowledge and to the education by them TIC (Pérez et al., 2021). The digital divide is not related only aspects exclusively of a technological nature, reflects the combination of socio-economic factors and in particular limitations and lack of infrastructure, telecommunications and computer science (Serrano y Martínez, 2003).

This study makes special relevance in the digital breach that exists in our society (Celeste, 2019). This can give not only by the aspects, physical and technological. That effect to the educational institutions, but also to the society as such, their social classes, more marked and the power purchasing in their families influences to do the digital gap, wider (Faraj et al., 2021).

We can understand the changes of the social media in Ecuador and Latin American countries, talking about the spiral of the wealth and the poverty; this is called in economy, as "vicious circle or virtuous circle" (Goyanes et al., 2021; Mateus et al., 2022). What comprises them ups and downs in those movements in the economic status of the region; the favorable or unfavorable scenario develops in which the social and

economic breach is developing. The division of social classes and the marked differences in the level of education of the population makes a higher concern in the Ecuadorian policy in education (Villafuerte & Mosquera, 2022).

Countries like Finland, Korea and Estonia spent many decades implementing their educational reforms to be update. In addition, curriculum adaptations, online grading, digital platforms contributed to establish a good relationship among themselves sharing the high potential by social media transformation. Ferrio (2015) says that "the society of the information is characterized in changing our way of thinking, of live and of relate what surrounds us." This means that education is intimately linked to the development of skills and competencies that can be applied using the technology (Pérez et al., 2021).

Bhanu (2020) states that internet plays a vital role in providing various services to people all over the world. Its usage has been increasing tremendously all over the years. Taking this into account, it is proven that the internet is becoming the best resource in every field with have many advantages if people are aware about it. Considering this research, the use of ICTs, especially the Internet is extremely important not only in Hispanic countries, but also all over the world in which everybody exchanges ideas, thoughts and culture (Üzüm et al., 2020).

Material and methods

Territorial Context

Two universities and one technological institution were the participant in this relevant case. The University of Guayaquil is a public institution that offers several options of careers to people. This is located on Salvador Allende Avenue. The Universidad Laica Vicente Rocafuerte which placed on Americas Avenue and the Espiritu Santo Technological Institute that is in Juan Tanca Marengo Avenue.

Type and design of research

This research project was descriptive since it allowed to the researchers to analyze the problematical situation and the components that it had. Moreover, the qualitative method was also used to obtain better results and it was also quantitative, based on data mining, through a validated and reliable instrument (Ortega et al., 2021).

The author describes two broad approaches to conducting direct observation research, naturalistic and laboratory-based observation, and offer a framework to guide theoretical and practical decisions regarding the use of each approach, as well as limitations of each (Pryce, 2020).

Considering the author words, the observation was considered in the insight of this project because it became familiar with the problems that the students had to manage during the COVID 19. Therefore, the information collected was better interpreted rather than in-depth.

Within their digital networks, the professors used multiples technological resources to conduct interpersonal relationship among professors and authorities, and also, they seek out new ideas and information from several sources in their homes and in the classrooms. This study was done during the months of March to December 2022, it took several months to obtain the information to be published.

Study population

Professors and students of three Ecuadorian institutions were selected randomly as it is showed in the following table 1:

Table 1. Sample of professors and students selected. Source: self-elaboration.

Article	Stakeholders	Population
1	English coordinators	3
2	English Teachers	6
3	Students (people)	66
	TOTAL	75

Sample size

The sample of this research that contributed to this research were three English teachers’ coordinators of the area, six English teachers. In addition, the population was sixty-six students of the 115 students of the institutions that are involved in this process which means 75% of them.

Data collection techniques

The surveys and the interview were used for collecting information in this study, it helped to acquire the most truthful and relevant results according to the input of the stakeholders and the people around them. Beyond observation, facilitators analyzed the problems that students faced in the classroom.

The instruments mentioned above facilitated to the researchers to support this investigation with the experiences of the stakeholders. For instance, the results of the surveys allowed to the researchers to know the weakness and the strengths in the use of technology. In addition to, a google online format was also administered in class that was settled in 25 minutes in which they were asked for personal information, methodology and the resources used in the class to learn (Pérez et al., 2022).

Furthermore, to grow this project, a statistical data analysis consisted in a excel format was used to set down the results. This was a qualitative method placed for this data process collected. The purpose of this package was to determine the improving not only for teachers but also for the students is the use of technology in and out the class.

Theoretical Framework

Definition on Digital Breach

Digital breach is not just as a concern a complication for security experts, they also affect clients, stakeholders, organizations, businesses and education. It means any type of learning that is facilitated by technology or institutional practice that makes the use of platforms and digital resources more effective in the teaching-learning process.

