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Digital Competencies in Verifying Fake News: Assessing the Knowledge and Abilities of Journalism Students

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Abstract: The surge of disinformation in the digital sphere following the COVID-19 pandemic presents a considerable threat to democratic principles in contemporary societies. In response, multiple fact-checking platforms and citizen media literacy initiatives have been promoted. The fact checker has indeed become a new professional profile demanded by the sector. In this context, this research delves into the study of digital skills applied to information verification by journalism students. Adopting a comprehensive understanding of digital skills that extends beyond technical proficiency to encompass a shift in mindset, journalism students' perceptions of their verification abilities are examined using a quantitative survey technique. This examination is based on an original list of competencies prepared specifically for this study. The results indicate that journalism students demonstrate awareness of the implications of disinformation, exhibiting scepticism towards content from unfamiliar sources or displaying clear signs of deceptive intent. Furthermore, they emphasise the importance of verification and fact-checking practices and express confidence in their proficiency in analysis, critical thinking, and social skills. However, their confidence in handling computer applications for verification and specialisation in data journalism is comparatively lower. Notably, significant gender disparities were observed in these areas, with women exhibiting greater confidence in social skills, collaborative work, and innovation, while men displayed a heightened proficiency in computer applications. Consequently, there is a need for improvements in teaching practices, which could potentially create new job opportunities for journalism students.

Keywords: disinformation; misinformation; fact checking; digital competencies; digital literacy; media literacy; higher education

1. Introduction

Social networks and instant messaging services have accelerated the spread of disinformation and fake news in the digital environment. This trend has worsened during the COVID-19 health crisis [1]. This circumstance accentuates the importance of having digital skills applicable to the information verification process [2]. Assuming that digital competencies include professional skills and tools that are increasingly in demand by employers, future journalists cannot remain outdated [3,4]. Developing digital skills in fact checking guarantees one's competitiveness in the labour market. Therefore, evaluating students' levels of digital skills is essential for introducing improvements in teaching and, thus, contributing to a greater specialisation.

Defining the concept of digital competencies presents a challenge, with the literature offering various perspectives. Among them are laws or regulations established by supranational institutions [5]. A comprehensive definition is provided by the European Commission's research centre, which defines digital competence as encompassing knowledge, skills, attitudes, abilities, strategies, and awareness necessary for using ICT and digital media effectively and ethically. This includes various tasks, such as problem solving, communication, information management, collaboration, content creation, and knowledge

building, which are developed in an effective, critical, creative, autonomous, flexible, ethical, and reflective manner for work, leisure, participation, learning, socialisation, consumption, and the empowerment of citizens [6]. Moreover, the concept of media competencies emphasises citizens' ability not only to appropriately use the information produced by digital media but also to navigate effectively and to proficiently express themselves in the digital environment [7].

Furthermore, in the workplace, it is understood that digital skills must be complemented by a change in mentality, which is known as a digital mindset. This mindset involves a willingness to learn and take advantage of the opportunities offered by the digital sphere, adeptness at adapting quickly to changes, flexibility, and the capacity to work collaboratively to foster innovation and generate value, among other attributes [8]. Digital skills include not only technical expertise but also incorporate elements of humanistic disciplines and require a creative attitude. In a context characterized by the rapid evolution of artificial intelligence, it becomes essential to develop skills that differentiate people from machines, such as creativity, critical thinking, social skills, emotional thinking, collaborative work, and the ability to inspire [9].

Previous research has increasingly focused on digital and media literacy [10–13], with some studies examining the role of teachers [14–16], specifically in primary and secondary education [17,18]. Less frequently, studies focus on the student body, specifically within a university context [19–22]. However, fake news poses a threat to citizens of all ages, although it has been observed that older individuals are more vulnerable than younger ones. [23]. Various studies analyse the implications of disinformation on society, considering different age groups [24]. Primarily, these research efforts focus on delving into proactive training in specific fake news detection methods, training to cultivate a critical understanding of the media system, or training aimed at a fact-based correction of disinformation [25]. Nevertheless, there are still few studies that focus on educational approaches aimed at empowering individuals to distinguish between reliable and unreliable media content. This highlights the importance of continuing research on the digital skills of university students. This aspect is the focus of the present study, which examines how journalism students' perceptions of their abilities evolve as they progress through their courses.

In Europe, the acquisition of technological skills is contemplated in different journalism curricula [26]. However, the concept of digital competence requires other skills, such as rapid problem solving through collaborative work and creativity, which are often overlooked. Sometimes, these aspects are evaluated in isolation, missing a more integrative vision of the students' abilities. In Spain, a specific experiment has been conducted to check whether journalism students are able to recognise bots or false accounts dedicated to disseminating disinformation on Twitter (now referred to as X) [27]. However, a further investigation is necessary to gain a comprehensive understanding of the situation.

This research is framed in this context and aims to explore journalism students' perceptions of their capabilities, knowledge, and skills for verifying disinformation in the digital environment. Additionally, it examines the students' conceptions of disinformation, the seriousness they attribute to various types of disinformation, and the importance they assign to different verification practices. Furthermore, this study investigates the origins and dissemination processes of fake news that reach students, exploring the sources, channels, or platforms through which they access false content.

1.1. Disinformation in the Digital Environment

Social media and mobile messaging systems have been positioned as the vertex of a digital and interconnected communicative ecosystem [28,29], empowering any citizen to become an independent media capable of generating and disseminating (dis)information without any filter [30]. The paradigm shift has led to an exponential increase in the volume of information generated and new forms of consumption [31,32]. However, the digital revolution has also facilitated the proliferation of disinformation strategies, resulting in significant repercussions [33,34].

