



# Cyber-plagiarism as digital support for the submission of academic writing

## Ciberplagio como soporte digital en la realización de trabajos académicos

**Dr. Eva-María Espiñeira-Bellón.** Associate Professor, Department of Specialized Didactics and Methods of Research and Diagnosis in Education, University of A Coruña (Spain) (eva.espineira@udc.es) (<https://orcid.org/0000-0001-7522-9406>)

**Dr. Jesús-Miguel Muñoz-Cantero.** Full Professor, Department of Specialized Didactics and Methods of Research and Diagnosis in Education, University of A Coruña (Spain) (jesus.miguel.munoz@udc.es) (<https://orcid.org/0000-0001-5502-1771>)

**Dr. Enelina-María Gerpe-Pérez.** Researcher, Department of Pedagogy and Didactics, University of Santiago de Compostela (Spain) (emaria.gerpe@usc.es) (<https://orcid.org/0000-0001-7560-4608>)

**Dr. María-Dolores Castro-Pais.** Associate Professor, Department of Didactics, School Organization and Research Methods, University of Vigo (Spain) (maria.dolores.castro.pais@uvigo.es) (<https://orcid.org/0000-0003-2002-7262>)

### ABSTRACT

Access to the Internet and digital technologies has become the primary source of information used in academic papers, and, according to numerous studies, is therefore accountable for the greatest number of cases of cyber-plagiarism. The aim of this study is to determine whether the type of format used by university students for their academic papers (paper/electronic) has an influence on plagiarism or cyber-plagiarism. The research is based on a quantitative methodology, and it is characterized as exploratory, descriptive, and explanatory, using the questionnaire as a tool for data collection. Purposive non-probability convenience sampling provided a sample of 8,943 students from the Autonomous Community of Galicia. The findings show a preference for the use of the electronic format for submitting academic work. Exceptions are made in several cases in which statistically significant differences are observed both in the acts of plagiarism that are initiated and in the main reasons given to justify such acts. A discussion of the findings correlates the findings of the research with the analysis of previous studies in this area, and the conclusions focus on the need to train students in informational skills so as not to commit plagiarism when using the Internet as an academic source.

### RESUMEN

El acceso a Internet y a las tecnologías digitales se ha convertido en la fuente fundamental en la búsqueda de información para la elaboración de trabajos académicos y por ello, de acuerdo con numerosos estudios, es una de las causas con mayor incidencia en la comisión de ciberplagio. En este estudio se pretende verificar si el tipo de soporte (papel/electrónico) empleado por el alumnado universitario para hacer sus trabajos presenta diferencias en cuanto a la comisión de plagio o ciberplagio. Partiendo de una metodología cuantitativa, se caracteriza la investigación como exploratoria, descriptiva y explicativa, utilizando el cuestionario como instrumento para la recogida de la información. La muestra, de carácter no probabilístico, intencional y por conveniencia, se compone de un total de 8.943 estudiantes de la Comunidad Autónoma de Galicia. Los resultados muestran el empleo preferente del formato electrónico. Se exceptúan varios casos en los cuales se aprecian diferencias estadísticamente significativas tanto en las actuaciones de plagio que se ponen en marcha como en cuanto a las principales causas establecidas para justificar dicha comisión. Se realiza una discusión de los resultados relacionando los hallazgos de la investigación con el análisis de estudios precedentes en esta temática y se establecen conclusiones centradas en la necesidad de formar al alumnado en competencias informacionales para no incurrir en plagio a través del empleo de Internet.

### KEYWORDS | PALABRAS CLAVE

Cyber-plagiarism, university education, Internet, academic writing, citation, academic ethics.  
Ciberplagio, educación universitaria, Internet, escritura académica, citación, ética académica.

## 1. Introduction

Many studies focus on the ease of Internet access and the possibilities offered by technologies as the most frequent causes of academic fraud, and more specifically of plagiarism: “The most recurrent form of academic dishonesty is the practice of plagiarizing, and the main source of information for committing plagiarism is the Internet” (Morey et al., 2013: 239).

This study performs a review of the literature on this topic in order to identify existing research and contribute to the construction of knowledge, to then incorporate the methodological aspects followed in prior studies. The term plagiarism was consulted in the Scopus database in order to identify publications with a high impact index, accompanied by a search in Google Scholar, selecting documents from the last ten years. From among these articles, papers focusing on cyber-plagiarism in the university sphere were selected. Finally, while no articles of characteristics similar to those set forth by this paper were identified, 27 other documents were used, an assessment of which follows.

To begin with, we should highlight the existing variety of terminology used to refer to the topic of study, among which we can find concepts such as cyber-plagiarism (Caldevilla, 2010), electronic dishonesty (Akbulut et al., 2008), electronic plagiarism (Alemán et al., 2016), cyber plagiarism or digital plagiarism (Díaz-Rosabal et al., 2020; Ennam, 2017). Thus, Ruiz-Bejarano (2016: 216) highlights “the printed or digital nature of formats and sources as the element that differentiates both groups of dishonest practices” (plagiarism and cyber-plagiarism).