Before the digital breach exists, it would be better to talk about a latent reality that has its origin in the division of social classes into the industrial age, where the foundations of industrialized and non-industrialized countries have already been laid. History has led industrialized countries to evolve and to achieve new models of production and resources based on technological innovations, while others that did not achieve these advances are in fact still maintaining subsistence economies.

An analysis of the causes that let to this development of technological competencies in each country would be extremely complicated. Since many countries in Europe and Asia, have a large population density, instead of conducting a study of the digital division or the technological gap. In Latin America and Ecuador is easier to analyze. From the point of view that social classes are more marked and that, make them, sensitive factors to consider, that contribute to the development of the digital division. In African countries the digital divide and the separation of social classes is much greater than in Latin America due to the extreme poverty that is evident in their countries.

To carry out an analysis on the development of technologies and competences in the knowledge and use of information and communication technologies, the following question arises: Is Ecuador prepared to reduce the development of the digital division, in the state and private education system?

The purpose of this report is to identify and find solutions to the development of the digital division, in education and in the implementation of technological tools that promote the strengthening of students in the different educational institutions in Ecuador.

The Digital breach in education

Historical Development

In the last decade, the Ecuador has been failing in the meaning progress of its economy with a higher crisis in the fall of the price of the oil, so their income and collapse of their country, have seen affected, and them investments that is performed in matter educational status is also appear affected (Bendix et al., 2013).

This economical issue is in the first instance, an issue, to access to cheaper information, or virtual connection to media; for example. There are many people that have a limited access to internet or to technological resources, which contribute to the self-learning, and their causes are hugely different, as geographic conditions, money, less time, because many people that are studying, they must work part time or full time, etc.

A virtual environment of teaching is the set of environments of interaction, synchronous and asynchronous, where, with base in a program curriculum, it takes to out the process teaching-learning, through a system of administration of learning (Rayon & Ledesma, 2002).

The digital breach, it is not only defined or perceived by the absence of economic resources. It is also by the ignorance of their tools, which make possible the access to the information and the share of acknowledge. The internet and their social networks are powerful tools for share information between their users, but also there are factors of distraction that distort the quality of what it shares in the network.

To understand the development of the digital breach is required a full analysis of how the development is, in the different societies that built acknowledge or reduce it. Can implement different technological tools so their people can make use of them. Same access for them to various sources of information. Them ICT can be the solution to solve many problems of Education in Ecuador, it can build acknowledge based on their own experiences and diversify the work of them too. The teaching of the educational institutions may seek a higher level worldwide.

In summary, its digital gab is not a problem of provision of technological services, its reduction is not achieved with the implementation of isolated projects, its reduction depends on of processes in which the population is intimately related with it vision towards a sustainable development (Serrano y Martínez, 2003).

Digital Breach Conditions

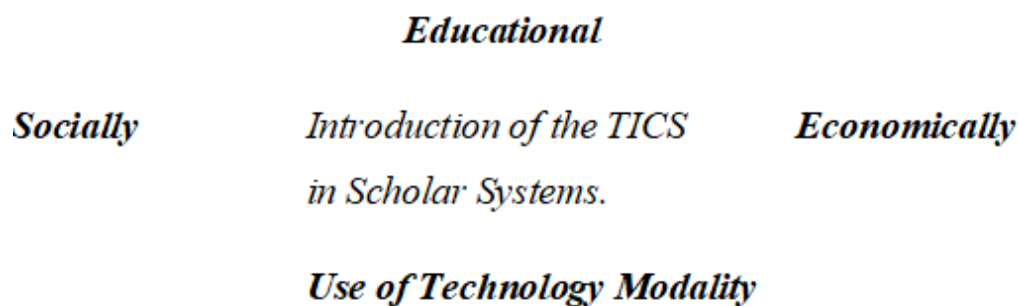


Figure 1. Quantification of the Digital Breach. Source: Gómez Malaver.

- a. **Educative Factor:** In the educational appearance it can be considered that there are social gap and technological gaps, which advertise the differences that exist in quality of the education of different campuses, private or public; being most vulnerable in logistics and resources public institutions.
- b. **Social:** Many factors social involved in the growth of digital breaches, such as infrastructure in them educational campus's location and the access to the sources of information, such as the absence of the internet or the digital illiteracy (ignorance of use of technologies).
- c. **Economy:** An important factor that contributes to the development of digital breach is the economy; in the meaning of inequality conditions in the population, in where not all of them people have the resources to afford connections to internet of quality. The influences of the economic situation of their villages and the bad political implemented by the Governments, is an issue too.
- d. **Use of Technology Modality:** A recurring situation is that on campuses, private education intended to use more resources for the implementation of digital tools as opposed to public campuses, making it more difficult for poor people to share or receive information.

