# Digital natives: Internet and its relationship with reading in university students

# Nativos digitales: internet y su relación con la lectura en estudiantes universitarios

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#### **ABSTRACT**

Keywords
Internet; reading;
university students

The aim of this work was to diagnose native digital university students, about the relationship between Internet use and the number of hours of weekly reading on the internet and printed sources. As well as its relationship with academic and non- academic information, which will be useful for future research. It was a quantitative, transversal and correlational research; there was a sample of 1,500 university students, with random probabilistic sampling of students enrolled in Mexico in higher education. A survey type instrument was used. The results indicate that university students in Mexico present a direct relationship in the number of hours of weekly reading via the internet and the number of hours of reading in printed published sources; they search for academic information to a greater range in printed sources; This highlights that most digital university natives have a reading habit.

#### **RESUMEN**

Palabras clave Internet; lectura; estudiantes universitarios El objetivo de este trabajo es realizar un diagnóstico en estudiantes universitarios nativos digitales sobre la relación entre el uso de internet y el número de horas de lectura semanal en este y en fuentes impresas, así como su vínculo con la búsqueda de información de tipo académico y no académico. Es una investigación diagnóstica de tipo cuantitativo, transversal y correlacional; la muestra se conformó de 1 500 estudiantes universitarios, con un muestreo probabilístico aleatorio de estudiantes en México inscritos en educación superior y el uso de un instrumento tipo encuesta. Los resultados indican que los estudiantes universitarios en México presentan una relación directa entre el número de horas de lectura semanal vía internet y el número de horas de lectura en fuentes impresas; son buscadores de información académica en mayor medida en fuentes impresas. Destaca que la mayoría de los nativos digitales universitarios tienen un hábito lector.

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#### INTRODUCTION

Internet is paramount in the daily life of the people, where most of them have access to it. Furthermore, it is relevant in every educational field, reading included, which improves the quality of education in every level. In this context, information and communication technologies (ICTs) have become an inherent element to education and an essential requirement in the university field.

The 2021 Educational Goals project of the Organization of Ibero-American States (OIE) proposes the link to reading by using ICTs and education. Earlier, it presented an analysis on the impact and influence of digital texts in the reading comprehension skills of learners (OIE, 2011).

The results of the survey made by Pontes, Attila & Griffiths (2015) suggest that users choose using Internet to partake in activities with a specific content; if prevented to have access to their favorite activities, they would discontinue the use of Internet or significantly reduce the weekly time online. This confirms that permanence time on Internet goes hand in hand with the academic activities of university learners, such as reading and browsing for information related with their field of study.

At present, university learners have been educated in the basis of new technological advances, and they have access to computers, videogames, smart telephones, and other related tools. Salvador-Oliván & Agustín-Lacruz (2015) sustain that this generation, being born after information technologies had been established, has developed under an atmosphere of digital devices and tools that are part of their daily life and which have an impact on communication, entertainment and individual education.

According to Prensky (2010), this may have given rise to a detriment of reading, to which they might have invested at least five thousand hours at the end of their university life, in contrast to the ten thousand hours devoted to videogames. Hence, it is not an exaggeration to consider that instant messaging, the smart phone, Internet, email, and computer games are part of their lives, which turns them into digital natives. This generation sees Internet as a permanent companion in academic activities and as a means to attain good academic performance (Young et al., 2017).

Internet management of university learners goes from recreational use to academic use, and it also goes through diversified types of reading related thereto. It is desirable that the type of predominant reading is of critical nature, which will lead them to a detailed analysis of contents for every subject within their field of study. There is an intrinsic relationship between the community of information with critical reading processes, derived from the concept of informational literacy, as this may be considered as a means to generate knowledge and achieve permanent learning (Uribe, 2010),

The foregoing gives rise to the likelihood of establishing a critique in the reading field. When reference is made to teach informational literacy to people so that they handle themselves among the different sources of information, critical reading and writing ought to play a preponderant role, as they are key to a political, sociocultural and geographical participation of an even more competitive world (Méndez et al., 2014).

In college education, both reading and critical thinking are necessary skills to face the challenges learners would encounter in a global world (Flores, 2016). In this respect, Yubero & Larrañaga (2015) say that "reading competency falls within this important nucleus of competencies which university learners ought to master for their education as professionals" (p. 719).

Furthermore, reading done on Internet also counts as traditional reading in printed sources, which has been displaced, from greater to lesser degree, by the use of technology. This largely has an influence on the fact that a college learner has both options to fulfill their academic goals or tasks. Questions arise on whether there are any factors that have an impact on the selection of a model where they will have access to reading and time invested to it.