In this sense, Caldevilla (2010: 151) defines cyber-plagiarism as “the use of information and communication technologies to access papers or studies carried out by third parties with a view to acquiring them (either partially or in their entirety) and presenting them as one’s own, i.e. without indicating the source or reference used”. For Díaz-Rosabal et al. (2020: 7), it can be considered as a typology of academic plagiarism, understanding that “it is committed with the use of ICTs, but it is not an inherent problem of technologies. This practice arises from a lack of ethical values, as well as from a gap in the knowledge, skills and proficiency required for preparing academic papers”. In this line, Luis-Solano (2020: 52) identifies it as “an act of academic dishonesty that focuses on the use of digital resources through ICTs, through which information is sought, accessed and used, which may be partially or wholly appropriated”.

Secondly, there is an excessive reliance on the Internet, which is used as an end in itself, leading students and academics to commit cyber-plagiarism, which, as indicated, can be considered a dishonest practice (Casasola, 2015; Domínguez-Aroca, 2012; Gallent & Tello, 2017; López-Gil et al., 2017; Zrnc & Lavbic, 2017). However, the Internet should be used as a means for preparing academic papers (Al-Thwaib et al., 2020; Martínez-Sala et al., 2019) and, more generally, for research and academic development.

Thirdly, investigations such as those of Cevallos et al. (2016), Sanvicen and Molina (2015), and Zarfaz and Ahmadi (2017) have concluded that the Internet is the main source of document consultation and content development for scholarly work in the university field. They assert that immediate use of the Internet results in students inserting fragments of different electronic texts into their academic papers and, in the worst-case scenario, directly accessing academic papers that are available free of charge, or through purchase (Comas-Forgas & Sureda-Negre, 2008; Devlin & Gray, 2007; Flint et al., 2006; Moreno, 1999; Park, 2003). As to the causes of this, research indicates that it is due to the availability of a large amount of information, the speed of access and the ease of the copy and paste tool (Mejía & Ordóñez, 2004; Guangwei & Xiaoya, 2016; Miranda, 2013). McGowan and Lightbody (2008) point out that students do not perceive the same type of intellectual property attached to an electronic document as to a conventional document (paper format), and they do not perceive the need to cite and reference documents that are on the web. Comas-Forgas and Sureda-Negre (2010) associate it with the belief that copying from the Internet is not bad, with student perception that teachers are not qualified enough to use the Internet and discover the plagiarism, and with the idea that teachers will not read the submitted works.

Finally, most of the studies consulted assert that the Internet facilitates plagiarism (Sorea & Repanovici, 2020) which may be due to the fact that, in the analyses carried out, this was one of the reasons given by both teachers and students, but few studies focus on whether different format types (electronic versus paper) can actually affect results.

Studies on cyber-plagiarism in higher education, as indicated by Olivia-Dumitrina et al. (2019: 112), “are framed within research examining academic honesty, and have addressed both the plagiarism of printed sources and the appropriation of digital materials”. In light of the above, it can be assumed that information and communication technologies have encouraged the expansion of digital plagiarism in the face of print-based plagiarism and, therefore, the objectives of this study are focused on determining which format is most frequently used by Galician university students for submitting their academic work, and on ascertaining whether the type of format used has an impact on the frequency of plagiarism. This analysis involves valuing the importance of honesty and academic integrity in the work of university students, as well as an advance in identifying the phenomenon of cyber-plagiarism. Its originality lies in the fact that it more directly addresses the influence that the type of format used (digital or paper) can have on cyber-plagiarism.

## 2. Materials and methods

A quantitative, exploratory, descriptive and explanatory methodological approach was used to address the objectives of the study. This type of study is in line with those performed by Balbuena and Lamela (2015) and Tayan (2017), because it is intended not only to describe the problem of cyber-plagiarism, but to investigate, explore and analyze perceptions, experiences, attitudes, behaviors and causes of plagiarism in the context of student learning.

The survey technique used for this study is based on a questionnaire, as are the studies performed by Akbulut et al. (2008), Balbuena and Lamela (2015), Caldevilla (2010), Cevallos et al. (2016), Dias et al. (2013), Mejía and Ordóñez (2004), Morey et al. (2013), and Tayan (2017). The questionnaire is a widely used tool for conducting research, and, in particular, for use with large cohorts, especially for the purposes of identifying aspects related to perceptions and in order to improve certain types of practices (Martínez-Sala & Alemany-Martínez, 2017).

### 2.1. Participants

The population under study consists of students from the Galician University System. Participants were selected by purposive non-probability convenience sampling (Akbulut et al., 2008; Tayan, 2017). Selection criteria included: holding at least one degree per branch of study in two of the three universities participating in the study, with one of these being a double degree, as well as an additional degree from a university campus; in the case of master's degrees, the criterion was to obtain the participation of one third of the degrees offered in the three universities by branch of study.

The data sample consists of 8,943 students in undergraduate (95.3%) and master's (4.7%) studies at the Universities of Santiago de Compostela (41.3%), A Coruña (39.7%) and Vigo (19%), of whom 33.5% are male, 65.7% are female, and the remaining 8% unspecified. Average participant age is approximately 21 years ( $\mu=21.32$ ;  $\sigma=3.79$ ). Regarding the branch of study, just over half of participants study Social Sciences and Law (57.1%), 16.6% Health Sciences, 10.2% Engineering and Architecture, 9.2% Sciences, and only 6.8% Arts and Humanities.

