

## **A study case on the use of Web resources in the teaching-learning process at a public higher-education institution: The University Center of Lagos (University of Guadalajara)**

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**Abstract:** The use of web resources in education is very common nowadays, this study presents a general view about the importance on the use of Information and Communication Technology (ICT) in the teaching-learning process in the context of Higher Education Institutions and more particular about the use of web resource in local contexts.

We did a descriptive approximation about the students and professors perception on the use of web resources in one Campus of the second most important higher-education institution in Mexico, the University Center of Lagos, from the University of Guadalajara. In this study, 370 students and 55 professors from pregraduate participated. Data was collected by using a questionnaire with closed question and the Likert scale with 25 questions.

The study allowed identifying some matches and differences in the perception between students and teachers about the usefulness of these web resources in their teaching-learning process.

**Keywords:** New Technology & education, ICT and learning, social network & education, internet & higher education, Web 2.0, B-learning

### **1. Introduction**

Nowadays, in the development of educational activities, the use of Information and Communication Technologies (ICT) belong already to a routine character, in this article a descriptive-quantitative approximation is made about the perception that professors and students of a public higher-education institution have about the use of some Web resources to support the teaching-learning activities. In this called "information era" [1], the ICT have influenced in all spheres and one of the fields that have been transformed the most by the implementation of tools that have produced a new stoking, communication and information-generating capacity is the education sector.

For terms of this work, we will resort to the ITC definition written by Rosario [2], which identifies them as "the ensemble of technologies that allow the acquisition, production, storage, treatment, communication, registration and presentation of information, in the form of voice, images and data contained in signs of acoustic, optic or electromagnetic nature. The ICT include Electronics as the primary technology that supports the development of telecommunications, information technologies and audiovisuals". About the use of these New Information and Communications Technologies (NTCI) Almeida S. quoted by Prieto [3] mentions that they have been introduced to the most dissimilar fields, among them, teaching, where NTCI have determined the appearance of new roles for the education institutions, the educators and the learners, as well as in the buildup of support materials to the learning process. In the same sense Morales [4] argues that NTCI like the internet, telematics, cell phone, etc. are the central axis in the transformation of the

education world “the usage of NTCI is transforming diametrically the teaching-learning processes ... currently, the trend is teaching with electronic and digital media, teleconferences, electronic portals, social networks, electronic mail. Likewise, for students the quotidian use of New Information and Communications Technologies has become obligatory”. On that regard Marqués P. quoted by Prieto [3] points out some of the functions of the TCI in education, where we can perceive some of their uses:

1. Source of information (hypermedia).
2. Interpersonal communication channel, for collaborative work and for the exchange of information and ideas (e-mail, telematics forums, social networks).
3. Media for expression and creation (texts and graphics processor, web pages editors and multimedia presentations, video camera).
4. Cognitive instrument and to process information: spreadsheets, database managers.
5. Management instrument, since they automatize diverse management jobs of the center: secretariat, tutorship, assistance, libraries.
6. Interactive resources for learning. The multimedia educational resources inform, train, simulate, guide learning, motivate.

From this new education scene in which the use of technology is habitual and where the students are heavy users of internet[5] this work aims to analyze, with a higher accuracy, the perception that a group of professors and students have about its use in the teaching-learning activities.

## 2. Literature Review

The presence of ITC in the teaching-learning processes is relevant to understand the current interaction between the performers in whom the usage of those tools fall on, in this regard, a great numbers of works have been made that grasp on how the professors and pupils perceive their mediated relationship by the use of this new technology. Moguel [6], Riascos and Ávila [7] after revising several surveys performed in Mexico and Latin America recall on the perception of the advantages and disadvantages on the use of ITC in the education processes. For professors, they represent a strength in the formal communication that they allow with large groups, along with their utility to encourage debate, to designate and check assignments, to attend scholar groups that are geographically disperse, professors also identify that ITC have allowed them to improve their teaching practice, observing a cognitive enrichment at a personal level. Weaknesses have also been identified, like the lack in interpersonal contact with the learner, the access faults, among others. Students, meanwhile, identify the Web as a tool that facilitates their scholar learning, it gives them the opportunity to satisfy personal needs, not related to the educational field, as well as recreation and communication. It was also found that self-learning emerges as a common modality for the young. Nowadays, students also grant importance to the use of collaborative tools of the “2.0 Web (forums, wikis, chats, blogs, social networks) for their skills formation” [8]. In literature it is identified that the young perceive the use of technology as an indispensable tool to appropriately get on in the modern world, that it allows them to keep updated and to successfully be inserted to the social and working life.

