THE USE OF TIC'S IN MUSEUM SPACES. FROM THREE CASE STUDIES: THE NATIONAL HISTORY MUSEUM, GEOLOGY MUSEUM AND ECONOMICS INTERACTIVE MUSEUM.

HÉCTOR VALVERDE MARTÍNEZ

SUMMARY:
This text will explore how different cultural institutions have implemented the use of TIC's as a museum resource because of its importance in our day, so it is to consider using them to reach new audiences and satisfy both those already captivated making their spaces places that allow a new dialogue to reach different users.
KEYWORDS: *TIC's, museum, digital technology, target audience, culture*

INTRODUCTION
Do different cultural institutions have implemented the use of TIC's as a resource museum? Have they identified the dialogue that has been made between users and space museum through technological tools they offer to their audiences? Do Cultural Places such as museums are able to identify the potential of these tools to reach new audiences and keep them enthralled? These are some questions that more than one at some point we have made by realizing the rapid advance of Information Technology and Communication, which have become an interconnected global society, where virtuality gaining ground every day and individuals do not respond the same way to different stimuli in a crisis putting the role of museum spaces becoming increasingly difficult to work.

After entering a digitized world by the end of the twentieth century, we find that today it is imperative that all human activity as companies and institutions make use of digital tools more accessible to all because society demands it. For this reason is that cultural industries, such as museums, have begun to worry about interactive dialogue with its users to keep them captive and similarly attract new audiences, and dabbling in the use of TIC's.

WHAT ARE TIC'S AND THEIR IMPORTANCE IN SOCIETY.

According to the United Nations Development Programme (UNDP) defines the Information Technology and Communication (TIC's) as *"electronic technologies and techniques used to manage information and knowledge, including those goods, services and applications that are used to produce, store, process, distribute and exchange information. Include older technologies such as radio, television and telephone, and new as computers, satellites, Internet and wireless technology. These tools are able to work related and combined to integrate our interconnected world: a massive infrastructure of wireless telephone services, standardized computing hardware, Internet, radio and television, which reach across the globe".* (Miguel de Bustos, 2006: 61). These electronic technologies have managed to permeate every aspect of daily life, especially the youth have become technophiles and we need to be at all times connected to these tools to accomplish our daily tasks.
Then we can summarize that "*in general, TIC can be considered as general purpose technologies that are characterized by providing a wide scope for improvement and development of the tasks and activities they offer applicability in a variety of products and processes [...] the advantages of TIC ranging from continuous improvement, allowing faster downloads with a multitude of uses, and you can access all kinds of information and knowledge with very different purposes as a communication between all kinds of people, it that allows a variety of products or processes for the same information can be accessed or transmitted in very different ways: radio, TV and online media, weblogs (blogs), podcasts, etc.. Finally, the connection with other present or potential future technologies shown in the relations between the Internet and mobile telephony, Internet and television or*" (Miguel de Bustos, 2006: 65). by downloading information and content to be stored on MP3 players or other technological devices such as smartphones or tablets.
This reminds me of Giovanni Sartori, in his proposal; from the book "*The homo videns: tele-directed society*" which states that the video is transforming the homo-sapiens, in a homo-videns, who believes that the word is losing value before the image, as there is already a preponderance of the visible on the intelligible, with this statement is that it is proposed that the new paradigms of teaching should consider the image rather than as a tool, the means

by which the content is transmitted.
This is why we can say that these new technologies have made the digitization and subsequent globalization of content, they provide storage and its rapid spread and cost reduction, which generates in society seek other experiences to through these means. An example is the section in which the child raises formed in the image is reduced to a man who does not read, to be softened on television and as an adult has an answer to almost exclusively visual stimuli.
So we can say that in order to disclose any content through TIC's need to be considered: evaluate the needs of the audience, identify the expected results, identify who can assist in the dissemination of content to facilitate communication and the audience to which it is addressed and intermediaries, just as it must take into account the context in which the message is to be sent to make a choice of appropriate means.
By this we mean that contemporary society is a society purely visual, therefore, must be considered lead digested the contents of the form through media.