The Organization for Economic Cooperation and Development (OECD) has mentioned that reading ought to be considered a priority by member countries, as this is the focal point of an important indicator for human development of their inhabitants as well as quality standards. Reading capacity, from printed and virtual texts, consists of understanding, using and reflecting on these texts; whereas at higher educational levels it happens that learners read more because they are compelled to than because they like reading and using language (Barrio et al., 2005).

Searching information online or on a printed source implies compulsory reading, with a specific analysis level that would lead to critical thinking. The reading practice entails paying attention on the influence of cultural factors, as well as on the reciprocal effects among these and on the development of processes of the cognitive type (Teberosky, Guardia & Escoriza, 1996). Reading complements the scientific education of college learners, because communication and dissemination of science are an integral part thereof; in addition, it should be considered that technology is always immersed in a conditioning and social space of influence (Cornejo et al., 2012).

Díaz, Bar & Ortíz (2015) imply that the development of critical reading skills of advanced college learners is an unexplored area of research. They also say that higher thinking and academic reading are important in the college environment and that, nonetheless, a number of investigations disclose development difficulties among learners.

Currently, education implies a high degree of autonomy by college learners, considerably supported by the use of technology, whereas the teacher has a guiding role during the learning process, and has an impact on and encourages learners to read. Rovira & López (2017) mention that, in the university context, in order to promote and foster reading the teacher is thought of as having a leading role, and that the teacher ought to keep three factors in mind: to be a mediator, to treat reading as an end in itself and to provide academic literacy associated to ICTs.

To Aguilar, Cruz & Aguilar (2014), the teacher at the university level is a direct invigorating agent and a mediator of the reading practice at the university. Reading scientific articles by learners ought to be a controlled, intentional and self-regulated process, whereby knowledge is obtained (Ochoa & Aragon, 2005). Currently, college youths have access to different means of digital information and technological supports to read (e-book readers, tablets, and laptop) (Salado, Ramírez-Martinell & Ochoa, 2017), which is encouraged and supplemented by reading traditional printed sources.

The availability of new means of access to reading and writing is no guarantee, per se, of higher competencies for these tasks. In the university classroom, the reading practice of learners is linked to the ends and traits and conventions adopted as a result of work priorities (González, Jiménez & Rosas, 2016). The findings in some studies show that the use of Internet by means of mobile devices has

a supplementary effect, not a displacing one, on the acquisition of information through traditional means (Kitamura, 2013).

With regards to reading, Elche & Yubero (2019) mention that "digital reading maintains the essence of traditional reading, therefore, the use of digital reading cannot be separated from reading habits" (p- 54). Therefore, as stated by Martos & Martos (2018), "reading education can no longer be separated from media and digital culture" (p. 21).

The arrival of several Internet technologies has changed the manner in which knowledge is addressed, regardless of the area in question. Reading has changed through time, as mentioned by Martos & Martos (2018): "Reading is no longer a simple practice of humanistic education but a practice of consumption in the full meaning of the word" (p. 22), as it responds to the market and has an active participation in marketing, also, it adapts to the pressures of the reading industry in accordance with new media and technologies.

The new generations are developing on par with ITCs, therefore, it is to be expected that the manner to reach knowledge has also changed with time; the options to access knowledge in an individual manner considers from the mainstream to what is achieved aided by technological advances the new generations have access to. Not every college learner, however, has access to the same opportunities; this, along with their different cultural or educational training, has an impact on several habits of their academic development.

To Prensky (2010), young people today cannot learn in the same manner as the youths of the past, because there are differences between their culture and the way they think; it is natural that learners process information differently from their predecessors; in addition, their dexterity when handling and using technology is superior to that of their professors.

Generally, learners are constant users of Internet for several activities, academic activities included, where reading is a compulsory part of their development. Therefore, it is important to be acquainted with the relation between the use of Internet and reading hours in this media and on printed sources, as well to find out whether the search for academic information online is related with its degree of use.

Our first hypothesis is that digital natives employ reading hours both online and on printed sources. The second hypothesis is that constant use of Internet is directly related to the search of academic information by this means. The objective of our work was to make a diagnosis on digital native college learners on the relationship between the use of Internet and the number of weekly reading hours on the Internet and on printed sources, as well as the relationship to the search of academic and non-academic information.