### 2.2. The instrument

Within the framework of the project entitled “Study on plagiarism by students in the Galician University System”, the Questionnaire for the Detection of Coincidences in Academic Papers (CUDECO) (Muñoz-Cantero et al., 2019) was used throughout the 2018-2019 academic year as a tool to detect plagiarism and gauge the academic integrity of the students at the three universities when writing their papers.

This instrument covers a range of 47 items grouped in five categories. After performing the corresponding exploratory factor analysis, the structure of the questionnaire reveals a model of five factors that refer to the concept of plagiarism and its types (partial and total), the causes that lead to plagiarism, both internal (related to the subject) and external (unconnected to the subject), and the attitudes of the peer group towards plagiarism (Muñoz-Cantero et al., 2019). The present study makes use of 19 items from this instrument: first, the type of format that students use for their academic work (paper or electronic); second, seven items related to student plagiarism throughout their university studies; and finally, the eleven items linked to the causes that lead students to engage in plagiarism on their academic papers. The items are measured using a Likert scale of seven response options ranging from “strongly disagree” to “strongly

agree”, in addition to an open-ended question that aims to determine students’ opinions and suggestions on possible ways to avoid plagiarism.

The instrument yields a Cronbach’s alpha coefficient for reliability for the three universities of .865 (.851 for the University of Santiago de Compostela, .868 for the University of A Coruña, and .877 for the University of Vigo), registering a high overall reliability factor. The reliability of the instrument for the identified sample is .827 for the university studies category, and .886 for causes.

### 2.3. Data collection procedure

The instrument used for the research was applied in university classrooms during the academic period, April 2019. The guidelines issued by the Research and Teaching Ethics Committee of A Coruña University (the university coordinating the project) were followed, with the informed consent of each university and the school steering committees and a selection of those classes with the highest number of students.

Once in the classroom, the students were informed of the most relevant details regarding the purpose and benefits of the research, based on the information highlighted in the Ethics Committee report, as well as the guidelines regarding the anonymity of participation in the study.

### 2.4. Data analysis

The data was scanned by an optical reader, converted into a data matrix for the three universities under study, and analyzed using version 24.0 of the IBM SPSS Statistics package.

The findings of the most relevant descriptive statistics are presented first: mean, median, mode and standard deviation for each of the items for the total sample of participants, distinguishing between those that use paper or electronic formats.

The Kolmogorov-Smirnov normality test and Lilliefors Significance Correction (K-S-L) were then used, rejecting the null hypothesis ( $H_0$ ) of normality for all items in the total sample (K-S=.129,  $p=.000$ ). Levene’s test of homogeneity of variance was performed, resulting in the rejection of the null hypothesis ( $H_0$ ) of homogeneity of variance, with a Levene’s value of  $F=10.983$ , and significance of  $p<.001$ .

On the basis of these validating tests, non-parametric tests were used to analyze whether or not statistically significant differences existed between students using paper or electronic formats with regard to the frequency of plagiarism throughout the period of degree studies and the causes of these actions. For this purpose, we used the Mann-Whitney U-test, a non-parametric equivalent that does not require the assumption of normality (Goss-Sampson, 2018).

## 3. Findings

### 3.1. Descriptive analysis

Table 1 shows that a large majority of the students surveyed used an electronic format to submit their academic papers (91.2%), while only 8.8% prepare their scholarly work using paper as their main medium.

		Frequency	Percentage	Valid percentage
Valid	Electronic format	7.968	89.1	91.2
	Paper format	771	8.6	8.8
	Total	8.739	97.7	100.0
Loss to follow-up	NR/DK	204	2.3	
Total		8.943	100.0	

### 3.2. Prevalence of academic plagiarism by university students depending on the format used for submission

An analysis of the prevalence of academic plagiarism according to the format used to present scholarly work reveals a trend for both sample groups to negatively assess the items related to having committed plagiarism throughout their university studies ( $M_o=1$ ), independently of the type of format used. Table 2 shows very low incidences of the following practices in both sample groups (paper/electronic): downloading a full paper from the Internet and submitting it as one’s own, with no modifications (paper:  $\mu=1.42$ ,  $\sigma=1.22$ ; electronic:  $\mu=1.31$ ,  $\sigma=1.05$ ); submitting a paper that has been submitted by others in previous courses (paper:  $\mu=1.90$ ,  $\sigma=1.68$ ; electronic:  $\mu=1.89$ ,  $\sigma=1.68$ ); submitting a paper composed

solely of literal excerpts extracted from other papers (paper:  $\mu = 1.95$ ,  $\sigma = 1.54$ ; electronic:  $\mu = 1.99$ ,  $\sigma = 1.60$ ); or submitting a paper based on printed sources without citing the author(s) (paper:  $\mu = 2.04$ ,  $\sigma = 1.63$ ; electronic:  $\mu = 1.96$ ,  $\sigma = 1.56$ ).