Disinformation can be defined as "proven false or misleading information created, presented, and disseminated for financial gain or intentionally misleading the public" [35]. Therefore, it requires an intention to deceive on the part of the sender [36,37]. Consequently, it is a complex concept, as "the lines are blurred and what begins as an error becomes a fallacy, or what was planned with malice is repeated by an innocent user who is unaware of its origin" [38] (p. 41).

This phenomenon relates to various terms, such as 'post-truth' and 'fake news', which are polysemic and equivocal in nature [39]. 'Fake news' is the most prevalent and frequently cited form within Web of Science and Scopus articles [40,41], although it is insufficient to encompass all disinformation disorders [42–44]. Therefore, institutions like the European Commission make distinctions between disinformation and misinformation to precisely designate these disorders in a less biassed way [35,45]. Misinformation refers to an unintentional error, whereas disinformation implies deliberate attempts to deceive [37,46]. Researchers Ireton and Posetti [47] introduce a third category: malinformation, which includes private or restricted information published with the intent to harm individuals, institutions, or countries and should thus not be published.

Fake news typically follows a straightforward pattern of dissemination. Originating from anonymous or obscure websites, fake news gradually spreads to mainstream social media platforms like Twitter, Facebook, or Instagram. This growing dissemination of fake news has been called the "trumpet of disinformation" [48] or "cascade of rumours" [49]. The use of fake news as a manipulation strategy is becoming increasingly entrenched, leading to detrimental outcomes, such as the erosion of public trust in the media, particularly on social networks [50,51]. Consequently, disinformation, as a deliberate distortion in communication, undermines the foundation of democracy [52,53], and the lack of truthful information curtails citizens' capacity to make informed decisions freely [40].

Academic interest in studying the phenomenon has multiplied since 2016 [40]. Previously, during the Ebola virus crisis in 2014, an exceptional flow of hoaxes and fake news emerged on the Internet [54]. However, it was in 2016, amid two significant political events—the Brexit referendum in the United Kingdom and Donald Trump's electoral victory in the United States—that disinformation strategies became more organised and prominent [30,55,56]. In both cases, there was a favourable context for the dissemination of fake news, which prevailed over verified information on social networks [57,58].

With the COVID-19 health crisis, there was a noticeable and immediate surge in citizens' news consumption [1,59], but the spread of disinformation intensified, leading to an unprecedented communicative crisis [60]. To address this phenomenon, the World Health Organisation (WHO) coined the term infodemic to describe the excess of information about COVID-19 circulating through multiple platforms [61]. In response, governments and institutions launched campaigns urging the public to consult official sources for accurate information [62].

Information has long been recognized as a mechanism of control. However, situations as complex as those caused by the COVID-19 pandemic have exacerbated the dissemination of false content. Consequently, there has been a surge of research interest focusing on various aspects of disinformation, including its impact on media and democratic systems; the capabilities of media and institutions in detecting disinformation [1]; the challenges posed by its dissemination through social networks [63]; and the typology of these information disorders [64]. In this sense, two research questions are posed, as follows:

RQ1: What conception of disinformation do journalism students hold?

H1: Journalism students predominantly perceive disinformation as involving the intention to deceive by employing false information.

RQ2: To what extent are journalism students concerned about each type or strategy of disinformation?

H2: Journalism students consider strategies that incorporate words such as deceit, manipulation, and bias in their articulation as highly severe. Conversely, clickbait, exaggeration, and satire are perceived as less severe.

1.2. Mechanisms and Tools to Fight Disinformation

In a context dominated by false content, addressing disinformation effectively poses a collective challenge for democratic institutions, private organisations, media, and users [46,65]. Before the COVID-19 crisis, fact-checking platforms were already operational in over 50 countries [66]. However, the pandemic has promoted numerous international institutional initiatives aimed at curbing the spread of fake news, highlighting the significant social threat posed by this trend [50].

Originating in the United States, fact checking has expanded globally over the recent fifteen years. As of April 2020, Duke Reporter's list included 237 organisations dedicated to verification in 78 countries [42]. Undoubtedly, verification stands as a critical challenge within the digital media landscape, seeking to restore credibility to the sector amidst increasing consumption of content on social networks [67,68]. In the context of the pandemic, with the credibility of journalism and democratic values on the line, the activity of fact-checking organisations has intensified [69].

Currently, fact-checking platforms predominantly emerge as a result of collaborations between media and private verification entities [70]. These alliances make sense since the processes of contrasting and verifying information are inherent to journalistic practice. Consequently, it seems reasonable to know how to combine traditional journalistic verification methods [71] with the use of new technological tools for detecting falsehoods, including search engines and more sophisticated technologies [33]. These fact-checking platforms are not integrated within the newsrooms but rather operate autonomously, staffed by specialists who use the same digital tools that spread disinformation but to deny it [72–74].

Addressing this challenge involves initiatives aimed at empowering the public. Improved media literacy among citizens is essential to safeguard against the risks posed by disinformation, equipping individuals with the skills and competencies necessary to critically evaluate the information they encounter [75–80]. In this regard, public institutions are promoting initiatives to improve digital media literacy among both educators and citizens [45,53,81] because "if new generations obtain their information from social networks and other online resources, they must learn to decode what they read" [66] (p. 75).