# **METHODOLOGY**

This survey consisted of a diagnostic study of quantitative, cross-sectional, descriptive and correlational type between variables taken into consideration, which was performed from the month of February to the month of June 2019. The sample was made up of 1500 college learners, with a random probabilistic sampling of the total of the population enrolled: 4,210,250 learners enrolled in Mexico in higher education (ANUIES, 2019). Below is the formula employed for the size of the sample, where we considered a level of confidence of 99% and a maximum error of 3.325%, with values of 0.5 for p and q.

$$n = (N*Z2*p*q) / (E2(N-1) + Z2*p*q) = 1,499.17 = 1,500 learners$$

We used a simple probabilistic and random sampling. Participants are of different areas in the country and, from the total, 56.9% are women and 43.1% are men; 84.4% are enrolled in public universities and 15.6% in private universities. We considered five disciplines of study: economic-administrative sciences, social sciences and humanities, health sciences, engineering and chemical sciences, and farming sciences. The age median of the sample is 20.156 years with a standard deviation of 0.8833 years.

Variables to be evaluated were: Internet use, reading online, reading on printed sources, searching academic information online, searching academic information on printed sources, and searching non-academic information online. Age, sex, the discipline of study and the type of university (public or private) were indicators for the variables under consideration. The learners were selected in a random manner and answered an online questionnaire by means of Google forms sent through a link to have access to the instrument. The database imported from the site was analyzed by means of the SPSS (Statistical Package for the Social Sciences) statistical software.

The measuring instrument included two sections: the first one, with the learner's filiation data (sex, age, educational sector, and discipline of study); the second one was made up of items focused on finding out weekly reading hours online and on printed sources, as well as weekly hours engaged in the search of information both on digital sources and on printed sources, in addition to weekly hours connected to Internet. The questionnaire was designed by using closed-question options, with scales of timed answers for each variable and indicators to be evaluated.

The measuring instrument was validated by means of the Kaiser-Meyer-Olkin (KMO) coefficient, with a value of 0.67. and Bartlett's test of sphericity, with a statistical significance of 0.000. To analyze the results, the data obtained were processed by means of a factor analysis of primary components, as well as determination of chi-square, for the variables under consideration and their indicators, a linear regression model and Pearson correlation coefficient.

## RESULTS

The descriptive statistical data of the variables under study are presented on table 1, where we noted that the hour average per week of printed reading (2.38) is slightly higher that the average hours devoted to online reading (2.11), with a standard deviation of reading hours slightly higher on printed sources.

Table 1. Descriptive statistics

Variable	Median	Standard deviation
Weekly hours dedicated to the use of internet	2.62	1.096
Weekly hours dedicated to reading on the internet (books and scientific papers)	2.11	1.548
Weekly hours dedicated to reading printed sources (books and scientific papers)	2.38	1.695
Weekly hours dedicated to searching academic information on the internet	1.59	.851

Weekly hours dedicated to searching academic information in printed sources	2.14	1.638
Weekly hours dedicated to searching non-academic information on the internet	2.06	1.204

On table 2, we noted how the variability provided by each indicator is explained; we also noted which components have a greater variance percentage, within which are weekly hours devoted to reading, both on printed sources and online, as well as on the use of Internet and weekly hours devoted to searching online information. With the results obtained from the factor analysis, we may deduct that the weekly hours devoted to the use of Internet are linked to reading hours, both on this means and printed, and to the hours employed searching academic information online.

**Table 2**. Variability per component and higher accrued variances.

	Extraction	Percentage of variance	Percentage accumulated
Weekly hours dedicated to the use of internet	.615	17.034	17.034
Weekly hours dedicated to reading on the internet (books and scientific papers)	.447	14.794	31.828
Weekly hours dedicated to reading printed sources (books and scientific papers)	.623	12.196	44.024
Weekly hours dedicated to searching academic information on the internet	-495	10.031	54.055

Weekly hours dedicated to searching academic information in printed sources	.537	-	-
Weekly hours dedicated to searching non-academic information on the internet	.508	-	-
Age (years old)	.321	-	-
Sex	.539	-	-
Educational sector (public or private)	.828	-	-
Discipline of study (major)	.491	-	-

Note: Method of extraction: analysis of main components.

Table 3 contains groups per rotated components and the sample on the link between variables of weekly hours devoted to reading online and those employed reading on printed sources with hours devoted to searching academic information on printed sources. Meanwhile, the hours devoted to the use of Internet are related to the search of academic and non-academic information.

**Table 3.** Matrix of rotated components

	Component					
	1	2	3	4		
Weekly hours dedicated to the use of internet	-	.770	-	-		

Weekly hours dedicated to reading on the internet (books and scientific papers)	.628	-	-	-
Weekly hours dedicated to reading printed sources (books and scientific papers)	.788	-	-	-
Weekly hours dedicated to searching academic information on the internet	-	.692	-	-
Weekly hours dedicated to searching academic information in printed sources	.695		-	-
Weekly hours dedicated to searching non-academic information on the internet	-	.608	-	-
Age (years old)	-	-	.474	-
Sex	-	-	692	-
Educational sector (public or private)	-	-		.906
Discipline of study (major)	-	-	.698	-

Note: Method of extraction: analysis of main components.