Analysis and Development

There are several factors that influence the use / application relationship of technology, the differences between countries and regions are of the speed of adoption of technology, and at this stage, we find at least three factors that determine this relationship:

1. Communication infrastructures that identify the availability of physical resources that facilitate access to the digital economy and stimulate their development.
2. Human resources, which are important in determining of the system of technological innovations concerning the available knowledge as a base and education.
3. The competitiveness of the information and communication providers compared the competence level between different operators, both have a definite role in the provisions establishments of new services and define the rhythm of acquirement of new platforms and applications.

Digital Breach in Guayaquil:

The digital breach has a regular development due to the evolution natural of the Ecuadorian Society, the economic and social development of those homes that has begun to differentiate, between rich and poor. There are a range of factors that contribute to the growth of this gap, as example, the fall of the price of the oil that affected to the income of the country and the social investment, which performed by the Government is wide affected, however it seeks to increase the number of people digitally connected.

In the report presented by the Ministry of Telecommunications and the society information, says that in Ecuador has been achieved by 14% reduce Digital literacy in comparison to the year 2010 (Expenses Report of the Telecommunication Ministry and Information Society. 2014).



Figure 2. The Digital literacy has been reduced in a 50% in comparison with 2010. Source: The Telecommunication Ministry and Information Society (2014).

This means that there was more connection to more Internet users in 2014, but it is possible to determine that users, use the internet for their own benefit of the education or learning, or not? In many institutions educational private already used environments of digital learning that strengthen to the learning independent of their students, in level of undergraduate and education top, is implementing these virtual strategies too.

It seeks to also apply these environments and strategies of learning, could be exploit in establishments of public educational too. "The breach between who have access to the information and who have the lack of this possibility is a global phenomenon that it same covers to them individuals that to them inhabitants of a neighborhood, of a country, of several countries and even of continents" (Rodríguez Gallardo, 2006, p. 255).

Digital inclusion is a concept coined in 2003 by citizens groups that drove a campaign to promote communication rights in the information society. Better known by the acronym that Communication Rights corresponds to its name in the English language in the Information Society (CRIS), during the development of the first phase of the World Summit of the society of the information held in Geneva (Lacruz, 2005).

In Ecuador, their data are running that is reducing the digital gap, between the population, having last of the since 116 in 2009 to the 82 in 2014, by what is have reduced thirty-four positions with regard to countries

with major inequalities (Caicedo, 2014). Everything points to implement ICT in most schools are private or public at all levels and to reduce the digital divide and ridding the country of a progressive digital illiteracy.

Results and discussion

Research and student survey

We decided to make an exit poll of a group of 150 students in the Universities of Guayaquil, such as “*Tecnológico Superior Espíritu Santo*”, and “*Universidad Laica*” and there were many interesting data in their answers about the digital breach in their college experience. To discover the impact of the Digital Breach, man questions were doing this research.

a. DO YOU HAVE A PERSONAL COMPUTER AT HOME?

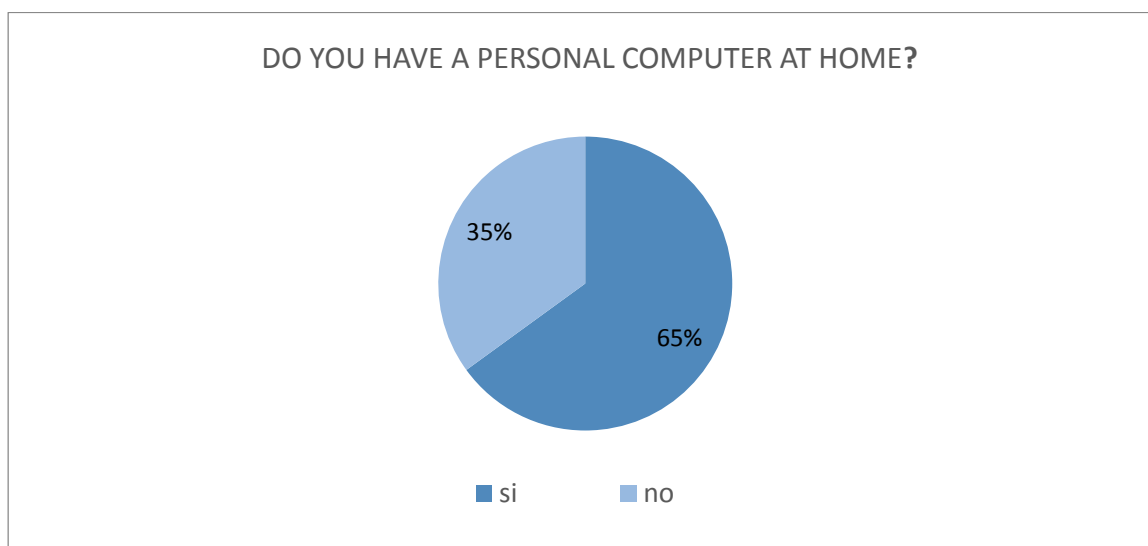


Figure 3. Students with personal computers at home. Source: self-elaboration.

