

El uso de las tecnologías de la información en estudiantes de nivel bachillerato de comunidades en desarrollo

*The Use of Information Technologies in High School Students at Developing
Communities*

*O uso de tecnologias da informação em estudantes do ensino médio de
comunidades em desenvolvimento*

Luis Mexitli Orozco Torres

Universidad de Guadalajara, México

mexitli.orozco@cuci.udg.mx

<https://orcid.org/0000-0001-6576-9767>

Eliseo López Cortés

Universidad de Guadalajara, México

eliseo@cuci.udg.mx

<https://orcid.org/0000-0001-6828-6066>

Guadalupe José Torres Santiago

Universidad de Guadalajara, México

gpejose@sems.udg.mx

<https://orcid.org/0000-0001-5652-2164>

Resumen

La simbiosis y evolución de la sociedad con la tecnología ha generado una transformación en las relaciones culturales, la comunicación y el aprendizaje. Esta investigación se centra en conocer y analizar la incursión e influencia que ha tenido la tecnología en algunas comunidades en desarrollo del municipio de Arandas, Jalisco. Para ello, a partir del uso de encuestas y entrevistas dentro de la población estudiantil de la Preparatoria Regional de Arandas de la Universidad de Guadalajara, se observan aspectos significativos que se refieren

a lo social y a lo educativo, al igual que a las costumbres, la cultura y las dinámicas dentro de esta localidad desde años atrás.

Como resultado se encontró que el desarrollo tecnológico ha dado paso a la evolución o transformación de la dinámica social, educativa y personal, ya que la tecnología permite, en cuanto a la comunicación, una dinámica distinta y rápida, y para lo educativo se hace notar una amplia red de información que sustenta y genera conocimiento mediante diversas plataformas que son facilitadoras del trabajo escolar. En ellas es posible observar que, a pesar de la incursión en la globalización y la facilidad de obtener dispositivos de tecnologías de la información, las políticas públicas se han visto rebasadas, así como diferentes factores que afectan la dinámica social en cuanto a su comportamiento. Sin embargo, no dejan de ser un detonante en el desarrollo de estas comunidades en crecimiento.

Palabras clave: cultura, educación, tecnología, transformación social.

Abstract

The symbiosis and evolution of society with technology is generating a transformation in cultural relations, communication and learning. This research focuses on knowing and analyzing the incursion and influence that technology has had in some developing communities of the municipality of Arandas, Jalisco. For this, with the use of surveys and interviews within the student population of the Regional High School of Arandas, of the University of Guadalajara, significant aspects are observed that refer to the social, educational, customs, culture, as well as dynamics within of this town since years ago.

As part of the results it was found that technological development has given way to the evolution or transformation of the social, educational and personal dynamics, since technology allows, in terms of communication, a different and rapid dynamics, and for educational purposes, a wide network of information is noted that sustains and generates knowledge through various platforms that are facilitators of school work. In them it is possible to observe that, despite of the incursion in the globalization and the facility to obtain devices of information technology, the public policies have been surpassed, as well as

different factors that affect the social dynamics as far as their behavior. However, technology is a trigger in the development of these growing communities.

Keywords: culture, education, technology, social transformation.

Resumo

A simbiose e evolução da sociedade com a tecnologia gerou uma transformação nas relações culturais, comunicação e aprendizagem. Esta pesquisa tem como foco conhecer e analisar a incursão e influência que a tecnologia teve em algumas comunidades em desenvolvimento do município de Arandas, Jalisco. Para isso, a partir do uso de inquéritos e entrevistas na população estudantil da Escola Regional de Ensino Médio de Arandas da Universidade de Guadalajara, são observados aspectos significativos que remetem aos aspectos sociais e educacionais, bem como aos costumes, cultura e dinâmica dentro desta localidade por anos. Como resultado, verificou-se que o desenvolvimento tecnológico deu lugar à evolução ou transformação das dinâmicas sociais, educacionais e pessoais, uma vez que a tecnologia permite, em termos de comunicação, uma dinâmica diferente e rápida, e para a educação se percebe uma ampla rede de informações que sustenta e gera conhecimento através de diversas plataformas que são facilitadoras do trabalho escolar. Neles é possível observar que, apesar da incursão na globalização e a facilidade de obter dispositivos de tecnologias da informação, as políticas públicas foram superadas, bem como diferentes fatores que afetam as dinâmicas sociais quanto ao seu comportamento. No entanto, eles não deixam de ser um gatilho no desenvolvimento dessas comunidades em crescimento.