Journalism is moving towards a new scenario where "the media must understand that fighting misinformation and fake news requires greater training for their journalists and greater transparency in terms of editorial policy" [82] (p. 40). This paradigm shift implies the need for new professional profiles within journalism, emphasizing verification training for editors, transparent rectification policies, and a commitment to public benefit [83–85]. In fact, verifying fake news is useful to reinforce the journalistic personal brand [86]. This research aligns with the overall objective of improving the professional verification skills of future journalists.

The concept of professional competencies integrates both specialized knowledge and the application of relevant tools, alongside the requisite attitudes for effective journalism [87]. However, given the pivotal role of digital tools in detecting fake news, it appears pertinent to emphasize digital competencies in verification [6]. Beyond technical skills, fostering creativity, critical thinking, emotional thinking, and collaborative work can help combat disinformation [9]. Consequently, a comprehensive approach to the enhancement of verification skills can improve the employability of journalism graduates, bridging the gap between academic training and the professional sector demands [3,4]. In this sense, Ufarte-Ruíz et al. [84] confirm discrepancies between academic and professional perceptions when assessing which skills are most important. Academics highlight the necessity to integrate journalistic fundamentals with technological training, promoting the use of fact-checking digital tools. This "double path" approach [78], which emphasizes both traditional journalistic principles and technological proficiency, is precisely what the professional sector expects from journalism graduates.

In this context, this work is based on the idea that fundamental journalistic principles should be complemented by the ability to enjoy learning and take advantage of all the

opportunities offered by the digital environment, the rapid adaptability to changes, and the ability to innovate and create value working collaboratively [8].

However, there is a notable absence of research into journalism students' perceptions of their own competencies and abilities in verifying information in the digital sphere, particularly in the post-pandemic period and from the perspective adopted in this study, which emphasizes a broad conception of digital competencies in verification. Therefore, two additional research questions were proposed to deepen the understanding in this field.

RQ3: How important do journalism students consider practices associated with fact checking to be?

H3: Journalism students attribute great importance to practices involving consulting official sources, experts, mainstream media, and fact-checking services. Conversely, they assign less importance to the use of computer tools for verification.

RQ4: To what extent are journalism students trained in digital skills relevant for fact checking?

H4: Journalism students perceive themselves as more competent in skills related to the attitudes and principles intrinsic to the profession. In contrast, they perceive themselves as less trained in terms of their social skills, capacity for innovation, and use of technology (computer applications, data journalism).

Traditionally, a gender gap has been observed in the field of digital competencies [88,89], specifically in the field of journalism. In this regard, it has been observed that women have less presence in digital media and produce less digital content [90], although more recent studies suggest that women identify fake news more frequently than men [91]. Similarly, journalism students have been found to become more pessimistic about their training as they reach the end of their studies [92]. However, more recent empirical evidence is needed on these issues. Therefore, in relation to RQ2, RQ3 and RQ4, another research question was proposed:

RQ5: Are there differences based on journalism students' gender or the academic year they are in?

H5: Journalism students attribute higher severity levels to disinformation strategies as they progress in their studies. Furthermore, students in their final year give more importance to verification practices that involve the use of computer applications. Additionally, women perceive themselves as more competent in social skills, collaborative work, and creativity, while men perceive themselves as more competent in technological skills.

2. Materials and Methods

This research is conducted from a quantitative perspective, employing an online survey technique. In particular, it aims to explore journalism students' perceptions of their digital skills in detecting fake news and verifying information. Furthermore, this study examines what level of severity students attribute to various strategies used for disseminating disinformation in the digital sphere. This research also aims to improve the design of study curricula and the training of future professionals.

To develop the questionnaire, this study adopted the definition of digital competencies from the European Commission's research centre [6] and the skills required by the multinational human resources company Randstad (Netherlands) [8], targeting students in the four courses of Journalism at the Universitat Jaume I of Castellón (Spain).

The survey combines ten questions of different types: with one being closed and the remainder being dichotomous (yes/no), comprising multiple-choice with multiple answers. Moreover, the survey utilises a Likert scale. The initial question adopts an experimental approach as it presents a case for students to solve. Specifically, this case involved presenting students with information about COVID-19 circulating on social networks—without mentioning its falsity—to assess, based on a series of proposed options, the students' responses to this content. The validated questionnaire on disinformation strategies, fact-checking practices, and digital skills for fact checking using a Likert scale, was specifically developed for this study due to the absence of a suitable instrument in the literature (Table 1).

Table 1. Questionnaire design.

Questions	Type	Sources
Case to solve	Experiment	
Concept of disinformation	Multiple choice	[47]
Have you ever received/found a hoax or false content?	Dichotomous	
Have you ever received/found a hoax or false content about COVID-19?	Dichotomous	
When you have been sent a hoax or false content, who did it?	Multiple choice	
Severity attributed to different disinformation strategies (10 statements)	Five-point Likert scale (Cronbach's alpha = 0.75; M = 3.81 SD = 2.722)	[30,36,39,45]
Platforms that contribute the most to the spread of disinformation	Multiple choice	
Importance of fact-checking practices (8 statements)	Five-point Likert scale (Cronbach's alpha = 0.76; M = 3.81 SD = 1.031)	[30,93]
Knowledge, skills, and abilities for verifying information (10 statements)	Five-point Likert scale (Cronbach's alpha = 0.80; M = 3.80 SD = 1.650)	[6,8,9]
Digital tools for verification known to students	Multiple choice	

The survey was distributed in April 2021, and the sample of responses was N = 232, representing 64.5% of the population (42.7% men and 57.3% women). In total, 31.9% of responses were from first-year students, 22% from second-year students, 21.6% from third-year students, and 24.6% from fourth-year students. To know whether the dependent variables (Table 1) and the examined independent variables (genre and course of the students) were related and whether there were statistically significant differences between groups, ANOVA was conducted. The statistical analysis of the results was conducted using SPSS (v.26).