ASPECTS OF MUSEOLOGY: A NEW INTEGRATED MUSEOLOGY

"*While utopian rejection of any technology can be a respectable, though impossible political position, our systems, minds and lives are already inundated with technological innovations, instances that must be addressed in order to be understood, as they are key byproducts of the global economy, be responsible for erasing the old conceptual differentiations exposures [...] as we enter the XXI century, it is necessary that in the world of museums take a fresh look at how science and technology products affect us*". (Vakimes, 2005:20)
To address aspects museum to find ways in which to use TIC appropriately to attract new audiences and engage in closer dialogue with different users, you must first understand what a museum is, and its role and similarly museology, because not only the museums are places where they are stored and placed the pictures or museum objects in a space, not a space means making a merely pretty or even fill it with information, which will not achieve link desired between the museum with users.
According to ICOM Statutes, adopted at the twenty-first General Conference in Vienna, Austria, in 2007: "*A museum is a non-profit organization, is a permanent institution in the service of society and its development, open to the public, which acquires, conserves, researches, communicates and exhibits the tangible and intangible heritage of humanity and its environment for the purposes of education, study and enjoyment*".
According to George Henri Rivière, museology means "*the science that studies the history and role in society, the specific forms of physical research and conservation, presentation, entertainment and broadcast, organizational and operational...*" (Zubinar, 2004:47). The way the museum seeks to open a dialogue with its users to make known its contents and present to it a broader picture of their reality.
Similarly for Aurora Leon "*museology aims projection of didactic and helpful content to different audiences, providing guidance for the cultivation of taste, sensitivity and intellectual faculties to train your users, always suggesting, never impress relating the microcosm with the macrocosm visitor of the culture in which it is immersed. The author also gives some basic principles such as:*
Respect the transformative capacity of the public.
The historical, critical, scientific and educational criteria must continue at the museum and should always be in line with the trends of the moment exhibition.
This is the result of socio-cultural movements of the late '60s, where under the cry of "*La Gioconda subway*" museum institution entered a crisis and began a process of democratization of itself, opening its doors to all types of audiences: example of this was in the 70's young audiences and students in general began to clutter the museums putting them in serious trouble, as it was to present the same content but in a more understandable and accessible to an audience that was raised to consume that kind of information, and although the work to capture these new audiences has been long and still continues, has made great progress in presenting the content in an innovative, fun and educational through different tools such as the use of internet, interactive, video, audio, games, among others.
This way the new museum is born, which transformed the museum demands from a static space to a dynamic and seek to meet the needs that the visitor demands for "*the idea of comprehensive museum poses that museums exist to serve the public*" (Zubinar, 2004:55).
For this reason we can say that today's museums have become dynamic spaces that are committed to society, leaving these galleries being inaccessible, under-resourced and motivated public by marketing are in the need to seek other sources of income, which has led them to explore new patterns of dissemination and promotion of spaces and content, and other resources on public museographer to attract increasingly demanding both in what they want to see and in how they want it view. However, one must be especially careful that in seeking

to attract new audiences and captivate them, while competing with other industries, such as entertainment and entertainment-avoiding convert museum projects that only appealing aesthetically and not its content, introducing digested its contents will not allow users to reflect on what is presented or engage with the information given and even sell misconceptions.

Museum strategies that institutions use to keep their audiences captivated and bring new audiences varies in each case, but new theories suggest that one must analyze the teaching techniques, outreach and communication, the purpose of museums to through its resources is to inform and to understand the various skills that are occurring, and the strategies and techniques that bring transmission processes, understandable communication. So the museum resources can range from iconographic resources, cartographic, textual, audio, audiovisual, and using new tools such as the internet and mobile phones.

To get the user to dialogue, I quote content Wagensberg who argues that "*the museum in the visitor must create more questions than those with which he entered*" (Montellano, 2007:183), consider that audiences in museums, especially science, is universal, that is, are not the same and therefore there should be no distinction in public because of age or some other characteristic, museological and museology elements are reality, that is, that the text, audio, images, games, simulations, scenery or computers should be elements that complement the content of the exhibition, not the exhibition itself, these elements must be employed museographic to stimulate and achieve interactivity on users related learning and memory using the memory as a cognitive tool activity or more, fueled by the perception, which becomes significant knowledge to the user, which is why it must be remembered that as each individual is different, cognitive different forms: kinetic, visual, auditory, etc.. And also encourage them to look for all, without neglecting the precept that a museum is a collective space that could equally be enjoyed individually.

Luis Alonso in his text *"Design Exhibition. Concept, installation and assembly"*, stresses that the design and mount an exhibition should take into account the user and explains that a good museum attracts, entertains and arouses curiosity while learning. For this reason you must define the purpose and aim of the exhibition, and likewise should consider the target audience it is aimed at the exhibition (with consideration of course, which will not be the only ones who visit, but who want to visit it more often). So it will be easier to choose the tools and reassembly museum exhibition. We must always remember our exposure assessment or museum (before, during and after) a project at any time considering that no project is eternal.

Because most museums make use of TIC's, decided during the month of October 2011 a series of surveys –outside of each of the museums chosen– to a sample of 100 users –that were getting out– in each of the museums surveyed, which sought to identify the degree of user satisfaction through dialogue had proposed museums:

National Museum of History, Interactive Museum of Economics and Geology Museum, with the use of TIC, their views about the use of technological tools in museums such as audiovisual material, use of internet, content downloads, exchange of information or using interactive, among others, as well as the dissemination of museum space, plus finding out what kind of user are and if museums are making proper use of technological tools, that is, if they have been helpful in attracting new audiences and maintain captivated.

Among the questions asked to the different users are:

Gender, age, education, occupation, how did you hear about the museum? Have you visited the museum website? What did you think? Do you know any other electronic means using the museum to be known? How about the information received and the contents of the media? How did you like the museum? Did you identify some technological tools such as interactive touch screens, video, audio, audio guides, use bluetooth, scaner, sms, etc.. supplement or disclose the contents of the rooms? What did you think? Does adequate technology resources provided by the museum? What do you consider to be improve in the museum? Do you consider it necessary to use technological tools in museums? Why?