**Table 2. Descriptive statistics of the items included in the University Studies category, according to the format used to submit academic papers**

	Paper format				Electronic format			
	$\mu$	Md	Mo	$\sigma$	$\mu$	Md	Mo	$\sigma$
Item 1. I have submitted a paper written by someone else in a previous course	1.90	1.00	1	1.68	1.89	1.00	1	1.68
Item 2. I have copied excerpts from web pages and incorporated them into my own work without citing the sources	2.98	2.00	1	1.99	3.22	3.00	1	2.02
Item 3. I have copied excerpts from printed sources (books, newspapers, magazine articles, etc.) and incorporated them into my own work without citing the sources	2.94	2.00	1	1.96	2.92	2.00	1	1.95
Item 4. I have downloaded a full paper from the Internet and submitted it as my own, with no modifications	1.42	1.00	1	1.22	1.31	1.00	1	1.05
Item 5. I have submitted a paper composed solely of literal excerpts extracted from online sources	1.95	1.00	1	1.54	1.99	1.00	1	1.60
Item 6. I have submitted a paper composed solely of literal excerpts extracted from printed sources, without citing the author(s)	2.04	1.00	1	1.63	1.96	1.00	1	1.56
Item 7. I have used excerpts from my teachers' notes in a paper without citing the source	3.40	3.00	1	2.06	3.35	3.00	1	1.99

With values closer to the median, we find the items related to copying excerpts from teachers' notes (paper:  $\mu = 3.40$ ,  $\sigma = 2.06$ ; electronic:  $\mu = 3.35$ ,  $\sigma = 1.99$ ); copying excerpts from online sources and incorporating them into their own work without citing the source (paper:  $\mu = 2.98$ ,  $\sigma = 1.99$ ; electronic:  $\mu = 3.22$ ,  $\sigma = 2.02$ ); or copying excerpts from printed sources (books, newspapers, journal articles, etc.) and incorporating them into their own work without citing the source (paper:  $\mu = 2.94$ ,  $\sigma = 1.96$ ; electronic:  $\mu = 2.92$ ,  $\sigma = 1.95$ ). It should be noted that higher values also show a greater variance in responses.

### 3.3. Differences in academic plagiarism by university students depending on the format used for submission

The Mann-Whitney U-test for two independent samples was again used to verify the association between the frequency of plagiarism and the correct citation of documentary sources as an evaluation criterion.

**Table 3. Mann-Whitney U-test**

Student body	Format	n	Range	U	Z	P
Item 1. I have submitted a paper written by someone else in a previous course	Electronic	7.930	4345.95	3016944.000	-.230	.818
	Paper	764	4363.62			
Item 2. I have copied excerpts of text from web pages and incorporated them into my own work without citing the sources	Electronic	7.960	4383.52	2824252.500	-3.351	.001
	Paper	764	4070.51			
Item 3. I have copied excerpts from printed sources (books, newspapers, magazine articles, etc.) and incorporated them into my own work without citing the sources	Electronic	7.930	4341.17	2993449.000	-.040	.968
	Paper	764	4344.91			
Item 4. I have downloaded a full paper from the Internet and submitted it as my own, with no modifications	Electronic	7.930	4342.73	2941136.50	-2.606	.009
	Paper	764	4482.38			
Item 5. I have submitted a paper composed solely of literal excerpts extracted from online sources	Electronic	7.960	4346.92	3004946.500	-.263	.072
	Paper	764	4325.00			
Item 6. I have submitted a paper composed solely of literal excerpts extracted from printed sources, without citing the author(s)	Electronic	7.960	4343.37	2971356.000	-1.047	.295
	Paper	764	4430.29			
Item 7. I have used excerpts from my teachers' notes in a paper without citing the source	Electronic	7.960	4352.51	3011586.50	-.424	.671
	Paper	764	4392.29			

The findings collected in Table 3 lead to the rejection of the null hypothesis ( $H_0$ ), which provides evidence of the existence of statistically significant differences in two of the seven items analyzed: Item 2, "I have copied excerpts of text from web pages and incorporated them into my own work without citing the sources", and Item 4, "I have downloaded a full paper from the Internet and submitted it as my own, with no modifications".

The range values show that the figures for the group of students submitting their work electronically are higher for the first of these two items (Item 2), which means that it is more common to copy excerpts from web pages and incorporate them into their own work, as compared to the second of these items (Item 4), where it is more common for students who predominantly submit their work on paper to use complete works downloaded from the Internet without modifying them, submitting them as if they were their own.

### 3.4. Prevalence of the causes of academic plagiarism by university students depending on the format used for submission

If we analyze the prevalence of the causes that university students cite to justify plagiarism, we again find a similar trend in the responses from each group, regardless of the format used to submit their academic work. The only point of note is that for most items the figure for students who opt to submit their work on paper tends to be higher than that of the other group. For example, assessment of the item "Unaware that citing sources is mandatory" was higher for the group submitting on paper ( $\mu=3.21$ ,  $M_o=3.00$ ,  $\sigma=2.18$ ) than for the electronic format group ( $\mu=2.96$ ,  $M_o=2.00$ ,  $\sigma=2.07$ ).