Palavras-chave: cultura, educação, tecnologia, transformação social.

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Introduction

Undoubtedly, information and communication technologies (ICT) are enhancing educational and social aspects that are changing the way they are learned both in educational centers and within society (Suárez and Custodio, 2014; Orozco, 2014 ; López et al., 2016; Hernández, 2017; Torres and Cobo, 2017; Aretio, 2018; Pérez, Mercado, Martínez, Mena and Partida, 2018). The integration and evolution of the social context with technology is generating a transformation in cultural relations, communication and learning (López et al., 2016). ICT change the actions of teachers and students in the classroom, which brings a radical change regarding interactions both inside and outside the classroom (Pinto, Cortés, and Alfaro, 2017, Aretio, 2018).

And although there are students who require the presence of teachers and classmates, there are also some who learn best in silence and solitude, which gives greater importance to the pedagogical and methodological designs that, in combination with the resources and teacher preparation, they mark the results and the effectiveness of the teaching-learning process (Coaten, 2003, Marsh, McFadden and Price, 2003, Bartolomé, 2004, Pinto et al., 2017). In addition to this, the improvement of software and hardware systems and their application as intelligent tools in education have allowed the increase of quality, as well as the increase of educational opportunities. These challenges of economic development and social cohesion have in turn enhanced the growth of a productive profile with greater value and added knowledge (Albornoz, 2012).

Obviously education is an aspect of utmost importance in the lives of people. By adding ICT to this sphere, students are able to become protagonists of their own learning. But this brings with it new challenges and educational and pedagogical paradigms in which education becomes part of technology with actions such as electronic literacy, a competence that is currently indispensable for new students (Organization for Economic Cooperation and Development [OECD], 2016; Hernández, 2017).

Technological advances originate communication processes that stimulate the educational system to innovate and offer new alternatives for training. Likewise, it is possible to redimension the communication, research, teaching and learning, which applies and strengthens the educational environment (Torres and Cobo, 2017).

According to Hernández (2017), contemporary societies are transformed based on three technological areas: information technology, telecommunications and data processing. These changes impact the educational area directly. This has repercussions in the technological approach towards the daily and generational, in the improvement of the distance and digital communication, as well as in the educational aspect with the access to the digital information in a fast and disaggregated way.

And within the proposed scenario, selecting reliable information is a skill that must be developed. For Buxarrais and Ovide (2011), the teacher's function is not to transfer information, but to help the student find it, select it, identify reliable sources and teach how to cite; while the student will develop the ability to identify sources of information and know how to transform them and adapt them to their context; Finally, the institution's function is to make time and space more flexible with content management platforms for the realization of academic projects (Pinto et al., 2017) and, more generally, to facilitate infrastructure in all its aspects in order to generate inclusion of ICT in education. Therefore, educational institutions must generate an open space, in which society in general has access to technologies, and be a bastion in the digital social transformation.

Finally, although it is necessary to increase the application of technology in education, it is an act that should not be forced. First of all, you should have planned what are the benefits and technological alternatives to get students to learn in a better way. In addition, there is a need to develop competences for the efficient, responsible and ethical use of technology, which is essential for the development of a citizen or worker in the knowledge society (Ananiadou and Claro, 2010, OECD, 2016); to get the student to improve their ability to solve problems, improve the development of mental processes and promote a healthy communicative relationship.

Objective

Analyze the implications of ICT in the individual, social, communication and educational aspects of high school students, with a special focus on those aspects that are transformed in the new generations, all in developing communities.

Method

The investigation was carried out in the limits of the Ciénega region and the Altos of the state of Jalisco, in the municipality of Arandas. A mixed methodology was used, in which qualitative and quantitative tools are applied that are contrasted to corroborate the results and establish the conclusions. For this, surveys and interviews were generated that were applied to the student community of the Regional Preparatory School of Arandas, belonging to the University of Guadalajara. This, as already it was implied arribas lines, with the purpose of obtaining information referring to the influence that has the technology as far as the social thing and the educative thing, with respect to the existing infrastructure to connect to the Network that there is within the community, on the spaces available to access the Internet, in relation to the implications and connections between the phenomenon of migration and the communicative uses of these technologies, and determine the preferences of online applications, electronic platforms and Internet uses, among other issues of importance .