So, after applying this user survey in the three museums studied over a period of one month, the results obtained from the surveys were:

As seen in the charts, in the National History Museum found that visitors are mostly men, and the average of all visitors are between 19 and 20 years, followed by users who are 14 to 18 and 21 to 30 years old. For this reason is that in the chart "Schooling of visitors" find that they are mostly college students, followed by middle and high school students, which gives us the target audience you are targeting this museum is the young audience , who also attend this venue for mostly homework.

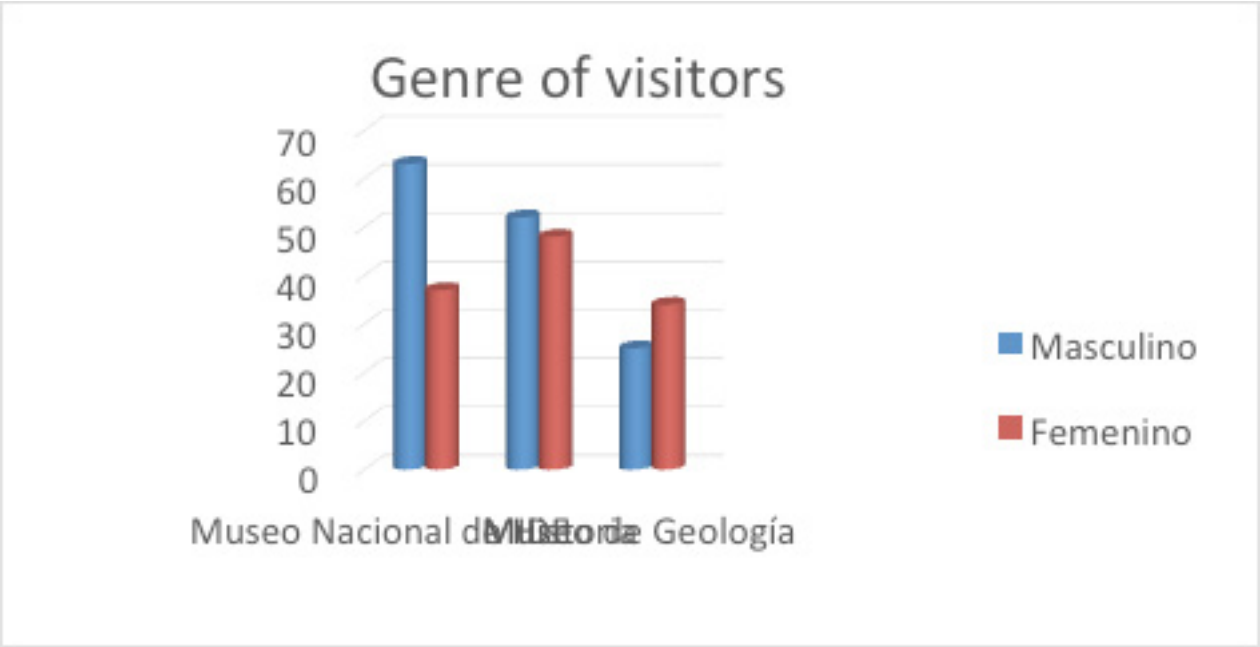


CHART 1. GENRE OF VISITORS
Methodological note:
Survey Population: Members of museums. **Type of interview:** Personal (face to face) in survival **Sample Size:** 300 cases. **Margin of error:** + / - 4% at 95% confidence **Date Closed:** October 2011. **Prepared by:** Hector Valverde.Martinez

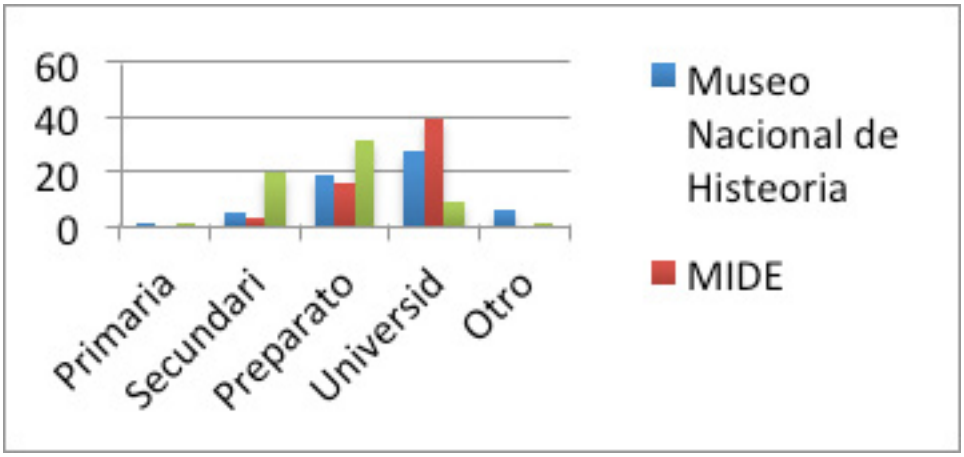


CHART 2. EDUCATION LEVEL OF VISITORS
Methodological note:
Survey Population: Members of museums. **Type of interview:** Personal (face to face) in survival. **Sample Size:** 300 cases. **Margin of error:** + / - 4% at 95% confidence. **Date Closed:** October 2011. **Prepared by:** Hector Valverde Martinez