The 65% of students in both universities said that they have a personal pc at home. The other 35% remain may not have one because of the lack of economic resources.

b. DO YOU HAVE ACCESS TO INTERNET AT HOME?

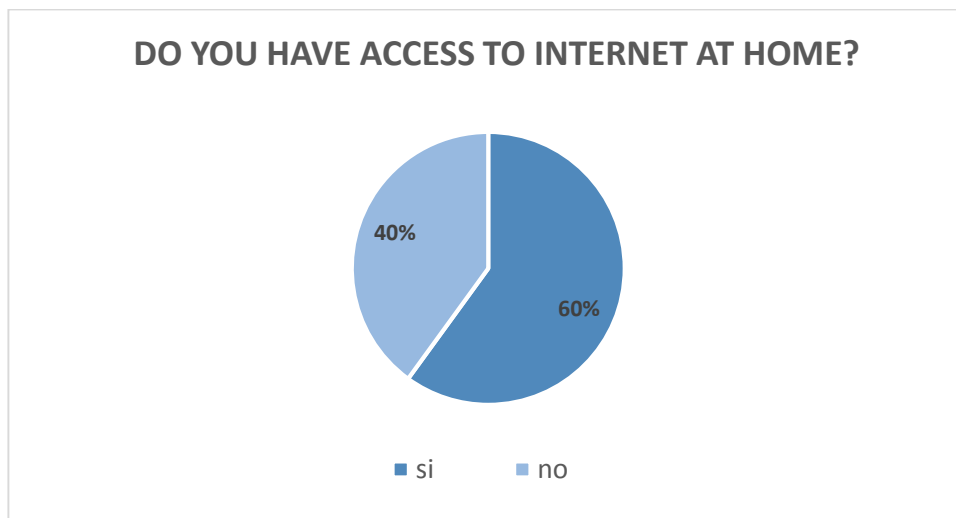


Figure 4. Access to internet al home. Source: self-elaboration.

The 60% of students in both universities said that they have computers, but the internet is limited. Therefore, they go to cybercafé to access internet or they use internet provided for local Guayaquil's authorities of the city. The 40% remain do not have co because the lack of economic resources, the internet provider does not cover the area where the students live.

c. DOES YOUR UNIVERSITY HAVE ENOUGH COMPUTERS AND TECHNOLOGYCAL RESOURCES IN YOUR CLASSROOM?