Table 4 reveals values above the mean for both sample groups in reference to items considered external to the student body, such as work overload (paper:  $\mu=4.41$ ,  $\sigma=2.16$ ; electronic:  $\mu=4.56$ ,  $SD=2.11$ ), the ease and convenience of access to material via the Internet (paper:  $\mu=4.08$ ,  $\sigma=2.00$ ; electronic:  $\mu=4.27$ ,  $\sigma=2.03$ ), or lack of time (paper:  $\mu=4.06$ ,  $\sigma=2.16$ ; electronic:  $\mu=4.18$ ,  $\sigma=2.11$ ). Again, higher values also show a greater variability in responses.

In terms of the lowest score, students are assigned to the item "Penalties are not serious", regardless of whether they submit their academic work electronically or on paper (paper:  $\mu=2.60$ ,  $\sigma=1.90$ ; electronic:  $\mu=2.44$ ,  $\sigma=1.78$ ).

**Table 4. Descriptive statistics of the items included in the Causes category, according to the format used to submit academic papers**

	Paper format				Electronic format			
	$\mu$	Md	Mo	$\sigma$	$\mu$	Md	Mo	$\sigma$
Item 1. It is a "shortcut" that is generally accepted	3.04	3.00	1	1.95	3.21	3.00	1	1.96
Item 2. My classmates do it	2.71	2.00	1	1.93	2.78	2.00	1	1.93
Item 3. Access to online material is easy and convenient	4.08	4.00	5	2.00	4.27	5.00	5	2.03
Item 4. It guarantees better academic results	3.15	3.00	1	1.91	3.28	3.00	1	1.92
Item 5. I was unaware of regulations at my university penalizing this practice	2.79	2.00	1	2.06	2.58	2.00	1	1.97
Item 6. Penalties are not serious	2.60	2.00	1	1.90	2.44	2.00	1	1.78
Item 7. I was unaware that citing sources is mandatory	3.21	3.00	1	2.18	2.96	2.00	1	2.07
Item 8. Lack of precise instructions on how to write the paper	3.93	4.00	1	2.13	3.92	4.00	1	2.07
Item 9. Lack of motivation	3.41	3.00	1	2.05	3.54	4.00	1	2.05
Item 10. Lack of time	4.06	4.00	1	2.16	4.18	4.00	1	2.11
Item 11. Work overload	4.41	5.00	7	2.16	4.56	5.00	7	2.11

### 3.5. Differences in academic plagiarism by university students depending on the format used for submission

The findings collected in Table 5 lead to the rejection of the null hypothesis ( $H_0$ ), as statistically significant differences were found for four of the eleven items analyzed: "It is a 'shortcut' that is generally accepted", "Access to online material is easy and convenient", "I was unaware of regulations at my university penalizing this practice", and "I was unaware that citing sources is mandatory".

The range values show that the figures for the group of students submitting their work electronically are higher for the first two items (Items 1 and 3), which means that plagiarism is considered to be a generally

accepted shortcut, and that accessing online material is easier and more convenient for preparing academic papers.

On the other hand, the values registered for the third and fourth items (Items 5 and 7) show that it is more common for students who predominantly submit their work on paper to be unaware that their university has policies that penalize plagiarism, and that citing one's sources is always mandatory.

Student body	Format	n	Range	U	Z	p
Item 1. It is a "shortcut" that is generally accepted	Electronic	7.846	4313.03	2779775.500	-2.291	.022
	Paper	744	4099.74			
Item 2. My classmates do it	Electronic	7.846	4306.36	2852769.00	-1.241	.215
	Paper	744	4192.97			
Item 3. Access to online material is easy and convenient	Electronic	7.846	4312.50	2762534.000	-2.514	.012
	Paper	744	4076.63			
Item 4. It guarantees better academic results	Electronic	7.846	4295.96	2818692.000	-1.599	.110
	Paper	744	4147.35			
Item 5. I was unaware of regulations at my university penalizing this practice	Electronic	7.846	4266.81	2750751.500	-2.422	.015
	Paper	744	4483.27			
Item 6. Penalties are not serious	Electronic	7.846	4255.27	2787367.500	-1.587	.113
	Paper	744	4396.71			
Item 7. I was unaware that citing sources is mandatory	Electronic	7.846	4270.39	2721690.000	-3.040	.002
	Paper	744	4549.45			
Item 8. Lack of precise instructions on how to write the paper	Electrónico	7.846	4292.67	2892941.500	-.225	.822
	Papel	744	4313.90			
Item 9. Lack of motivation	Electrónico	7.846	4302.94	2813247.000	-1.595	.111
	Papel	744	4153.75			
Item 10. Lack of time	Electrónico	7.846	4305.73	2825568.000	-1.442	.149
	Papel	744	4170.31			
Item 11. Work overload	Electrónico	7.846	4312.37	2812776.500	-1.648	.099
	Papel	744	4157.70			

#### 4. Discussion and conclusions

The two main objectives of the study were to determine the format (paper/electronic) most frequently used by university students for submitting their academic work and to determine whether format influences plagiarism rates. Here we shall compare our own findings with those of other studies to identify similarities, new contributions, and limitations.