Table 4 specifies the relationship among variables and their statistical significance: the highest correlation is between the hours devoted to reading on printed sources with the search of information on printed sources (.354) and with hours devoted to reading online (.339), both with high statistical significance. This is an indication that devoting hours to reading online also implies devoting hours to

reading on printed sources, as well as devoting time to read on printed sources also implies searching information on printed sources.

**Table 4**. Correlations matrix.

	<b>10 4.</b> COTTO	1	2	3	4	5	6	7	8	9	10
1	Pearson correlation	1	029	020	.292**	.009	.244**	.056*	- .093**	.007	.068**
	Sig. (bilateral)	ı	.259	.429	.000	.738	.000	.030	.000	.799	.008
2	Pearson correlation	029	1	.339**	.074**	.170**	.069**	047	049	020	.024
	Sig. (bilateral)	.259	1	.000	.004	.000	.007	.071	.057	.429	.356
3	Pearson correlation	020	.339**	1	023	·354**	.096**	- .052*	.088**	.017	025
	Sig. (bilateral)	.429	.000	-	.380	.000	.000	.044	.001	.517	.325
4	Pearson correlation	.292**	.074**	023	1	046	.135**	.075**	.010	.041	.079**
	Sig. (bilateral)	.000	.004	.380	-	.077	.000	.004	.688	.111	.002
5	Pearson correlation	.009	.170**	·354**	046	1	.191**	020	- .094**	.052*	.004
	Sig. (bilateral)	.738	.000	.000	.077	1	.000	-447	.000	.043	.885
6	Pearson correlation	.244**	.069**	.096**	.135**	.191**	1	013	027	.023	024
	Sig. (bilateral)	.000	.007	.000	.000	.000	-	.612	.296	.372	.344

7	Pearson correlation	.056*	047	052*	.075**	020	013	1	- .100**	.064*	.093**
	Sig. (bilateral)	.030	.071	.044	.004	.447	.612	-	.000	.013	.000
8	Pearson correlation	.093**	049	.088**	.010	- .094**	027	.100**	1	015	- .170**
	Sig. (bilateral)	.000	.057	.001	.688	.000	.296	.000	ı	-559	.000
9	Pearson correlation	.007	020	.017	.041	.052*	.023	.064*	015	1	.084**
	Sig. (bilateral)	.799	.429	.517	.111	.043	.372	.013	-559	-	.001
10	Pearson correlation	.068**	.024	025	.079**	.004	024	.093**	- .170**	.084**	1
	Sig. (bilateral)	.008	.356	.325	.002	.885	.344	.000	.000	.001	-

Note: 1) use of internet (weekly hours); 2) reading on the internet (weekly hours); 3) reading printed sources (weekly hours); 4) searching for academic information on the internet (weekly hours); 5) searching for academic information in printed sources (weekly hours); 6) searching for non-academic information on the internet (weekly hours); 7) age; 8) sex; 9) educational sector; 10) discipline of study (major).

As a multiple linear regression model is obtained, taking reading online as a dependent variable, only age and sex report a degree of significant influence on weekly reading hours online (see table 5).

**Table 5**. Multiple linear regression model.

<sup>\*</sup> Correlation is significant at 0,05 (bilateral).

<sup>\*\*</sup> Correlation is significant at 0,01 (bilateral).

Model	Unstandardized coefficients		Standardized coefficients	Т	Significance
	В	Standard error	Beta		
(Constant)	2.666	.236	-	-	-
Sex	170	.082	055	2.072	.038
Age (years old)	088	.046	050	- 1.936	.053
Educational sector	082	.110	019	742	.458
Discipline of study (major).	.027	.031	.023	.872	.383
Weekly hours dedicated to the use of internet	044	.037	031	- 1.197	.232

Note: dependent variable: Weekly hours dedicated to reading on the internet (books and scientific papers). / F Value of 2.057, with a significance of 0.068.

Table 6 contains the results of the chi-square test for related variables: greater statistical significance is presented among four of these relations; here is the relationship of hours per week devoted to reading online, and weekly hours of Interne use. It is significant that reading hours on printed sources are related to sex and to the discipline of study, whereas reading hours online, with the discipline of study and with hours of Internet use, and increase proportionally with age.

 Table 6. Chi-square test.