In the general revision of literature, it is shown that some professors have difficulties in using the technological media or that they use the ITC less that the students, which reflects when the methodology strategies that the professors use do not include these technologies in the learning process. However, opposite to this perspective it also exists literature that refer educators are in constant technology update and move forward in the knowledge of didactic applications appropriate for the development of their subjects and that these variety of tools have allowed the professor to see in the student a greater knowledge apprehension and interest for the class, and for the student to build a high cognitive enrichment. Other surveys [7] explain that some other variables distinctive of professors such as: gender, age, academic level, or of the surroundings, for example: resources, the directives attitude or contents, influence in their approach to ITC, in this matter it is supposed that the teachers perception to ITC its stated by the degree of their use.

Within the use of ITC in education as appreciated in the previous section, online resources stand out, this study efforts to focus in the perception among the students and teachers of these many tools that have modified the teaching activity, therefore we will now specify the conceptualization and definition of these, trying to enumerate the great diversity of Web resources quoted in the specialized literature in this matter.

Harasim et al [9] points out that the learning networks in computer surroundings is present in all levels and fields of education “at the University, students use networks as a complement to the course activities, to participate in the network shared courses or to register in complete programs that take place in a virtual campus which are accessed through computer networks”, as you may already know it is no longer required to attend a classroom at a given time to acquire a training, which can go from basic practical knowledge to a bachelor degree or very specialized courses [10]. Thus, web facilitates a paradigm change in human interaction by allowing a real time connection, situation that in the pedagogic practice has strengthened the teaching-learning process.

As to terminology to denominate the use of internet in education, we found the concept E-learning which Rosenberg [11] refers to as the use of Internet Technologies to promote a wide display of solutions that improve knowledge and performance. As also Carrasco [12] identifies the term with the wide spectrum of ICT resources, and the learning, to the construction of knowledge of the learning subject. Adding to this concept, Alvarez et al. [13] mentions that “In online education, the important thing is the communication means done by the computer, that provides internet access and involves multiple ways to communicate and interact: electronic mail, electronic bulletins, boards, conversations, information exchange, video conference, audio conference, shared navigation even the novel virtual trips. Besides, online education doesn’t collocate as the axis of learning the teacher-student relationship, but the learning itself, where the contact of the student with the educational material is very important.”

Below, we present some of the web resources that are considered important in the Blended Learning modalities [14] including the relevant use of Web 2.0 tools [15], which frequency of use and perception of utility were analyzed in this work:

Table 1. Web Resource analyzed in the survey

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You Tube
Facebook
E mail
Chat
Digital Libraries
Wikis
Blogs
Virtual Blogs
VideoBlogs
Twitter
Podcast
SlideShare
WebQuest
LinkedIn
MySpace
Second Life
Flickr
RSS

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### 3. Methodology

For this survey a mixed methodological model was used with a qualitative cut allowing to delimit the scope of analysis, identifying the online resources put to use in the teaching and learning processes in the context of the case and what are the defining variables that delimit the frequency of their use, and a quantitative cut to allow an analysis of the perception of these variables in the academic community of the University Center of Lagos.

Population and sample: We worked with an unrepresentative sample of a non-probabilistic type, this because as a sample we took professors and students in course during December 2013 and who had the availability to answer the identification of perceptions instrument. The sample was composed by a total of

370 students of the diverse Educational Programs (EP) and 55 professors also from varied educational programs.