3. Results

3.1. Experiment

The first question is experimental in nature. A practical case is proposed for students to solve by selecting a single answer from a series of given options. An image with text was displayed (Figure 1), followed by the question, "What would you do if you were given or found this information?"

Journalism students mainly select two options, with similar percentages of around 40% (Table 2). The most appropriate response according to the academic literature ('I would not share it because I do not know who the source or author of the content is') obtained the highest average (44.2%), despite a notable percentage of students who trust traditional media and would share this information if it had been previously published by them (42.0%). This second option is less acceptable due to the potential fallibility of the media, which could propagate fake news.

In terms of sharing news, it should be avoided as it contributes to the spread of fake content lacking official or recognisable sources. Although the percentage is small, one in ten students would share this type of news without conducting prior verification, only because it appears relevant or originates from a trusted source. This tendency is more pronounced among men than women. Indeed, statistically significant differences based on students' gender were found in this question ($p = 0.009$). According to the results, it can be concluded that men are more likely than women to share unverified information (see the results related to items 'I would share it because it is relevant information'; 'I would share it if it came to me through a reliable contact'; and 'I would look for this information on social networks, and if I see that there are reactions and that it is interesting, I would share it on my accounts'). Conversely, no statistically significant differences were observed based on the academic year.

Figure 1. Image and text of the survey case study. Source: Maldita.es (detected on social networks).

Table 2. Responses to the practical case of journalism students (%).

	Total	**1st**	**2nd**	**3rd**	**4th**	**M**	**W**
I would not share it because I do not know who the source or author of the content is.	44.2	43.2	29.4	48.0	55.4	45.9	42.9
I would look for this information in traditional media, and if it is published, I would give it credibility and share it with the link.	42.0	41.9	58.8	40.0	28.6	32.7	48.9
I would share it because it is relevant information.	4.3	2.7	3.9	8.0	3.6	6.1	3.0
I would share it if it came to me through a reliable contact.	4.3	6.8	5.9	2.0	1.8	7.1	2.3
I would look for this information on social networks, and if I see that there are reactions and that it is interesting, I would share it on my accounts.	3.5	4.1	2.0	0.0	7.1	6.1	1.5
I would not share it publicly, but I would share it with my closest WhatsApp groups because it is relevant information.	1.7	1.4	0.0	2.0	3.6	2.0	1.5

3.2. Conceptualisation of Disinformation

Three definitions are proposed to determine what is considered disinformation by journalism students (only one option can be chosen). These definitions are based on Ireton and Posetti's "information disorders" [47]: (a) disinformation; (b) misinformation; and (c) malinformation. The concept of an "information disorder" is broader than hoax or fake news [45], as it implies a deliberate intention to deceive and cause deception [39]. Hoaxes and fake news fall under the disinformation category (option a).

Generally, the definition considered most appropriate according to the literature ('deliberately false information, disseminated for economic, ideological, or some other reason') is favoured by the majority of journalism students (52%) (Table 3). However, the second definition ('false information, transmitted with the conviction of its truth'), which does not imply an intention to deceive, is also chosen by a substantial percentage of students (42.7%). While the most advanced students (4th year) appear to be more accurate regarding this question, no significant differences were found based on students' academic year or gender.

Table 3. Concept of disinformation according to journalism students (in %).

	Total	1st	2nd	3rd	4th	M	W
Deliberate false information, disseminated for economic, ideological or other reasons (a)	52.0	50.0	50.0	44.9	63.0	52.6	51.5
False information, transmitted with the conviction of its truth (b)	42.7	44.6	44.0	55.1	27.8	43.3	42.3
True information of a private or restricted scope that is brought to light with the intention of harming a person, an institution, or a country and which, therefore, should not be published (c)	5.3	5.4	6.0	0.0	9.3	4.1	6.2

3.3. Severity of Disinformation Strategies

Students rated the severity of various disinformation strategies on a Likert scale ranging from 1 to 5 points: 1 'not serious', 2 'slightly serious', 3 'serious', 4 'quite serious', and 5 'very serious'. The strategies evaluated were based on the research of Aguado-Guadalupe and Bernaola-Serrano [30], Magallón-Rosa [36], Redondo [93], Salaverría et al. [39], and Wardle and Derakhshan [45]. Table 4 shows the mean severity of each strategy, listed from highest to lowest.

Table 4. Severity of disinformation strategies according to journalism students.

	Mean	SD	Gender X^2—Sig.	Year X^2—Sig.
Deception through the impersonation of reliable sources.	4.77	0.559	0.422	0.020 **
Manipulation of photos, videos, or official documents.	4.61	0.671	0.781	0.674
Deception based on the fabrication of content.	4.52	0.700	0.299	0.093
Biased interpretations of certain images or content to promote conspiracy theories.	4.23	0.836	0.072	0.844
Lies about the location or date of a certain event.	4.20	0.857	0.509	0.752
Decontextualization of facts, statements, photos, or videos.	3.95	0.891	0.357	0.060
Clickbait (use of headlines or images that do not correspond to the content).	3.43	0.861	0.397	0.443
Reuse of old photos or videos from other places.	3.24	1.163	0.388	0.687
Exaggeration based on a fact or data linked to the truth.	3.10	0.841	0.924	0.800
Jokes, satire, or parody.	2.04	1.017	0.105	0.184

** $p < 0.05$.

The 'deception through the impersonation of reliable sources' (M = 4.77; SD = 0.559) and 'manipulation of photos, videos, or official documents' (M = 4.61; SD = 0.671) emerge as the most detrimental strategies in terms of disinformation. In contrast, journalism students perceive jokes and satire as mechanisms of disinformation with little seriousness (M = 2.04; SD = 1.017). Other strategies are perceived to be of intermediate severity. For instance, the exaggeration of facts/data (M = 3.10; SD = 0.841), the reuse of images from unrelated events (M = 3.24; SD = 1.163), and the practice of clickbait (M = 3.43; SD = 0.861).