Associated variables	Chi squared	Significance
Reading on the internet and sex (weekly hours)	5.451	.244
Reading in printed sources and sex (female) (weekly hours)	21.012	.000
Reading on the internet and age (older age) (weekly hours)	28.297	.005
Reading in printed sources and age (weekly hours)	10.903	.537
Reading on the internet and type of university (weekly hours)	8.585	.072
Reading in printed sources and educational sector (weekly hours)	7.307	.121
Reading on the internet and discipline of study (weekly hours)	87.230	.000
Reading in printed sources and discipline of study (weekly hours)	116.733	.000
Reading on the internet and use of internet (weekly hours)	54.900	.000
Reading in printed sources and use of internet (weekly hours)	21.800	.150

Note: asymptotic significance (bilateral).

# **DISCUSSION**

Findings of our survey were that digital natives, even when they make extensive use of Internet, both for academic activities and

non-academic activities, have not abandoned reading or the search of information on printed sources (in the grouping procedure, primary components are consistent with reading online, reading on printed sources, and searching information on printed sources). Jara & Prieto (2018) say that knowledge is to be traditionally fostered, as well as in a digital and technological way, reading included.

In order to search information online, people need to read, which turns into an ally and not a threat, as mentioned by Rodríguez (2005). Also, in this paper it was possible to determine that digital natives who use Internet consistently, do it both to browse for information and to read.

Elche & Yubero (2019) say that usual online readers are active browsers of information. Furthermore, in this paper it has been found that these readers they do not necessarily search for academic information online (R=0.074). The difference between the mentioned paper and ours is that the former was performed with Spanish college learners, whereas the latter was done with Mexican college learners.

Although we found some relationship between the variables considered in the survey, the behavior of digital natives is different when browsing for information, on the use of Internet and reading, and there is variability on the use of digital competencies. Acosta-Silva (2017) agree on this, who sustain that there is a large variety of digital competences among the youths, which generates a variable degree on the behavior of digital natives.

Another finding in our survey is the existing relationship between the hours devoted to reading online and the study discipline; for example, learners in the health field report greater engagement on reading. Marciales *et al.* (2010) found that there is a difference at the likelihood of stating the hypothesis on whether the type of subjects and content of a study discipline has an impact on the time devoted to reading, as, if the learner is doing a bachelor's degree with a large number of subjects of a theoretical and disciplinary field, rather practical than of numerical nature, this requires greater feedback and study through reading.

To a digital native, reading online does not mean superficial reading, for this may be done both deeply and critically, as it is usually thought of reading on printed sources, as mentioned by Ramírez (2012). In accordance with statistical results, sex is related with the

reading habit on printed sources, but not on reading online. As shown from our research, women devote more weekly hours to reading on printed sources. We have also identified that, the older a person is, the more extensive the number of hours per week employed in reading online. This is consistent with the findings of Pérez *et al.* (2019), who found that it is women who read more on printed formats, whereas men, to a larger extent, tend to read online. From their research they also found that, although women read more on printed formats than men, downloads are still favorably done, in larger numbers, by women.

Being a digital native does not rule out reading from recognized sources, as has been proposed by Yubero & Larrañaga (2005), who sustain that college learners have a low reading frequency linked to compulsory reading; the foregoing notwithstanding, in society "reading is a well appreciated activity, although not performed".

Pérez (2013) says that regardless of the discipline, [learners] are required to be knowledgeable of how search engines work, what tools they have and how they may make use thereof. According to Davidovitch, Yavich & Druckman, (2016), Internet affects many areas of life, reading habits included.

## CONCLUSIONS

Digital natives are college learners in Mexico who are directly related to weekly reading time online and weekly reading time on printed sources. Similarly, it may be affirmed that they seek academic information, to a greater extent, on printed sources rather than on digital sources; however, even when they are regular users of Internet, this does not affect their reading on recognized sources, such as books and scientific articles.

The first hypothesis we made is accepted: digital natives devote reading hours online, they also use them on printed sources. The case of the second hypothesis was rejected, as it stated that regular use of Internet is directly related to searching academic information using the same means; nonetheless, results show that academic information is extensively searched from printed sources.

Regarding indicators, there was no sex difference in reading hours online; the foregoing notwithstanding, reading on printed sources is more extensive on women. Reading online increases with age. It is highly conclusive that digital natives devote weekly hours to reading, and it is desirable that this increases from the college classroom.

Among final considerations, we believe that digital natives ought to take advantage of being regular users of Internet to increase the reading habit through this means, regardless of their study discipline.

Our paper encourages the realization of future research to determine to what degree the type of study discipline, what subjects and didactic methodologies, as well as the household environment, have an impact on the reading habit of college digital natives.

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