The methodology followed in the survey was as follows. Based on information from the community of Arandas, a random sample of men and women between 15 and 19 years old was formed. In a population of approximately 1200 students of the Regional High School of Arandas, a sample of 158 young people was formed with 90% confidence and 6% error. Finally, thanks to the survey, information was obtained on the access, devices, uses, preferences and knowledge of information technologies related to the socio-educational aspects of this representative group.

On the other hand, a semi-structured interview format aimed at the student population of the same institution was used for the interviews. Through this, eight informants communicated aspects about their customs, culture, social relations, school dynamics and aspects focused on the evolution of their sociocultural dynamics from the irruption of ICT in their daily environment. The interviews were recorded in audio and video format and then captured in a text document. Finally, the Atlas.ti software was used for the qualitative analysis, which makes a series of codifications with which networks are formed with the aim of analyzing relationships between different elements.

Results

Quiz

With a total of 161 respondents, we met more than the minimum number of surveys required for the percentage of confidence determined. The results of these allow to observe the following. The average age was approximately 16 years, because most of them were in high school. In addition, it is possible to observe that the female population surveyed is slightly higher than the male population. It is noteworthy that none of the respondents was employed in field work, even when the survey was conducted in a community that has deep roots in young people being embedded in the family economy through this work activity - which marks a Interesting change that answers one of the research questions.

Regarding the use of electronic devices, three different types are mentioned. First of all, it highlights the fact that the smart cell phone is used by almost all the students, who mainly consume medium and low-end equipment. It should be noted that not everyone uses it to surf the Internet, even if the device has this application; the main use is rather related to communication. In second place is the computer, with a cost higher than the telephone. This device has three quarters of respondents, approximately, but only slightly more than half use it to surf the Internet. In third place, the electronic tablet is positioned, which implies a cost very similar to that of the smart cell phone. This device is less than a third of the respondents and only a quarter of the total is used to surf the Internet.

As for the electronic devices that are available at home, television is the one that has the most presence: almost all of them manifest having a television. The computer is followed by more than two thirds. It is important to note that the landline does not have a presence in half of the houses, which is an important fact considering that this medium provides the digital subscription line (DSL), one of technology families to access the Network. Finally, the radio is far behind with less than a third of respondents.

The Internet connection by any means is just over two thirds and has as its main place of pairing the house itself, with almost all respondents. Then you have another person's house with half the respondents, followed by the workplace and the school, with a percentage equal to one third. Below those already mentioned are the following: a public place, cybercafé and

library, in that order. The main connection service is DSL, with an amount that represents half of the respondents; it is followed by the cellular data network and then the cable service.

Almost all of the respondents stated that their main means of connection is the cell phone. Then there is the laptop with just over a third. The desktop computer appears in the third place of this list, and already below the tablet and the television.

As for the days of connection, three quarters are connected daily; the rest only some days of the week. One to three hours of navigation is the average of almost half of respondents; followed by the connection period of three to seven hours with little more than a third; Lastly, very few report sailing more than eight hours, or less than an hour: around a tenth in both cases.

The main use of the Internet is to perform tasks; almost all of the respondents expressed the above, which is logical because the target population are high school students. Then communication is closely watched, with more than three quarters of respondents. It is followed by social networks with a considerable amount of more than three quarters. In the list continues the use related to fun with just over half and services with almost half. While only about a third say they use the Internet for paperwork and labor issues.

As soon as the preference for social networks is Facebook with almost all respondents. This is followed by WhatsApp and YouTube closely. Below is Twitter with almost a fifth. The time spent on social media in more than half of the respondents represents approximately one visit per day. Below is the frequency of three to five days with a quarter of respondents approximately, and finally, one to two days with just one tenth.

In the section on knowledge about virtual universities, you have more than half know what they are and how they operate. However, only one tenth could name one, which reflects the need for these institutions to implement an advertising campaign in these communities. In addition, of the respondents little more than a tenth have studied an online course or are currently studying it. But a quarter of them are interested in continuing their studies in this modality, which demonstrates the importance of bringing virtual universities closer to these student communities. Regarding the blended study programs of the Ciénega University Center (CUCiénega), less than half know them. It should be noted that the aforementioned

CUCiénega does have a presence with the academic offer of some careers in this community, however, based on these results, it is necessary to make a greater diffusion.