Regarding this question, no significant statistical differences were found based on gender. Based on students' academic year, significant differences were only found in the strategy considered most serious (p = 0.020), i.e., 'deception through the impersonation of reliable sources'. It is surprising that the most advanced students (4th academic year) perceive this strategy as moderately less serious (M = 4.57; SD = 0.792) compared to students from previous years (M = 4.77; SD = 0.562 in 1st year/M = 4.86; SD = 0.351 in 2nd year/M = 4.88; SD = 0.331 in 3rd year).

For increased transparency in fieldwork, the percentages obtained at each level of the Likert scale are sorted by gender and academic year (Table A1). The disinformation strategies considered most dangerous concentrate the highest percentages of responses in the 'very serious' and 'quite serious' levels. Other strategies used with the intention of deceiving citizens are not perceived in this manner by these future journalists. In these cases, the percentages are typically lower in the levels of greater severity. For instance, three out of ten of the students surveyed consider the 'reuse of old photos or videos from other places' 'slightly serious' or 'not serious', despite the fact that this practice contributes to falsifying the content of recent news. Half of those surveyed consider that 'exaggeration based on a fact or data linked to the truth' is 'serious' but not 'very serious'. Four out of ten students consider clickbait 'serious', but only one in ten considers it as 'very serious'. Seven out of ten consider that parody and satire are 'slightly serious' or 'not serious', although they are forms of disinformation.

3.4. Origin and Circulation of Fake News

Almost all respondents (98.7%) encountered or came across fake news in the digital environment, with a significant proportion of it being related to COVID-19 (95.2%). Fake news is primarily received or encountered on the messaging application WhatsApp and various social media platforms, often shared by family members or followed users. The survey reveals that WhatsApp was the primary source of fake news (42.7%), followed closely by social media platforms (41.2%). Additionally, journalism students were asked to identify the platforms they consider as most harmful for disseminating disinformation, with the option to select up to three options. According to their perceptions, WhatsApp and Twitter emerged as the primary contributors to the spread of fake news, followed by Facebook and Instagram (Figure 2).

3.5. Importance of Verification and Fact-Checking Practices

Journalism students evaluated the importance of various verification and fact-checking practices (Table 5) on a Likert scale ranging from 1 to 5 points: 1 'not important at all', 2 'of little importance', 3 'of average importance', 4 'very important', 5 'absolutely essential'. The categories evaluated were based on previous research regarding the most common practices used by fact-checking services [30,35,85].

The mean of all practices exceeded three points, and those related to consulting sources were the best-rated, with scores exceeding four points. Students prioritise expert and documentary sources (M = 4.45; SD = 0.679) over official or impersonated sources (M = 4.17; SD = 0.908) and the original source that spreads the fake news (M = 4.08; SD = 0.984). Furthermore, more importance is attributed to consulting fact-checking services (M = 3.67; SD = 0.948) than to consulting mainstream media (M = 3.42; SD = 0.866).
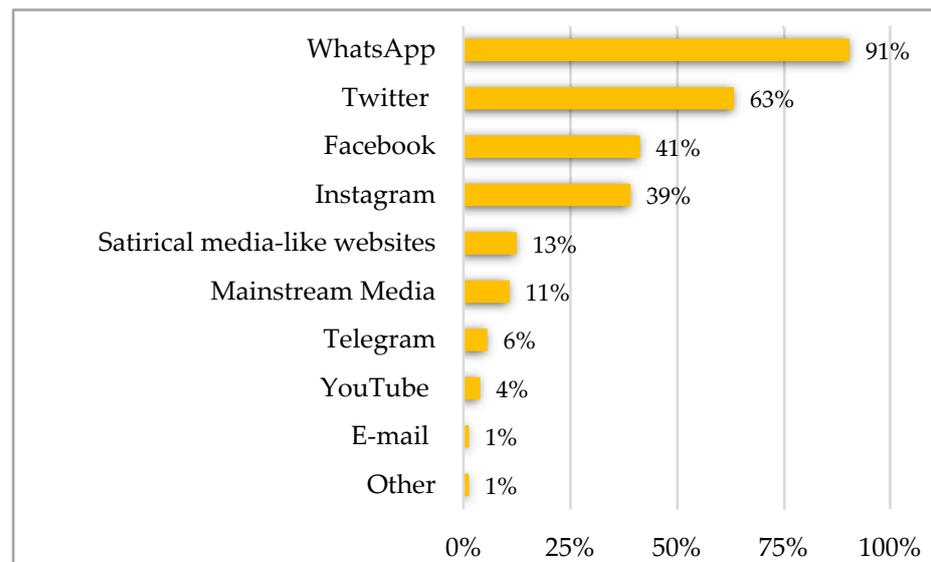
Figure 2. Channels with a greater capacity for the spread of fake news.

Table 5. Importance of fact-checking practices according to journalism students.