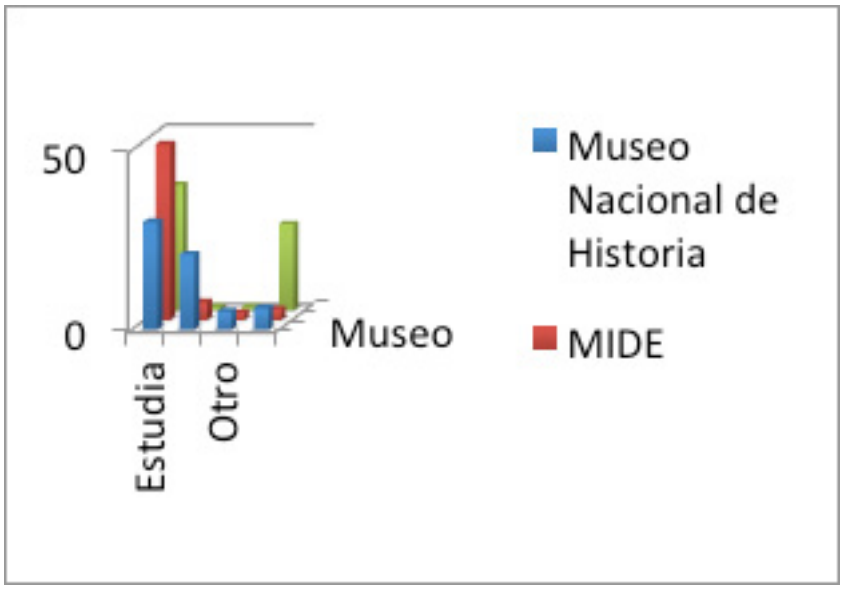
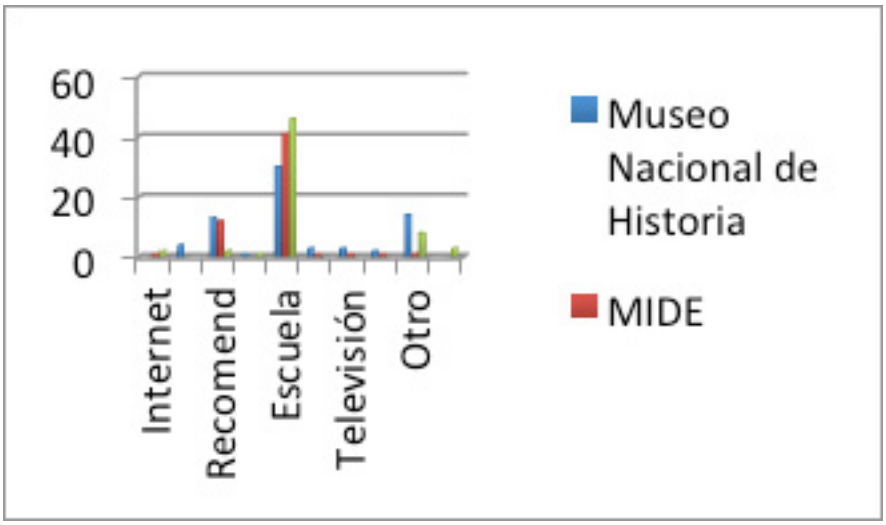


CHART 3. OCCUPATION OF VISITORS
Methodological note:
Survey Population: Members of museums. **Type of interview:** Personal (face to face) in survival. **Sample Size:** 300 cases. **Margin of error:** + / - 4% at 95% confidence. **Date Closed:** October 2011. **Prepared by:** Hector Valverde Martinez

These users perceive those spaces more attractive technological tools that manage both to entertain and to educate, as electronic devices are the means by which they can distract and keep in touch with their peers, and sometimes the first encounter with the cultural precinct is through the Internet and electronic devices.
Taking into account the above references, we can infer that they similarly determined museum appreciation and satisfaction within the space young audience, because you should also consider the degree of interaction that could have with digital tools, which would allow the users perceive the site as a boring space.
The perception of users, mostly young audience of high school and college students, do not know the museum's Web site, and those who do as good or excellent, assume that there are other technological tools to keep in touch with space and Twitter and Facebook, but are not sure of its existence, before these first approaches, consider the museum a good and interesting space, but it is very long boring and not much to do but read, and with the technological tools able to appreciate, complaint are very few and not all working properly.