Instruments: A survey was designed, through Likert scale, that allowed the measurement of the students perception about the use of Web tools and their utility in the teaching-learning processes, the following variables we tried to identify:

- Frequency of use.
- Ability of usage.
- Interaction type in their usage.
- Utility in the teaching-learning usage.
- Source of tools knowledge.
- Access options.

Research Procedure: A bibliographic review was held, that allowed to identify the variables to be analyzed, from there we categorized them and we designed a questionnaire that permitted us to operationalize the measurement of the students and professors perception, using closed questions through Likert scale. The questionnaire was applied only in one occasion to a non-probabilistic sample with students and course or full time professors that were at that moment in the school building. Once the information was collected, it was quantitatively analyzed trying to find an initial description of professors and students perception on the use of Web tools in the teaching-learning processes.

#### 4. Results

##### Use of Resources:

In response to the question about what resources they use in general, professors and students coincided in three web tools and the most used ones: You Tube, Facebook and E-mail. Likewise, in table 2, the least used web resources are shown: RSS, Flickr, Second Life, LinkedIn, Myspace, WebQuest and SlideShare.

Table 2. Web sources used by Students and Professors

Web Resource	Students		Professors	
	f	%	f	%
You Tube	370	100	50	90.90
Facebook	370	100	52	95.45
E mail	340	91.89	55	100
Chat	340	91.89	35	63.63
Digital Libraries	280	75.68	40	72.72
Wikis	240	64.86	15	27.27
Blogs	210	56.76	15	27.27
Virtual Blogs	160	43.24	25	45.45
VideoBlogs	150	40.54	10	18.18
Twitter	100	27.03	20	36.36
Podcast	90	24.32	25	45.45
SlideShare	80	21.62	5	9.09
WebQuest	60	16.22	0	0
LinkedIn	50	13.51	25	45.45
MySpace	30	8.108	5	9.09
Second Life	20	5.405	5	9.09
Flickr	20	5.405	0	0
RSS	10	2.703	5	9.09

##### Factors for not using the resources:

On table 3, we can appreciate the factors that influence students on not using these resources. In the case of Twitter and Myspace the factor is not requiring them. Meanwhile for RSS, Flickr, Second Life, LinkedIn, WebQuest, SlideShare and Podcast the factor is that they are unknown to them.

For professors, the "Other" factor is highlighted for resources such as Flickr, SlideShare, Second Life, WebQuest, LinkedIn, VideoBlogs, Wikis, Blogs and Virtual Blogs, which limits us to discover why they don't use these resources. Another important factor is unknowing the resources, this for the case of RSS and WebQuest.

Table 3. Percentage in factors for Students and Professors not using the Web resources.

Web Resource	Students					Professors				
	Unknown	Unnecessary	Complexity	Inaccessible	Other	Unknown	Unnecessary	Complexity	Inaccessible	Other
E-mail		8%		0%	3%					
Chat		8%								18%
Virtual Blogs	22%	22%	3%	3%	3%		9%		7%	27%
Digital Libraries	5%	8%	3%		5%		5%			7%
Wikis	22%	3%	8%		3%	9%	11%			
Facebook		3%								5%
Twitter	3%	48%			8%	11%	16%			16%
MySpace		70%	3%		8%	7%	24%	38%		20%
Flickr	38%	43%	3%		5%	18%	16%			38%
LinkedIn	49%	30%			8%	15%	15%			25%
SlideShare	49%	11%		3%	8%	16%	15%			33%
Second Life	51%	27%		3%	5%	7%	16%			36%
You Tube	3%						5%			
Podcast	41%	19%	3%	3%	3%		22%			9%
RSS	65%	22%			5%	22%	18%			18%
Blogs	14%	14%	5%	5%	3%		20%		7%	29%
VideoBlogs	14%	27%		11%	3%	7%	22%		11%	29%
WebQuest	41%	14%	3%	3%	14%	35%	7%			25%

**Frequency of use:**

About the frequency of use, in table 4, it is visible that Facebook, You Tube, E-mail, and Chat are the most frequently used resources by students. Besides, we can observe that it exists a great variation in the frequency of use of the other resources. On the other hand, professors use with a higher frequency resources like Chat and Electronic Mail, followed by Facebook, Chat and Digital Libraries.