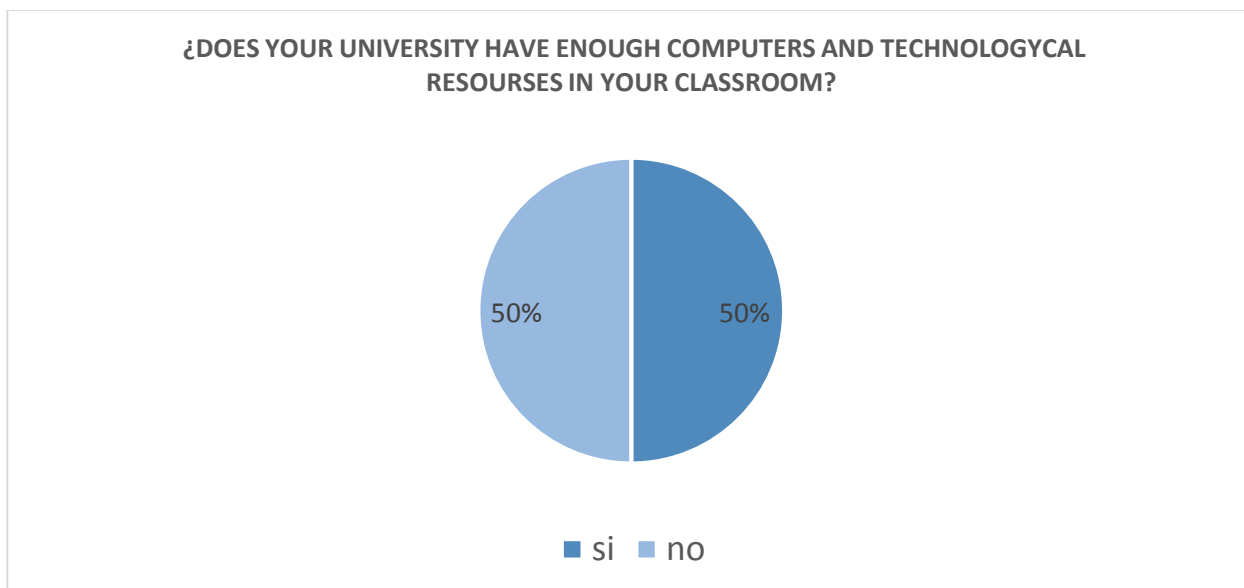


Figure 5. Quantity of computers and technological resources in classrooms. Source: self-elaboration.

The half of students said that the university has two computers' labs and all the classrooms have computers but the other 50% students said the limited is the university does not have internet connection in classroom even computers labs.

d. DO YOUR TEACHERS USE TIC TOOLS AT CLASSROOM?

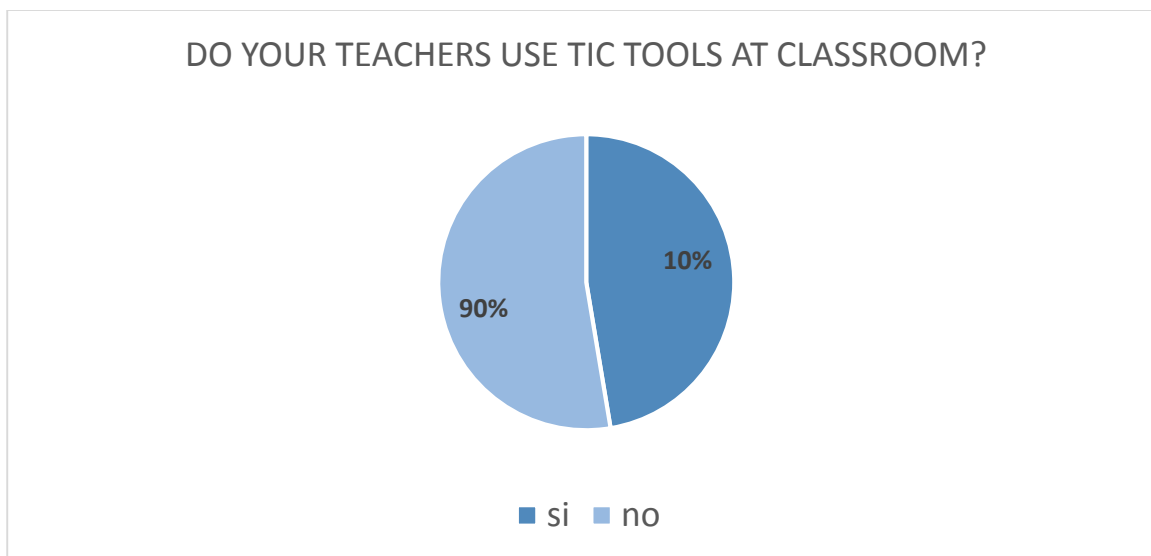


Figure 6. Use of teachers of TIC tools at classroom. Source: self-elaboration.

Only the 10% of the teachers cannot use tics in classroom because they do not know how to use it, whereas the 90% of the students who participated in the interview have experienced there are many teachers can use technological resources.

Conclusions

It is essential, that the Universities and institutions of higher education all students need to have Access to the internet and many problems about digital breach need to be solved. This is a responsibility not only to their government, instead to all the society indeed, there must start with a change in their mental behavior and the way to see the life.

The authorities of each institution have the highest responsibility of it, that entails the professional acknowledge to be a successful highly trained person and they must change the educational strategies with the implementation of technological tools that facilitate the autonomous learning of students. In addition, teachers must be updated to motivate students and facilitate a learning innovative and quality that meets the demands of what is expected to be.

It is noticeable that when a teacher has the preparation needed, they can apply TIC techniques in teaching, they can catch the student's attention when working in the class. Fortunately, there are many resources in the website and everybody can free access, so teachers can make their classes more interesting and manageable to develop their knowledge in benefit of Ecuadorian education.

Reducing the digital breach is a task that is embedded in social evolution, Political and economic development of countries that want their citizenship to reach higher of knowledge and development. As we have seen the first separation is the technological and this is established by the degree of development of each society. Those countries whose degree of development is scarce and technologically have not evolved those countries that have not overcome industrialization, there is hardly and their development needs pass first for other needs for the population.

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