Interviews

The interviews were carried out in the Regional High School of Arandas of the University of Guadalajara. They were applied to a total of eight students of different baccalaureate degrees: four of first grade, three of second and one of sixth grade. And as for gender: six women and two men.

The informants, in this case young adolescents from the city of Arandas, showed empathy towards the interviewers and towards the situation of being in front of a camera, as well as predisposition to talk about the topics that were discussed. So it follows that they are active young people with skills for socialization, fluent in communication and expression of their ideas and thoughts.

Based on the information obtained from the interviews, an analysis was carried out using the Atlas.ti software, where the answers were coded. These codes formed networks, which facilitates both the organization of information and the analysis itself.

The established codes were the following:

- Location
- Family abroad and contacts abroad.
- School grade.
- Reliable information.
- Social influence.
- School influence.
- Connection.
- Access to apps.
- Handling of electronic devices.
- Internet use.
- Public access.

The networks that emerge from the relationship of the codes are described below.

- Locality and migration network. This network shows the locations where each of the informants come from along with the information regarding family members abroad and if they have contact with them. Most informants have relatives abroad, especially uncles. They claim to have contact with them, which generates digital interaction: messages, video calls, sending photos, videos and being part of the social networks of the same family members. Family members work in different cities in different trades, some even have their own business. In this regard, a high percentage of informants maintain communication with them through social networks, such as WhatsApp, Facebook and Instagram.
- School grade network and reliability. For the school grade network, high school student informants come together: four of the first grade, three of the second grade and one of the sixth grade.

In the area of reliability, it was added with regard to the search of reliable information for the accomplishment of tasks and school projects in order to know if there is a culture of searching for adequate information; or if, on the contrary, only the information is taken without first reviewing the sustenance of this.

The informants students of the high school commented that yes the fact is encouraged to verify that the information they are obtaining is from reliable sources, whether they are magazines, articles, pages or platforms where the information is true, to be able to translate it into their jobs and school projects . Which indicates an increasing valuation of the supported information, and discards of everything what does not maintain a structured format or is without bibliographical references.

In addition, the capabilities related to technologies have been developed, since they know how to use educational application programs, such as Microsoft's parcel service and information search platforms on the Internet.

- Influence network. It deals with aspects of education and the dynamics that exist from the influence of technology. In this regard, informants mention that teachers promote the search for reliable information and are guided in the use of pages and programs for the preparation of work. In such a way that it is possible to infer that technology has become a facilitator of work and study, an effective, rapid, benefactor influence. Technology is, therefore, a tool that opens the doors, according to the informants, since the search for information occurs in a matter of minutes, with the advantage that it is more synthesized and especially focused on the needs of the subject who demands said information. In addition, it reduces the effort for the preparation of works.

On the other hand, despite having pages with excellent information, when creating their tasks, the information obtained is not analyzed or synthesized, but the bad practice of "copying and pasting" is used, which generates a counterpart or negative effect of the impact of technology on the educational issue. So it is possible to deduce that there is more access to information, but this openness and ease generates, in part, a deficiency in the understanding and development of analytical and critical capacity.

Regarding the social aspect, everything is summarized in dysfunction, young people move away from reality, people and social relations present. Some people are abstracted in the use of the telephone, which triggers a change of interests, ways of thinking and acting. Also, there is the dynamic that is based on the camouflage of the own image: the purpose of pretending to please others. According to the informants, there is no person who does not criticize some aspect, attitude or way of thinking of someone else, which generates a chain of prejudice and hypocrisy that leads to an imbalance and discomfort among the inhabitants themselves.

They are young critics towards situations that happen in their context, which have to do with information technologies. They also agree on the social aspect that technologies separate people because of their excessive use, describe a society with prejudices and a need to show something they are not.

These situations promote the critical and analytical part of the informants, as well as their interest in wanting to change somewhat the things that are lived within the city. For example, use technologies in a responsible manner and that this does not invade the

development of skills, skills and knowledge about education. Also respect interpersonal relationships and put aside the cell phone while socializing and avoid criticism of other people, either by digital networks or directly.

- Connection network. In this network the data referring to the type and quality of connection is involved: what electronic devices are counted, what access to applications is available, what is the use that is given to the Internet, and whether access to the Internet is available in public spaces.