Table 4. Frequency of use of Web resources in Students and Professors

Web Resource	Students					Professors				
	1-2 times per month	2-3 times per month	1 time per week	2-3 times peer week	Every day	1-2 times per month	2-3 times per month	1 time per week	2-3 times peer week	Every day
Facebook	3%		3%	29%	73%			18%	36%	55%
Chat		8%		26%	55%				18%	36%
E-mail		3%	3%	32%	53%		9%		9%	73%
You Tube		8%	12%	26%	53%		9%	36%	27%	27%
Digital Libraries	8%	13%	21%	18%	11%	27%	55%			9%
Wikis	3%	13%	11%	24%	11%		18%		18%	
Blogs	3%	13%	11%	21%	8%		18%		14%	
Virtual Blogs		8%	16%	11%	5%		18%	12%	18%	
WebQuest	8%	3%		5%	5%					
Twitter	3%	5%	4%	3%	6%		9%	11%	36%	9%
MySpace	3%		3%	5%	3%			5%		
SlideShare	5%		5%	11%	2%		9%			
Podcast		11%	5%	8%	5%		27%	7%	18%	
VideoBlogs	5%	8%	5%	18%	3%		18%			
Flickr			5%							
LinkedIn		3%		5%						
Second Life	3%			3%			5%			
RSS	3%							9%		

**Use in teaching and learning:**

In table 5 we can appreciate the resources that students and professors use, specifically in their teaching and learning activities. In students the use of Electronic mail, Digital Libraries, Facebook, Chat,

You Tube, and Wikis stand out, while for professors is distinctive the use of Electronic Mail, You Tube and Digital Libraries opposed to the under use of Chat, Facebook, Podcast and Twitter during their teaching and learning activities.

Table 5. Use of Web resources in teaching and learning activities in Students and Professors

Web Resource	Students		Professors	
	yes	no	yes	no
E-Mail	89%		91%	9%
Digital Libraries	68%	5%	73%	
Facebook	84%	16%	36%	55%
Chat	63%	26%	27%	36%
You Tube	61%	34%	82%	9%
Wikis	58%	3%	9%	18%
Blogs	39%	16%	18%	9%
Foros Virtuales	34%	8%	36%	9%
VideoBlogs	29%	11%		18%
SlideShare	18%	5%		9%
WebQuest	18%	3%		
Podcast	16%	11%	9%	36%
MySpace	5%	8%	9%	
LinkedIn	5%	3%		9%
Twitter	3%	13%		36%
Flickr	3%	3%		
Second Life	3%	3%		9%
RSS		3%		9%

**Ability to use the resources:**

According to the results obtained and presented in table 6, the respondent students who use de resources consider themselves with the skills to use Web resources: Electronic Mail, Chat, Facebook, Twitter, MySpace and You Tube stand out the most. Students also perceive that their teachers have the skills to use Electronic Mail, Digital Libraries, Facebook and You Tube, but the perception for the rest of the resources is not so favorable. Meanwhile, professors, who use the resource, in general consider themselves with the necessary skills to use the Web resources but they consider their students more capable to use some tools like MySpace, You Tube, Blogs and VideoBlogs.