It has been shown that university students predominantly submit their academic work electronically and that "the use of ICTs is widespread among students, as is the use of –and to some extent a certain dependency on– the Internet as a tool for preparing academic papers" (Segarra-Saavedra & Martínez-Sala, 2020: 421).

According to Devlin and Gray (2007), Flint et al. (2006), Moreno (1999) and Park (2003), the most common use of the Internet in writing academic papers is associated with copying excerpts from digital texts. In view of these findings, it is shown that university students admit to copying excerpts from texts published online.

If we look at the causes of plagiarism cited by students submitting their work electronically, university students point primarily to the volume of work required of them and the short deadlines allowed to prepare their work. This can lead to the assumption that there may be other causes related to ethical values or academic honesty itself, as indicated by Reche et al. (2016) and Espiñeira-Bellón et al. (2020) when they call attention to the need to train students in digital and information skills, as well as in the internalization and application of a code of ethics in everyday life. However, the students surveyed also point to the ease and convenience of access to information through the Internet as one of the causes, as indicated by Mejía and Ordóñez (2004), Miranda (2013) and Guangwei and Xiaoya (2016).

As discussed in the first part of this article, many studies establish that the Internet facilitates plagiarism, but few of these focus on determining whether differences exist according to the format that students use for submitting their academic work. In this sense, the findings of this study show the general trend of university students to negatively assess the act of engaging in plagiarism, regardless of the format they have used for submission. This confirms the findings provided by Lau et al. (2013), which indicate that there were no significant differences between the attitudes of students towards Internet plagiarism and

their attitudes towards ordinary plagiarism. However, statistically significant differences have been found for two of the items:

- A greater number of students who submit their work electronically indicate that they have copied excerpts from web pages and incorporated them into their own work without citing their sources, compared to those who submit on paper.
- A greater number of students who submit their work on paper indicate that they have downloaded a full paper from the Internet and submitted it as their own, with no modifications, compared to those who submit electronically.

Stephens et al. (2007) conducted a similar survey of 1,305 undergraduate students at two universities. Consonant with the present study, the findings indicated that students used conventional media more often than digital media to copy full tasks, and preferred to use digital media to plagiarize sentences, i.e. excerpts from texts.

Statistically significant differences have also been observed for several of the causes established by the study to justify cyber-plagiarism by university students. It should be noted that students who use the electronic format consider that plagiarism is a shortcut that is universally accepted and that it is easier and more convenient to access material online for the preparation of their academic work, which is contrary to the findings of Comas-Forgas and Sureda-Negre (2010: 228) when they point out that “the Internet is not the origin of plagiarism in academic environments”.

Notwithstanding, and with a view to resolving these situations, Gómez-Espinosa et al. (2016: 39) show that “it is possible to reduce the incidence of plagiarism by designing activities in which students are encouraged to come up with their own ideas, and in which they use the Internet as a vehicle to locate existing information to help them find solutions, but not as a means of fulfilling the main task”.

As an inference for future research, we might point out that the instrument used should be supplemented by an interview with students to obtain more in-depth information on the scale used, and that it is important to continue advancing in the subject with studies that address the empowerment of students for the development of higher-level proficiency so as not to engage in plagiarism. Additionally, with regard to data analysis, other variables not studied here could also be taken into account, such as differences in student response by gender or by prior academic background.

As a limitation to this study, we should point out that social-desirability biases may have been a factor in determining student response.

### Funding Agency

This work has the institutional and financial support of an autonomous call for papers of the Xunta de Galicia, with reference no. 002/2019.

### References

- Akbulut, Y., Sendà, S., Birinci, G., Kiliçer, K., Sahin, M.C., & Odabài, H.F. (2008). Exploring the types and reasons of Internet-triggered academic dishonesty among Turkish undergraduate students: Development of Internet-Triggered Academic Dishonesty Scale (ITADS). *Computers & Education*, 51(1), 463-473. <https://doi.org/10.1016/j.compedu.2007.06.003>
- Al-Thwaib, E., Hammo, B., & Yagi, S. (2020). An academic Arabic corpus for plagiarism detection: Design, construction and experimentation. *International Journal of Educational Technology in Higher Education*, 17(1), 1-26. <https://doi.org/10.1186/s41239-019-0174-x>
- Alemán, A., Castillo, R., Quezada, F., & Rueda, H. (2017). Plagio electrónico: La otra cara del APA. *Revista Humanismo y Cambio Social*, 7(3), 8-18. <https://doi.org/10.5377/hcs.v0i7.3505>
- Balbuena, S.E., & Lamela, R.A. (2015). Prevalence, motives, and views of academic dishonesty in Higher Education. *Asia Pacific Journal of Multidisciplinary Research*, 3(2), 69-75. <https://bit.ly/3bnxqo6>
- Caldevilla, D. (2010). Internet como fuente de información para el alumnado universitario. *Cuadernos de Documentación Multimedia*, 21, 141-157. <https://bit.ly/3kwMRLW>
- Casasola, VV. (2015). La sabiduría virtual: El ciberplagio universitario. *Revista de Lenguas Modernas*, 23(23), 429-433. <https://doi.org/10.15517/rlm.v0i23.22364>
- Cevallos, L., Guijarro, A., & López-Domínguez, L. (2016). Factores que inciden en el mal uso de la información en trabajos de investigación científica. *Didasc@lia*, 7(4), 57-74. <https://bit.ly/3lwnfQF>
- Comas-Forgas, R., & Sureda-Negre, J. (2008). El intercambio y compra-venta de trabajos académicos a través de Internet. *EduTec*, 26. <https://doi.org/10.21556.edutec.2008.26.466>