	Mean	SD	Gender X^2—Sig.	Year X^2—Sig.
Consult expert sources and documentary sources.	4.45	0.679	0.745	0.171
Consult official sources, impersonated, or cited in fake content.	4.17	0.908	0.323	0.807
Consult the original source of the manipulated content or out of context content.	4.08	0.984	0.860	0.628
Use of computer tools to verify the age of photos and videos.	3.73	0.887	0.204	0.147
Consult fact-checking services in the country of origin of the fake news.	3.67	0.948	0.025 **	0.001 *
Use of computer tools to verify the geolocation of an event.	3.53	0.895	0.602	0.406
Use of computer tools to track suspicious user accounts.	3.43	1.045	0.822	0.471
Consult other media.	3.42	0.866	0.055	0.195

* $p < 0.01$; ** $p < 0.05$.

Statistically significant differences were found only concerning consulting fact-checking services originating from the country where the fake news originated, both by gender ($p = 0.025$) and by academic year ($p = 0.001$). Women (M = 3.79; SD = 0.957) attribute more importance to this practice than men (M = 3.51; SD = 0.914). Regarding the academic year, first-year students attribute less importance to this practice (M = 3.530; SD = 0.856) compared to their counterparts from subsequent years of study (M = 3.82; SD = 0.850 in 2nd year/M = 3.83; SD = 0.907 in 3rd year/M = 3.89; SD = 1.058 in 4th year). This finding is consistent with their lesser exposure to training in this subject matter. In fact, it is the fourth-year students who attribute the greatest importance to this practice; they are likely more acquainted with fact-checking services.

To complement this section, the percentages obtained at each level of the Likert scale by academic year and gender are presented in Appendix A (Table A2).

3.6. Perception of Digital Competencies for Verification

The students assessed their digital competencies (capabilities, knowledge, and abilities) for verifying information (Table 6) on a Likert scale ranging from 1 to 5 points: 1 'none', 2 'little', 3 'indeterminate' (I would not know how to value my knowledge or ability), 4 'quite', and 5 'a lot'. The categories evaluated are based on the definition of 'digital competencies' [6,8,9] and their application to information verification [73,75,81,84]. The results indicate that most digital competencies receive an average score ranging between 3.8 and 4.2 points. Only two competencies fall below these values: 'mastery in the management of computer applications useful for verification' (M = 2.93; SD = 0.991) and 'specialised knowledge in data journalism, big data, and algorithms' (M = 2.65; SD = 0.874).

Table 6. Journalism students' perception of their digital skills for fact checking.

	Mean	SD	Gender X^2—Sig.	Year X^2—Sig.
Journalistic attitudes: curiosity, analysis, reflection, critical thinking, honesty, etc.	4.29	0.654	0.157	0.762
Social skills and emotional thinking (communication, empathy)	4.21	0.777	0.000 *	0.820
Ability to work collaboratively and in multidisciplinary teams.	4.08	0.852	0.030 **	0.930
Ability to be flexible and adapt quickly to changes.	4.03	0.827	0.219	0.125
Ability to enjoy learning and take advantage of the opportunities offered by the digital environment.	4.00	0.84	0.129	0.491
Knowledge of the basic principles and practices of journalism: credibility, impartiality, objectivity, etc.	4.00	0.670	0.265	0.716
Continuous learning and rapid updating in the use of new computer tools.	3.88	0.889	0.263	0.893
Ability to innovate and be creative.	3.85	0.915	0.020 **	0.928
Mastery in the use of computer applications useful for verification.	2.93	0.991	0.049 **	0.847
Specialised knowledge in data journalism, big data, and algorithms.	2.65	0.874	0.260	0.118

* $p < 0.01$; ** $p < 0.05$.

The two competencies with the highest averages are 'journalistic attitudes: curiosity, analysis, reflection, critical thinking, honesty' (M = 4.29; SD = 0.654) and 'social skills and emotional thinking (communication, empathy)' (M = 4.21; SD = 0.777). The 'capacity for collaborative work' is also well-rated (M = 4.08; SD = 0.852). Additionally, the competencies closely related to journalism, such as 'journalistic attitudes' and 'knowledge about the basic principles and practices of journalism' (M = 4.00; SD = 0.670), receive high average scores.

Regarding competencies for fact checking, no statistically significant differences were detected by academic year, but differences were observed by gender. Specifically, disparities were found in four of the competencies assessed: 'social skills and emotional thinking (communication, empathy)' ($p = 0.000$); 'ability to work collaboratively and in multidisciplinary teams' ($p = 0.030$); 'ability to innovate and be creative' ($p = 0.020$); and 'mastery in the use of computer applications useful for verification' ($p = 0.049$). Women seem to grade their social skills higher than men (M = 4.37; SD = 0.722 vs. M = 3.99; SD = 0.797), and they perceive themselves to have a greater ability for collaborative work (M = 4.19; SD = 0.778 vs. M = 3.94; SD = 0.927) and innovation and creativity (M = 3.98; SD = 0.931 vs. M = 3.69; SD = 0.870). Conversely, men demonstrate higher confidence than women in their mastery of computer applications for information verification (M = 3.08; SD = 0.986 vs. M = 2.82;

SD = 0.984). Therefore, it appears that women perceive themselves as more proficient in cross-cutting competencies, while men feel more assured in technical skills.