Table 6. Perception of ability to use the Web resources in Students and Professors (Scale 1-10)

Web Resource	Students		Professors	
	Ability to use the resource	Ability of my professors at use of resource	Ability to use the resource	Ability of my students at use of resource
E-mail	8.1	7.7	9.3	9.4
Chat	7.9	7.1	9.4	9.3
Virtual Blogs	7.5	6.1	8.8	8.0
Digital Libraries	7.8	7.6	8.5	6.6
Wikis	8.1	6.3	8.0	9.0
Facebook	8.3	7.2	9.1	9.3
Twitter	8.8	6.3	9.0	9.0
MySpace	5.0	6.8	6.0	10.0
Flickr	6.5	2.0		
LinkedIn	6.7	5.3	6.0	6.0
SlideShare	5.0	5.1	10.0	8.0
Second Life	8.2	5.0	10.0	8.0
You Tube	7.6	7.1	9.2	9.8
Podcast	8.0	6.2	8.8	8.5
RSS	7.4	6.0	8.0	8.0
Blogs	7.9	6.6	9.3	10.0
VideoBlogs	7.0	5.9	9.0	10.0
WebQuest	7.0	5.3		

**Direction of Interaction:**

As to whether use of the Web resources is conducted to share information among peers or among professor and student, on table 7 it is identified that the students who use these kind of resources share more information with professors through Electronic Mail although on the other hand to share information with their peers students use Chat or Facebook. In the case of professors, the most relevant tool to share information with students and with peers is still the Electronic Mail.

Table 7. Direction of Interaction in the use the of the Web resources in Students and Professors (Scale 1 never -10 very frequently)

Web Resource	Students		Professors	
	Share information with other students	Share information with professors	Share information with other Professors	Share information with students
E-mail	8.8	7.5	9.3	9.0
Chat	8.9	5.2	8.6	7.7
Virtual Blogs	8.0	5.8	8.8	6.5
Digital Libraries	7.4	6.4	8.3	8.6
Wikis	7.8	5.5	6.7	4.7
Facebook	8.9	6.1	6.9	5.3
Twitter	8.0	4.3	7.5	5.5
MySpace	6.2	4.4	5.0	3.0
Flickr	5.0	2.0		
LinkedIn	4.7	2.7	6.0	6.0
SlideShare	6.4	4.9	10.0	3.0
Second Life	6.0	5.0	4.0	2.0
You Tube	7.4	5.4	7.8	6.8
Podcast	7.8	5.2	4.0	3.0
RSS	8.0	6.0	4.0	6.0
Blogs	7.2	5.5	6.7	6.0
VideoBlogs	7.3	5.5	4.0	4.0
WebQuest	7.3	6.0		

**Interest and promotion:**

Relating to the perception that students and professors have about the interest and usage promotion of Web resources in the teaching-learning process, we can observe on table 8 that tools for instance Digital Libraries, Electronic Mail and Blogs are the ones that professors, who use these resource, promote. In addition, students state that the use of Twitter and Facebook could increase their interest in the teaching-learning activities.

Table 8. Promotion and interest in the use of Web resources in teaching and learning process (Scale 1-10)

Web Resource	Students		Professors	
	Professors promote the use of the resource	The use of resources could increase my interest	I promote the use of the resource	The use of resources could increase the students interest
E-mail	8.0	7.3	8.6	7.2
Chat	6.0	6.8	6.7	7.3
Virtual Blogs	7.7	8.9	8.5	8.0
Digital Libraries	7.5	7.8	9.3	8.5
Wikis	6.3	7.7	8.0	8.0
Facebook	5.8	7.9	8.0	8.6
Twitter	8.0	10.0		
MySpace	7.3	8.7	6.0	9.0

Flickr	4.0	8.0		
LinkedIn	3.0	9.0		
SlideShare	6.0	8.3		
Second Life	8.0	8.0		
You Tube	7.0	8.1	8.2	9.3
Podcast	5.2	8.8	8.3	6.0
RSS	4.2	4.4		
Blogs	6.0	8.1	8.0	8.0
VideoBlogs	5.8	8.5		
WebQuest	5.4	8.3		

#### Utility:

About the perception on the utility of the use of these tools, both professors and students believe Web resources promote the participation on academic activities, favor the construction of new knowledge and the creation of groups or communities among students and that they are a good option for the teaching-learning activities. On table 9 the statistics of perception on this matter can be observed.