- Comas-Forgas, R., & Sureda-Negre, J. (2010). Academic plagiarism: Explanatory factors from the students perspective. *Journal of Academic Ethics*, 8(3), 217-232. <https://doi.org/10.1007/s10805-010-9121-0>
- Devlin, M., & Gray, K. (2007). In their own words: a qualitative study of the reasons Australian university students plagiarize. *Higher Education Research & Development*, 26, 181-198. <https://doi.org/10.1080/07294360701310805>
- Dias, P., Bastos, A., Gandra, M., & Díaz-Pérez, J. (2013). Genius, ¿plagio o creatividad? Aportes para una discusión sobre las prácticas pedagógicas. *Bordón*, 65, 9-23. <https://doi.org/10.13042/23154>
- Díaz-Rosabal, E., Díaz-Vidal, J., Gorgoso-Vázquez, A., Sánchez-Martínez, Y., Riverón-Rodríguez, G., Santiesteban-Reyes, D., & Tenrreiro-Silva, N. (2020). Ciberplagio académico en la praxis estudiantil. *Revista de Investigación en Tecnologías de la Información*, 8(16), 1-9. <https://doi.org/10.36825/rii.08.16.001>
- Domínguez-Aroca, M.I. (2012). Lucha contra el plagio desde las bibliotecas universitarias. *El Profesional de la Información*, 21(5), 498-503. <https://doi.org/10.3145/epi.2012.sep.08>
- Ennam, A. (2017). Systematic analysis of the effects of digital plagiarism on scientific research: Investigating the moroccan context-Ibn Tofail University as case study. *Journal of Education and Practice*, 8(2), 133-141. <https://bit.ly/2IDn9lq>
- Espiñeira-Bellón, E., Mosteiro-García, M., Muñoz-Cantero, J., & Porto-Castro, A. (2020). La honestidad académica como criterio de evaluación de los trabajos del alumnado universitario. *RELIEVE*, 26. <https://doi.org/10.7203/relieve.26.1.17097>
- Flint, A., Clegg, S., & Macdonald, R. (2006). Exploring staff perceptions of student plagiarism. *Journal of Further and Higher Education*, 30(2), 145-156. <https://doi.org/10.1080/03098770600617562>, <https://dx.doi.org/10.1080/03098770600617562>
- Gallent, C., & Tello, I. (2017). Percepción del alumnado de traducción de la Universidad Internacional de Valencia (VIU) sobre el ciberplagio académico. *Revista Digital de Investigación en Docencia Universitaria*, 11, 90-117. <https://doi.org/10.19083/ridu.11.563>
- Gómez-Espinosa, M., Francisco, V., & Moreno-Ger, P. (2016). El impacto del diseño de actividades en el plagio de Internet en educación superior. [The impact of activity design in Internet plagiarism in Higher Education]. *Comunicar*, 48, 39-48. <https://doi.org/10.3916/C48-2016-04>
- Goss-Sampson, M.A. (2018). *Análisis estadístico con JASP: Una guía para estudiantes*. FUOC. <https://bit.ly/30nsLMM>
- Guangwei, N., & Xiaoya, X. (2016). Conocimientos y actitudes hacia el plagio del profesorado de lengua inglesa en universidades chinas. [Chinese university EFL teachers' knowledge of and stance on plagiarism]. *Comunicar*, 48, 29-37. <https://doi.org/10.3916/C48-2016-03>
- Lau, G., Yuen, H., & Park, J. (2013). Toward an analytical model of ethical decision making in plagiarism. *Ethics & Behavior*, 23(5), 360-377. <https://doi.org/10.1080/10508422.2013.787360>
- López-Gil, M., Angulo, F., & Vázquez-Recio, R. (2017). Sentido, gravedad y razones del ciberplagio entre el alumnado de ESO de Andalucía. *Icono14*, 15(2), 114-136. <https://doi.org/10.7195/ri14.v15i2.1054>
- Luis-Solano, E. (2020). Ciberplagio académico como desafío en la competencia informacional en estudiantes del segundo ciclo de nivel medio de la modalidad académica. *Revista de Investigación y Evaluación Educativa*, 7(2), 37-59. <https://doi.org/10.47554/revie2020.7.4>
- Martínez-Sala, A.M., & Alemany-Martínez, D. (2017). Aprender en un mundo de cambio. Aplicación práctica de métodos de aprendizaje colaborativo-cooperativo en el ámbito de la publicidad y las RR.PP. In R. Roig-Vila (Ed.), *Investigación en docencia universitaria. Diseñando el futuro a partir de la innovación educativa* (pp. 614-625). <https://bit.ly/3kSEj3S>
- Martínez-Sala, A.M., Alemany-Martínez, D., & Segarra-Saavedra, J. (2019). Las TIC como origen y solución del plagio académico. Análisis de su integración como herramienta de aprendizaje. In R. Roig-Vila (Ed.), *Investigación e innovación en la enseñanza superior: Nuevos contextos, nuevas ideas* (pp. 1208-1218). Octaedro. <https://bit.ly/3kSEj3S>
- McGowan, S., & Lightbody, M. (2008). Enhancing students' understanding of plagiarism within a discipline context. *Accounting Education*, 17(3), 273-290. <https://doi.org/10.1080/09639280701612168>
- Mejía, J., & Ordóñez, C. (2004). El fraude académico en la Universidad de los Andes ¿qué, qué tanto y por qué? *Revista de Estudios Sociales*, 18(18), 13-25. <https://doi.org/10.7440/res18.2004.01>
- Miranda, A. (2013). Plagio y ética de la investigación científica. *Revista Chilena de Derecho*, 40(2), 711-726. <https://doi.org/10.4067/S0718-34372013000200016>
- Moreno, J.M. (1999). Con trampa y con cartón. El fraude en la educación, o cómo la corrupción también se aprende. *Cuadernos de Pedagogía*, 285, 71-77. <https://bit.ly/3lx93XT>
- Morey, M., Sureda, J., Oliver, M.F., & Comas, R.L. (2013). Plagio y rendimiento académico entre el alumnado de Educación Secundaria Obligatoria. *Estudios sobre Educación*, 24, 225-244. <https://bit.ly/32M6727>
- Muñoz-Cantero, J.M., Rebollo-Quintela, N., Mosteiro-García, J., & Ocampo-Gómez, C.I. (2019). Validación del cuestionario de atribuciones para la detección de coincidencias en trabajos académicos. *RELIEVE*, 25(1). <https://doi.org/10.7203/relieve.25.1.13599>
- Olivia-Dumitrina, N., Casanovas, M., & Capdevila, Y. (2019). Academic Writing and the Internet: Cyber-Plagiarism amongst University Students. *Journal of New Approaches in Educational Research*, 8(2), 112-112. <https://doi.org/10.7821/naer.2019.7.407>
- Park, C. (2003). In other (people's) words: plagiarism by university students — literature and lessons. *Assessment & Evaluation in Higher Education*, 28, 471-488. <https://doi.org/10.1080/026002930301677>
- Reche, E., Quintero, B., & Marín, V. (2016). De la competencia informacional al ciberplagio en Educación Primaria. *Etic@net*, 16(2). <https://doi.org/10.30827/eticanet.v16i2.11924>
- Ruiz-Bejarano, A. (2016). Fuentes digitales y fuentes impresas: Prácticas letradas y plagio en el marco universitario. *Revista Chilena de Literatura*, 94(94), 215-230. <https://doi.org/10.4067/s0718-22952016000300011>
- Sanvicen, P., & Molina, F. (2015). Efectos del uso de Internet como fuente principal de información. *Prisma Social*, 15, 352-386. <https://bit.ly/35wxleW>