The percentages obtained at each level of the Likert scale by academic year and gender are presented in Appendix A (Table A3). Although there are no significant differences by academic year, it is observed that the fourth-year students choose the 'a lot' level more often. However, they are also the ones who most often choose the 'indeterminate' level (in four competencies), while second-year and third-year students are the ones who most often choose the 'quite' level. However, the most notable conclusion is that journalism students' perceptions of their capacities and abilities for fact checking do not significantly improve as they progress in their studies, at least in this case study. This finding is important for implementing improvements in teaching practices.

On the other hand, concerning software management, journalism students were queried about their familiarity with various digital resources and tools for fact checking, allowing them to indicate all the items they were acquainted with (Figure 3). In this context, eight out of ten students were familiar with Google Images, which facilitates tracking images online to find out if they were captured during events preceding the creation of fake content. However, few are acquainted with other similar search engines (Bing and Yandex) or tools for video tracking (InVid), and are they not aware of the original publication date of images on the Internet (TinEye). In terms of geolocation applications to verify the occurrence of events in specific locations, eight out of ten students are familiar with Google's services (Maps and Earth), but not with others (Baidu Maps). Six out of ten students are acquainted with Spanish fact-checking services, such as Maldita, Newtral, and EFE Verifica. In relation to these matters, no significant differences emerge by gender or academic year.
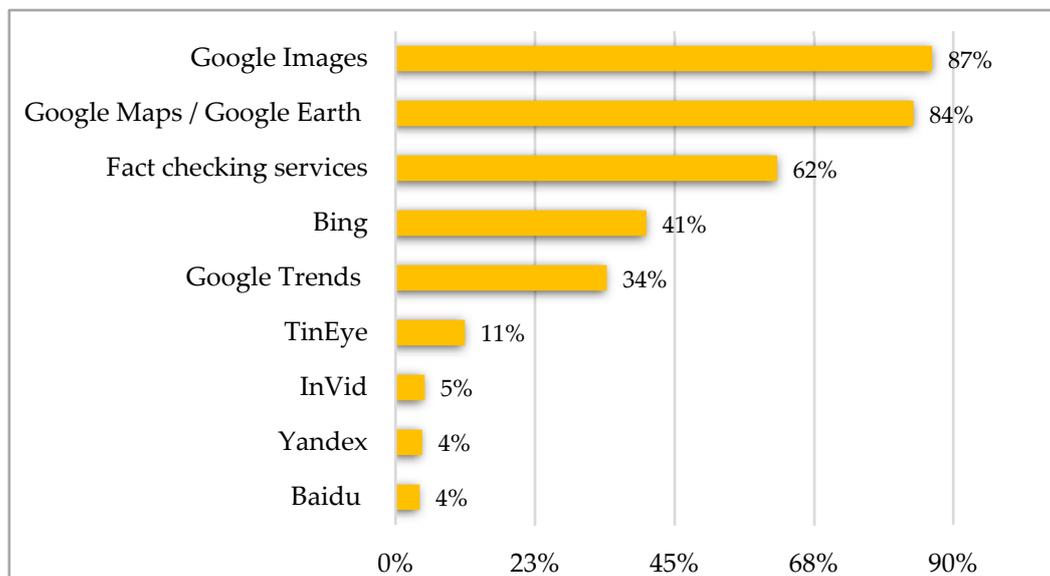
Figure 3. Knowledge of digital resources for fact checking.

4. Discussion and Conclusions

Disinformation has become a phenomenon that invades the digital environment and transcends it [57,58], especially after the COVID-19 pandemic [60,61]. The infodemic experienced during that time revealed the danger to which democratic values are subjected to in contemporary societies [1,40,52]. As an antidote to the plague of false content, there has been an increase in fact-checking services [69] and citizen media and digital literacy initiatives [75,76,78], which are two areas that are generating new professional profiles in the communication sector, specifically in journalism [84].

Therefore, this study examines the perceptions of journalism students about the (1) conceptualisation of disinformation; the (2) severity of different types of information disorders;

the (3) importance of fact-checking practices; and their (4) capabilities, knowledge, and skills for verification in the digital environment. As future communicators, their training in this area can be necessary to better adapt to the skills demanded by the labour market [3,4].

In this context, this research presents five significant findings. The first (RQ1) shows that, in relation to the conceptualisation of disinformation by journalism students, journalism students particularly coincide with the proposal by Ireton and Posetti [47], especially the more senior students, i.e., those who have already received more training before undertaking our survey (RQ5). According to H1, journalism students are aware of the implications of disinformation and predominantly perceive it when it emphasizes the conscious intention to falsify and deceive [37,42,46].

This first finding is directly related to the second, which focuses on the role of sources and the authorship of information. On the one hand, when the source or author of certain content is unknown, the results reveal that journalism students are particularly distrustful and hesitant to share the information. On the other hand, when the authorship of certain content corresponds to the media, students attribute greater credibility to it and their confidence in sharing it increases. Thus, we could say that when it comes to sharing information, the source of information is much more decisive for students than the actual content being discussed.

Consequently, the third finding demonstrates that journalism students perceive the impersonation of reliable sources and the manipulation of photographs, videos, or official documents as the most harmful strategies in terms of disinformation (RQ2). On the contrary, although jokes, satires, or the reuse of old photos or videos are also ways to promote disinformation, students perceive them as less serious. Therefore, we can affirm that future journalism professionals are particularly critical when the intention of disinformation is explicitly to deceive or spread false information. In contrast, when the type of disinformation is more akin to entertainment, such as jokes or satires, students are more flexible regarding the possible effects these contents may have on the public, confirming H2 of this research. Furthermore, according to students' perceptions, WhatsApp and Twitter are the channels that contribute the most to the spread of fake news, followed by Facebook and Instagram. Additionally, students receive fake news shared by their family or friends, or they find it in the accounts of users they follow. It is important to note that TikTok was not included in this study because it was still an emerging platform when the surveys were conducted.