Firstly, in terms of connection, it is presented efficiently in the basic communication issues: chats, messages or calls through a digital application. For the question of tasks and jobs, where rapidity is required to search for information, when trying to follow links within a web page or when opening more tabs in browsers to continue research, the connection is saturated. Even, sometimes, there is no telephone signal or internet network, which causes a delay in activities. In addition, the Internet is used in order to have contact through applications that allow graphic communication, and that facilitate the generation of visual content, such as photographs, videos, images, publications, among others, that can be shared by them. Applications. In the background, the Internet is used to carry out school tasks and projects, since it facilitates information management in programs that allow easy, fast and attractive creation. Finally, the use of the Internet for entertainment is mentioned: in this case to watch movies.

The need shared by the informants is that of greater and better access to the Internet, given that the connections are not entirely functional, there is no public place where they can access the network properly, mobile data often fail as well as the internet at home, especially if there are several connections to the same service and if it is accessed at the same time.

The electronic devices that you have are mainly computers and smart cell phones. The computer has a primordial use to do tasks, search for information, research and watch movies. The cell phone is used to communicate through applications, take pictures, videos and play music.

The predominant applications in question of use are mainly Facebook and WhatsApp. Facebook is used to post content of interest, share photos, have contact with relatives who live abroad or with friends and family members who are in other parts of Mexico. WhatsApp

is used for communication, either through the function of video calls, sending photos, videos, audios, music, or the creation of both family and social groups.

On the other hand, Instagram and Snapchat are used to publish photographs and videos. Messenger to send messages and voice notes. In addition, portals such as Ask are used, which is a space to ask questions of people close to you and those of other countries.

Access to the Internet in public spaces is scarce. It is mentioned that in a kindergarten and a departmental store the signal allows to connect to the Internet. Another place where there is a network is in the High School, however, due to the issue of users, it becomes slow and inefficient.

Digital profile of the baccalaureate student in developing communities

Based on the survey and interviews conducted, a profile of the student in developing areas was elaborated. This profile shows characteristics that differ from the predecessor generations because, despite being part of communities in which the work in the field is very marked, this generation not only does not have tasks of this type, but is entirely dedicated to study without developing any work activity. Young people, who have an average age of 16, have the ability to use various electronic devices, which they use to find and edit information, either graphic or written. In addition, they present knowledge to discern between that which could be apocryphal or true, as well as to differentiate that information that is based on the scientific knowledge of the one that does not. However, the possibility of having access to information that has already been processed and easily located has the consequence of undermining the understanding and development of analytical and critical capacity.

The vast majority have access to the Internet. Among the main uses are those related to communication with migrant relatives abroad, as well as for their daily work of study and leisure. They are young people immersed in a globalized culture through social networks. Which results in social dysfunction and personal relationships to be abstracted from reality and remain in a virtual rather than personal, despite being clear about the aspect of responsibility in the use of applications and electronic devices. Likewise, they are willing to join the online training. In such a way that they are open young people, who are constantly in contact with customs, information, fashions and ideas from other parts of the world. This

undoubtedly has an effect on the change of mentality, an action that distinguishes these generations of cross-border developing regions. However, they suffer from the deficiency of the means of connection and communication, as well as their poor quality, which reduces their technological development compared to their peers in urban communities.

Discussion

Digital networks help recontextualize digitally from mass self-communication regional identities. They also reconfigure the regional ethos, as well as memory and local self-identity. Thus, computer transformations from local heterocommunication have a digital impact on the local culture and are the basis of regional transfiguration (Pérez et al., 2018).

However, the few Internet access points show an important factor regarding the lag between public policies and the accelerated growth of the information society (Pedraja, 2017). And even more considering that this population has around 77,000 inhabitants (National Institute of Statistics and Geography [Inegi], 2015): a city of this size should not have so little connectivity at present times. Definitely the above is not in tune with respect to what the Ibero-American Program (Albornoz, 2012) proposes.

Regarding the educational issue, there is a concern to identify and select reliable information that comes from articles, magazines, books, platforms and web pages; sustained information and evident reliability, nuclear features in the generation of true knowledge. It is equally imperative that teachers promote this habit for the development and growth of students. This demonstrates the concern to achieve correct roles within the new culture of education, as mentioned by Buxarrais and Ovide (2011).