- Segarra-Saavedra, J., & Martínez-Sala, A.M. (2020). Percepción del plagio y uso de herramientas antiplagio por parte del alumnado universitario. In R. Roig (Ed.), *Redes de Investigación e Innovación en Docencia Universitaria*, vol. 2020, volume 2020 (pp. 409-424). Instituto de Ciencias de la Educación de la Universidad de Alicante. <https://bit.ly/3ejaOao>
- Sorea, D., & Repanovici, A. (2020). Project-based learning and its contribution to avoid plagiarism of university students. *Investigación Bibliotecológica: archivonomía, bibliotecología e información*, 34(85), 155-155. <https://doi.org/10.22201/iibi.24488321xe.2020.85.58241>
- Stephens, J., Young, M., & Calabrese, T. (2007). Does moral judgment go offline when students are online? A comparative analysis of undergraduates' beliefs and behaviors related to conventional and digital cheating. *Ethics & Behavior*, 17(3), 233-254. <https://doi.org/10.1080/10508420701519197>
- Tayan, B. (2016). Academic misconduct: An investigation into male students' perceptions, experiences & attitudes towards cheating and plagiarism in a Middle Eastern University context. *Journal of Education and Learning*, 6(1), 158-158. <https://doi.org/10.5539/jel.v6n1p158>
- Zarfsaz, E., & Ahmadi, R. (2017). Investigating some main causes and reasons of writing plagiarism in a EFL context. *International Journal of Applied Linguistics and English Literature*, 6(5), 214-214. <https://doi.org/10.7575/aiac.ijael.v.6n.5p.214>
- Zrnec, A., & Lavbic, D. (2017). Social network aided plagiarism detection. *British Journal of Educational Technology*, 48(1), 113-128. <https://doi.org/10.1111/bjet.12345>