Table 9. Perception of utility in the use of Web resources in teaching and learning process (Scale 1 disagree -10 agree)

	Students	Professors
Encourages participation in extra-academic activities	7.5	9.0
Increase the construction of new knowledge	8.2	8.9
Are a good choice for teaching and learning activities	8.3	9.1

#### How did you know them? And Where do you access them?

On table 10 we can notice that both professors and students mainly met these resources through friends and peers.

Table 10. How did they know the Web resources?

	Students	Professors
Friends	79%	82%
Classmates	61%	36%
Professor (for students) / Students (for professors)	21%	18%
Family	26%	9%
TV or Radio	11%	4%
Others	13%	36%

Finally, on table 11 we can identify that in both cases, students and professors predominantly access these web tools in their homes or in the Campus.

Table 11. From where they access?

	Students	Professors
University	78%	64%
Cybercafe	29%	0%
Home	82%	82%
Work	13%	73%
Others	5%	4%

## 5. Conclusion



The use of ICT and particularly the Web resources to share and create information in the educative field is a common practice in the Higher-Education Institutions. The analyzed literature proves it many experiences about its use in teaching-learning processes applying many resources can be found, analyzing this case in specific, allowed us to perform a first inspection about the perspective professors and students of the University Center of Lagos have on the use of the mentioned resources.

After the analysis of results it was proven that both students and professors of the University Center of Lagos are familiarized with the use of web tools, some of which they use very frequent both in a personal manner and in their teaching and learning activities. In this sense, some coincidences on how students and professors use the tools could be found but also there exist some particularities on how the two groups use them, the same happens with the perception they have on the utility the web resources have in the teaching-learning processes and even a more marked difference about the skills the two groups have to use some of the tools and the promotion on the use of these.

Even though we won't consider the results as conclusive, they do provide a description on trends concerning the use of web resources in the community of the University Center of Lagos. These trends show that both students and professors share the utility and frequency on the use on some resources such as Electronic Mail, Chat, Digital Libraries, YouTube and Facebook, yet the use of other resources like Wikis, Forums, Video Blogs and SlideShare differ, used in a higher percentage by students, which show students have a bigger diversity when it comes to the web resources they access to. Analyzing which of these tools also are specifically used in courses, students most frequently use resources such as YouTube, Wikis and Blogs, which are often also used by teachers in their courses.

Both students and professors match in have known these resources mainly through their friends and peers, which shows that the use of these tools has not necessarily been favored by an institutionalized strategy. The survey also points out that the two groups use the web resources preferably in their homes and in their working areas (which for most professors it will be the installations of the University). Among the not used resources, there are also coincidences between the two groups, being the least used RSS, Flickr, Second Life, LinkedIn and MySpace, among others, but where we found differences on the reason why they do not use them. In the case of students, not knowing the tools and the lack of utility are the main features, while professors manifest other causes.

There are also observable a few differences related to the impression of the skills for using web resources. For students it exists a favorable self-perception on their domain to use web tools and unfavorable about the teachers promotion and training on the use of these. On the other hand, professors have a good perception about their own and their students skills to use these resources, at the same time they consider themselves to be promoters of their use, at least of those they use. The differences between professors and students perceptions on the skills to use web resources and their promotion demonstrate that students' expectations are not completely satisfied in part because of the more limited spectrum of resources that the professors use. These differences are reasserted by identifying the direction of the interaction between students and professors, students have much less interaction with professors that among each other, situation emphasized by the resources that are less used by professors. Meanwhile the differences between professions interaction with colleagues and with their students are less marked. However, it should be noted that it does exist an important agreement among students and professors in considering that the Web resources increase the interest in the courses, help update contents and that they are a good option for the teaching-learning activities.

Based on the previous, we can conclude that the academic community of the University Center of Lagos frequently uses Web resources to perform teaching and learning activities in their courses, however, as it's stated in many current literature texts, it exist the need of the approach of professors to a vaster variety of Web resources, some of which students already master, which will facilitate the teaching-learning process.

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