GRAPH 4. WHERE DID YOU HEAR OF THE MUSEUM?
Methodological note:
Survey Population: Members of museums. **Type of interview:** Personal (face to face) in survival. **Sample Size:**

300 cases. **Margin of error:** + / - 4% at 95% confidence. **Date Closed:** October 2011. **Prepared by:** Hector Valverde Martinez

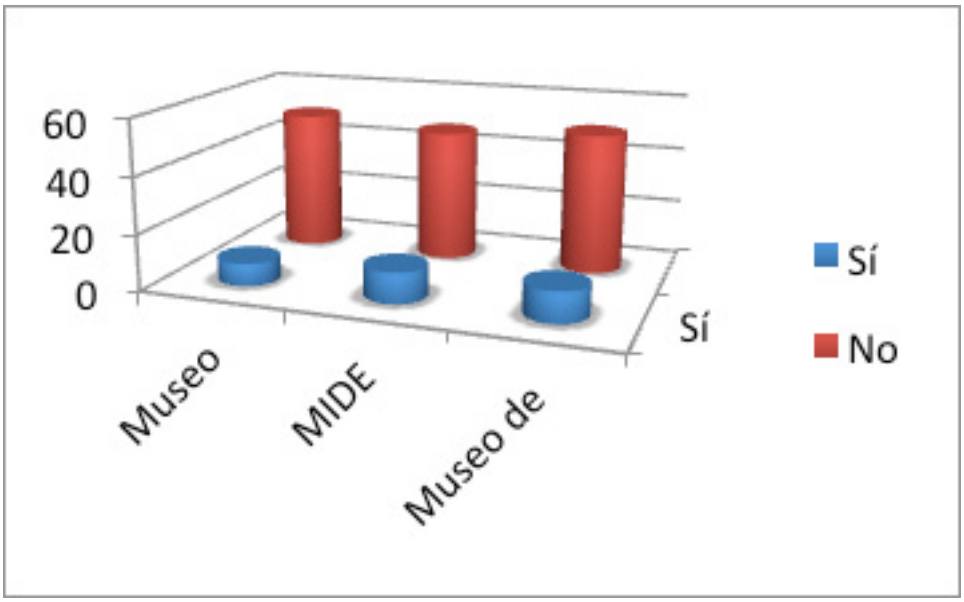


CHART 5. HAVE YOU VISITED THE MUSEUM'S WEB SITE?
Methodological note:
Survey Population: Members of museums**. Type of interview:** Personal (face to face) in survival. **Sample Size:** 300 cases. **Margin of error:** + / - 4% at 95% confidence. **Date Closed:** October 2011. **Prepared by:** Hector Valverde Martinez

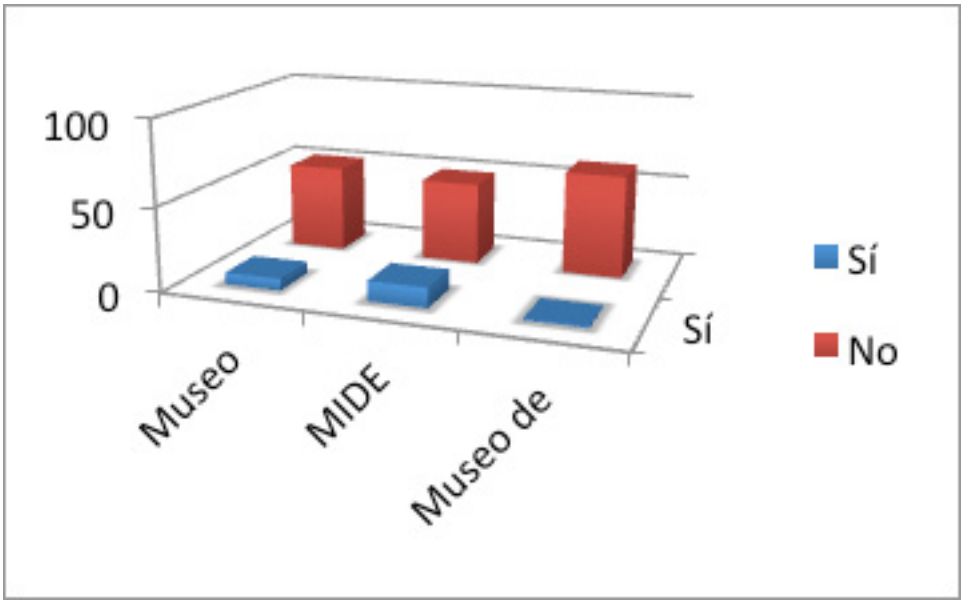


CHART 6. DO YOU KNOW ANY OTHER ELECTRONIC MEDIA USING THE MUSEUM TO BE KNOWN?
Methodological note:
Survey Population: Members of museums. **Type of interview:** Personal (face to face) in survival. **Sample Size:** 300 cases**. Margin of error:** + / - 4% at 95% confidence. **Date Closed:** October 2011. **Prepared by:** Hector Valverde Martinez

A comparison of the Castle of Chapultepec, MIDE users were very satisfied with the museum's facilities and the use of technological tools have, as seen in the charts, most users are men, and of the total interviewed, half are young people between 19 and 22 years of age, followed by young people from 14 to 18 and from 23 to 30 years.