The facilities provided by the technology are well used. However, it coincides with Ananiadou and Claro (2010): it is possible to observe decadence in the capacities to break down, analyze and synthesize information, which is a dysfunction that does not depend on information, but on those who use it, a very important competence in the current era (OECD, 2016). Likewise, it evidences the need to acquire skills for the efficient, responsible and ethical use of technology.

Adjustment in public policies is necessary (Pedraja, 2017), because the connection through companies, in this case Infinitum, Telecable and mobile data, are for some effective

issues; while for others, when high speed is needed and the execution of multiple activities at the same time, this same connection presents faults. When carrying out tasks or school projects, the network becomes weak. Situation that is even in places of payment, not to mention in the few public places that allow access to the Internet, such as the Preparatory School, which is detrimental to educational and social development.

On the other hand, it is possible to observe a decadent social context in terms of relationships and well-being, mainly due to the prolonged use of electronic devices, which generate a displacement and distancing: from a real site to a virtual one, of people and tangible situations to some more abstract ones. In addition, there is vulnerability for young people due to cyberbullying. This generates instability in one's own identity, which becomes complex and multifaceted in order to please and be accepted by others. So it is necessary to work digital skills in students to achieve the correct, responsible and ethical use of technologies for the benefit of their person and their social relationships (Ananiadou y Claro, 2010).

Regarding the possession of electronic devices, it is observed that there is access to this type of devices, such as the computer and the cell phone. The computer mainly with school use; the cell phone, as the main means of communication. In terms of applications, Facebook and WhatsApp are the most used, which shows a close incorporation to technological globalization through the large techno-digital companies that set a worldwide trend, and represents a low level of isolation and a high degree of linkage to the world society (Fidalgo, 2014), a situation that is occurring in diverse communities of these characteristics in different rural regions, as pointed out by López et al. (2016).

Some of the data obtained both in the survey and in the interviews coincide with those found by the Internet Association (2018). However, the results obtained in this study maintain their peculiarities and differences as a community in development. This research has as a strength that responds to the stated objectives due to the social group that participates. Even with everything it is necessary to observe as limiting the fact of having been applied to a single educational institution. Undoubtedly this is sufficient reason for a subsequent investigation that contrasts diverse communities in the region.

Conclusions

The linking of both development and rural societies to a globalized global organization is clearly reflected in education and its evolution. In such a way that if at some time it was thought that these communities remained isolated, today it is possible to observe their openness and connection to the rest of the world (Fidalgo, 2014). Regarding education, it is possible to determine that in the baccalaureate level stage the incursion of educational organizations in all their roles to the globalized digital technological environment is observed. However, there are still some lags that must be reduced in order to be comparable to developed regions in developing countries, and therefore, with developed regions of leading countries.

Regional societies suffer phenomena of transfiguration towards contexts of open regions in a global way. The cultural transfiguration of local patterns is like a "regional mark" of the identity of the particular culture of society. These patterns are the design of regional autoimmunity strategies in the face of globalization.

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Rol de Contribución	Autor (es)
Conceptualización	Luis Mexitli Orozco Torres «igual» / Eliseo López Cortés «igual»
Metodología	Luis Mexitli Orozco Torres «igual» / Eliseo López Cortés «igual» / Guadalupe José Torres Santiago «igual»
Software	No aplica
Validación	No aplica
Análisis Formal	Luis Mexitli Orozco Torres «igual» / Eliseo López Cortés «igual»
Investigación	Luis Mexitli Orozco Torres «igual» / Eliseo López Cortés «igual» / Guadalupe José Torres Santiago «igual»
Recursos	Luis Mexitli Orozco Torres «igual» / Eliseo López Cortés «igual» / Guadalupe José Torres Santiago «igual»
Curación de datos	Luis Mexitli Orozco Torres «igual» / Eliseo López Cortés «igual» / Guadalupe José Torres Santiago «igual»
Escritura - Preparación del borrador original	Luis Mexitli Orozco Torres «igual» / Eliseo López Cortés «igual»
Escritura - Revisión y edición	Luis Mexitli Orozco Torres «igual» / Eliseo López Cortés «igual» / Guadalupe José Torres Santiago «igual»
Visualización	Luis Mexitli Orozco Torres
Supervisión	Luis Mexitli Orozco Torres
Administración de Proyectos	Luis Mexitli Orozco Torres
Adquisición de fondos	Luis Mexitli Orozco Torres