For this reason it was found that users are mostly high school and college and decided to go to the museum for Homework.

As mentioned previously, users were very satisfied with the use of technological tools in the museum and the museum itself, however, with older audiences complained of little depth content and level of information (intended primarily for young audiences) and service of security guards, workers and staff in general which is expressed very little to explain the operation of the equipment (which similarly are very few for the high flow users).

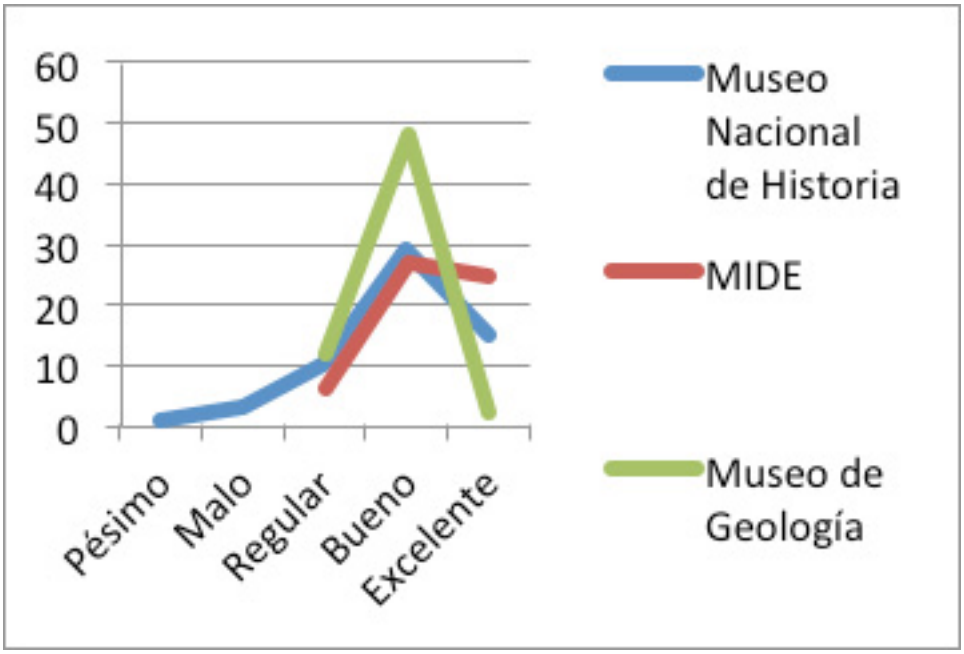


CHART 7. APPRECIATION OF THE MUSEUM
Methodological note:
Survey Population: Members of museums. **Type of interview:** Personal (face to face) in survival. **Sample Size:** 300 cases. **Margin of error:** + / - 4% at 95% confidence. **Date Closed:** October 2011. **Prepared by:** Hector Valverde Martinez

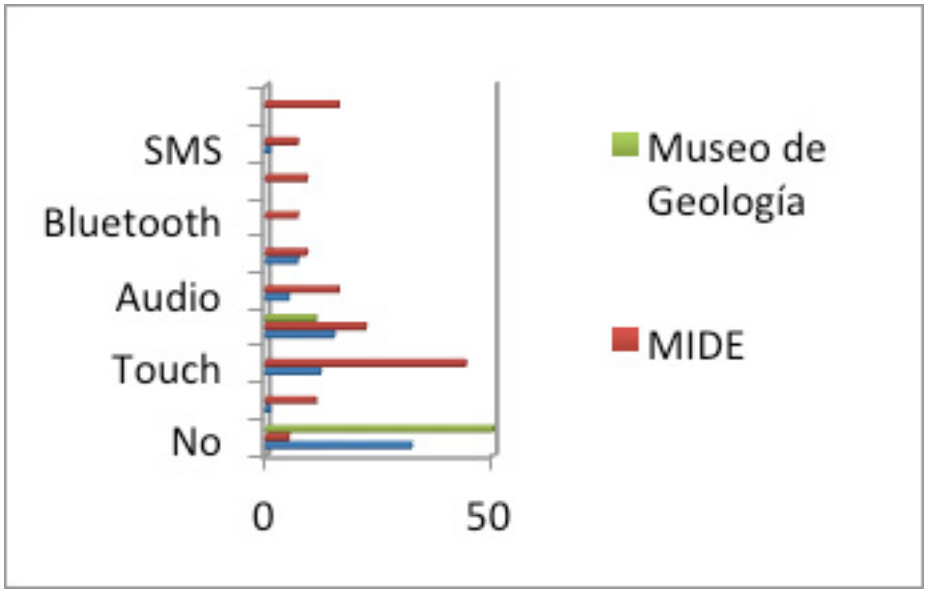


CHART 8. FREQUENCY OF ICT'S IN THE MUSEUM
Methodological note:
Survey Population: Members of museums. **Type of interview:** Personal (face to face) in survival. **Sample Size:**

300 cases. **Margin of error:** + / - 4% at 95% confidence. **Date Closed:** October 2011. **Prepared by:** Hector Valverde Martinez

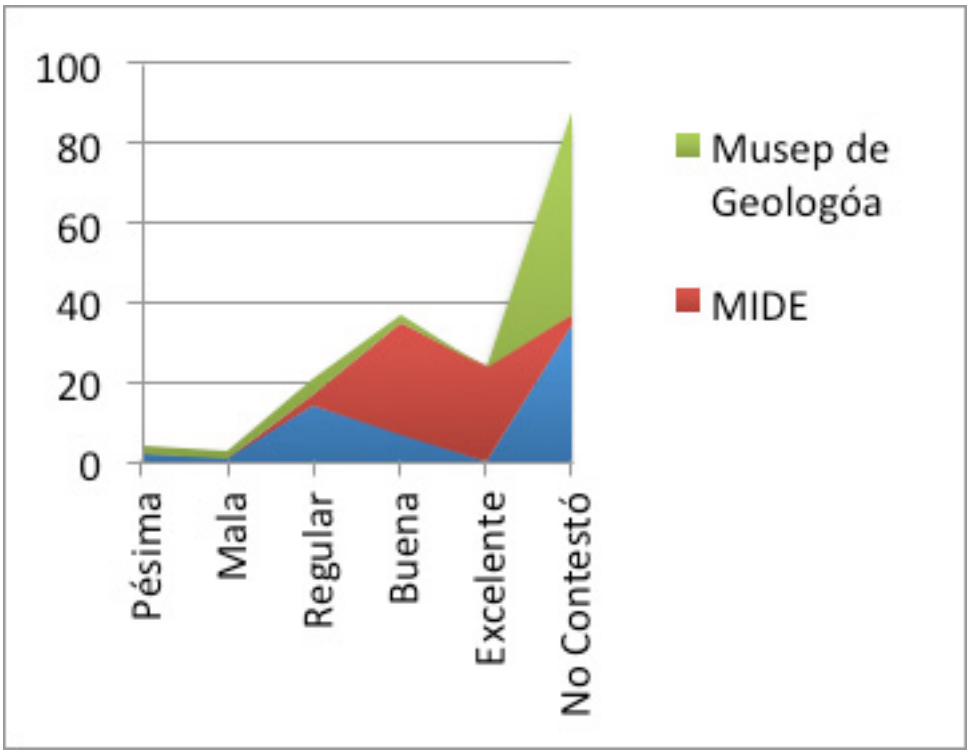


CHART 9. USING TECHNOLOGICAL TOOLS IN THE MUSEUM
Methodological note:
Survey Population: Members of museums. **Type of interview:** Personal (face to face) in survival. **Sample Size:** 300 cases. **Margin of error:** + / - 4% at 95% confidence. **Date Closed:** October 2011. **Prepared by:** Hector Valverde Martinez

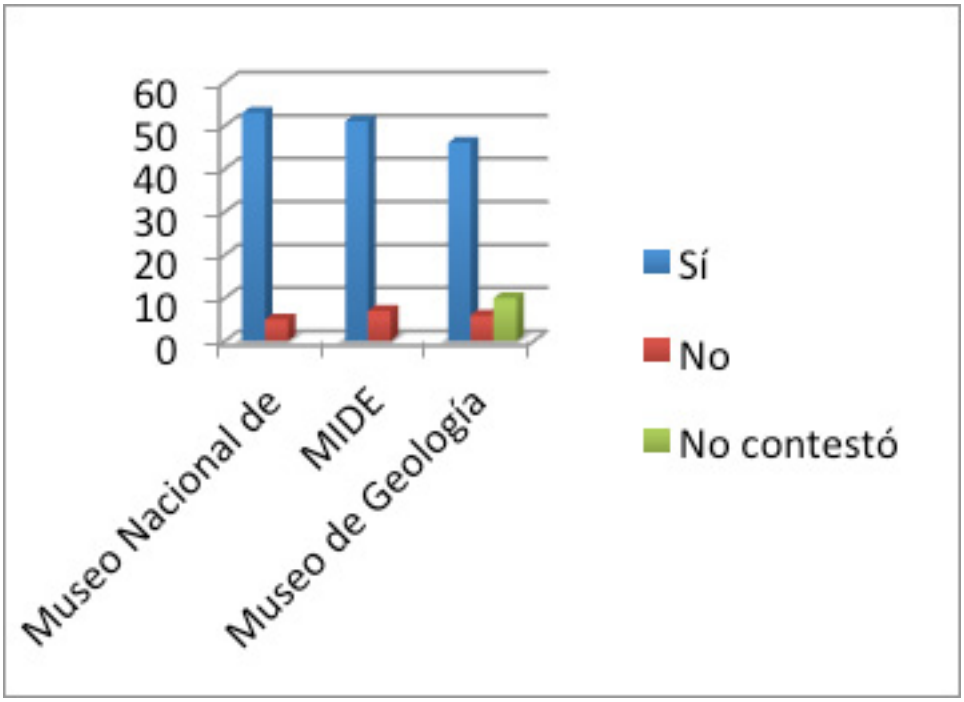


CHART 10. NECESSITY OF TECHNOLOGICAL TOOLS IN MUSEUMS
Methodological note:

Survey Population: Members of museums. **Type of interview:** Personal (face to face) in survival. **Sample Size:** 300 cases. **Margin of error:** + / - 4% at 95% confidence. **Date Closed:** October 2011. **Prepared by:** Hector Valverde Martinez

At the Museum of Geology, unlike the two previous museum is visited frequently by young people between 12 and 16 years old, mostly middle and high school students who attended for homework, unfortunately not very satisfied with the facilities museum, and although I found it interesting not represent a useful experience for learning beyond seeing the skeleton of a mammoth in person visitors noticed the use of screens and televisions, but it generated a distaste were not in operation. That is, consider a good museum space that can be exploited in a way that appeals to different users and provide information equally important in generating visitors curious to learn more about it.

It's interesting how they take advantage of new tools to dialogue with different audiences of museums, whether to invite them to attend the same or explain what they are experiencing in these areas, which is why I welcome the various museums are concerned about attracting and keep their audiences, however after this study concluded that although the National History Museum has found that through the download of web-phones is an ingenious solution for visitors, especially children, are no longer pointing bonds only ignoring the exhibits, it is not correct because what is sought is that the user visit the museum and experience within this space while more research is concerned about what displayed, and the provide all information downloaded from the Internet, many users fail to pay attention to space and grounds have since everything from the comfort of a click. Furthermore MIDE has entertain your users with interactive games, but hardly applied in games what is learned by the user, but the fact of receiving the desired information in the mail through the use of scanner is very interesting because users experience within the museum and the information they consider necessary, download and get home to entrench it in the museum experience. So even the incursion propose the use of two-dimensional codes or "QR Codes" with the format used in the MIDE, which have the ability to store large amounts of information and users can select what interests them after visiting the museum.

I believe there is still much work both in the content of museums and how to communicate, but a breakthrough is the fact that use technological tools to become known and to attract new audiences, but we must be careful not to fall into major production lacking real content, certainly the nature of the three museums is different and then the use of technological tools, but that does not mean you should avoid using them, but that should be implemented to complement and reinforce the museum space and enter user in the content of the museum.

REFERENCES

Books

Alonso, Luis. 2003. "Diseño de exposiciones. Concepto, instalación y montaje". Madrid. Alianza

Bellido, María Luisa, (Ed.) Aprendiendo de Latinoamérica: El Museo como protagonista. Luis Gerardo Morales Moreno, 2007. "Vieja y nueva museología en México". España: Trea

Hernández Hernández, Francisca. 2006. "Planteamientos teóricos de la museología Cap. 6 La Museología ante los retos que plantean las nuevas teorías del patrimonio". Barcelona: Trea

Miguel de Bustos, Juan C. 2006. "Comunicación sostenible y desarrollo humano en la sociedad de la información. Consideraciones y propuestas. Capítulo III. Las tecnologías de la información y de la comunicación (TICs)". Agencia Española de Cooperación Internacional Ministerio de Asuntos Exteriores y de Cooperación.

Miguel de Bustos, Juan C. 2006. "Comunicación sostenible y desarrollo humano en la sociedad de la información. Consideraciones y propuestas. Capítulo IX. Estrategias de comunicación para el desarrollo". Agencia Española de Cooperación Internacional Ministerio de Asuntos Exteriores y de Cooperación.

Montellano Arteaga, Marcela, "Notas sobre museología total y el Cosmocaixa". México

Serrat Antoli, Nuria. 2005. "Museografía didáctica". Barcelona: Ariel

Zubiaur Carreño, Francisco Javier. 2004. "Curso de museología". España: Trea.

Articles

De Montebello, Philippe. 2005. "Art Museum: Marketing, promotion, and the public trust"; Revista M Museos de México y del Mundo; CONACULTA, México, Vol. 1, Núm. 3, Otoño 2005

Fernández del Villar, Miguel A. 2005. "La era del cuestionamiento"; Revista M Museos de México y del Mundo; CONACULTA, México, Vol. 1, Núm. 3, Otoño 2005

Vackimes, Sophia. 2005. "El Museo Contemporáneo: ¿simetría de sustancia y accidente?"; Revista M Museos de México y del Mundo; CONACULTA, México, Vol. 1, Núm. 3, Otoño 2005

Vilchis Esquivel, Luz del Carmen. 2001. "Memoria e imaginación: componentes del sentido en el diseño museográfico"; Ponencia presentada en el Simposium del ICOM "Museos y Memoria". México

"Museum Definition", ICOM http://icom.museum/who-we-are/the-vision/museum-definition.html, october 24th, 2011