The fourth significant finding reveals that journalism students greatly value the need for verification and fact-checking practices, especially regarding making comparisons with expert and documentary sources (RQ3). Indeed, cross-referencing information with sources receives higher ratings than using technology for fact checking, even though the professional sector demands "double path" training that combines understanding the fundamental tenets of journalism while integrating technological expertise [78,84]. On the other hand, these results, once again, demonstrate the importance of the role of sources for journalism students when it comes to combating disinformation (H3). At this point, it is relevant to highlight how the academic level of students is a determining factor in assessing different verification practices. As students progress in their studies, the importance attributed to a consultation with fact-checking services increases. Additionally, while the senior students (3rd and 4th year) attribute more importance to innovative practices, such as to consultations with fact-checking services and the use of software, the junior students (1st and 2nd year) value traditional practices more, such as consulting sources and other media (RQ5).

Finally, the fifth finding highlights two significant trends regarding digital competencies (RQ4). On the one hand, from a positive perspective, the results demonstrate that the students' perceptions of their competencies are quite good, especially regarding skills related to curiosity, analysis, reflection, critical thinking, and honesty, as well as social skills and emotional thinking, such as communication and empathy, all of which are skills associated with human behaviour and difficult for AI to assume [9]. In this field, there are significant differences by gender (RQ5). Specifically, while women are more confident in

their social skills, collaborative work, and innovation, men show more confidence in their mastery of computer applications, as predicted by H5. Previous research suggests that men are inclined to have more digital skills [88]. However, this study is based on a broader concept of digital competence, which includes social skills or creative capacity, among other attributes [6–8]. In these skills, women seem to feel more confident, at least during their studies, so it is foreseeable that this trend will also be replicated in the professional field.

Although there are no statistically significant differences depending on the academic year, first- and second-year students are slightly more confident in their knowledge and digital skills than third- and fourth-year students. It is just an incipient trend, but it would be interesting to delve deeper into it. According to previous studies, journalism students become more pessimistic as they progress in their studies [92]. This could explain why they have a more critical view and perceive themselves as less prepared than at the beginning of their studies.

On the other hand, the results point to a certain issue that needs to be considered, as significant deficiencies are found in all courses in handling computer applications that are useful for verification and specialisation in data journalism, big data, and algorithms. This partly confirms H4, which indicates that journalism students perceive themselves as less trained in terms of their social skills, capacity for innovation, and the use of technology (computer applications, data journalism). However, more technological training in fact checking is demanded by professionals [78,84]. Their lack of technological skills is mainly because they are not familiar with and do not use specialized tools in data journalism or fact-checking services. Thus, this research demonstrates that the implementation of improvements in teaching practices to address gaps in information verification competencies is a necessary action for the proper progress of journalism students in terms of disinformation and verification. Additionally, it also represents a job opportunity [3,4], as the increase in disinformation leads to a growing need for new specialized professional profiles in verification [83,84].

4.1. Theoretical Contributions

This research contributes to the field in several theoretical aspects. Firstly, it applies the concept of digital competencies to fact checking from a comprehensive perspective, encompassing capabilities, knowledge, and skills that extend beyond a mere proficiency with digital tools. This approach also highlights the necessity for a shift in our mindset regarding our utilized methodologies [8,9]. Secondly, based on this concept of digital competencies, this study develops an original list of skills and knowledge pertinent to fact checking while also identifying students' deficiencies in this area. Thirdly, this research identifies a range of practices associated with fact checking in the digital sphere and assesses their perceived importance among journalism students. Lastly, this study addresses a gap in the previous literature, which tends to focus on educators [14–18] rather than the digital competencies of university students [19–22], lacking empirical evidence when encompassing practical training in media literacy [25].

4.2. Limitations of This Research

This research has some limitations. One of them is related to the speed at which the digital environment is changing. For instance, the survey used in this study does not include tools or social networks that are currently popular, such as TikTok. However, beyond the specific applications that the students know or use, this research seeks to identify trends, diagnose shortcomings, and improve teaching and specialisation practices in fact checking. A second limitation of this study is related to the sample, which focuses on a single case study. Regarding future research directions that could be explored, it would be interesting to extend this study to other universities with journalism studies and to other specialties, such as audiovisual communication or advertising. Additionally, it would also be necessary to delve into the curricula of universities themselves, with the aim of

understanding to what extent future communication professionals are being trained in verification and thus aim at improving the digital skills of communication students.

Institutional Review Board Statement: The study was conducted in accordance with the Declaration of Helsinki.

Informed Consent Statement: Informed consent was obtained from all subjects involved in the study.

Data Availability Statement: The original contributions presented in the study are included in the article, further inquiries can be directed to the corresponding authors.

Conflicts of Interest: The authors declare no conflict of interest.

Appendix A

Table A1. Severity of disinformation strategies by academic year and gender (%).

		Total	1st	2nd	3rd	4th	M	W
Deception through the impersonation of reliable sources.	Not serious	0.4	0.0	0.0	0.0	1.9	0.0	0.8
	Slightly serious	0.4	1.4	0.0	0.0	0.0	1.0	0.0
	Serious	2.6	2.7	0.0	0.0	7.4	4.1	1.5
	Quite serious	15.0	13.5	14.0	12.2	20.4	15.5	14.6
	Very serious	81.5	82.4	86.0	87.8	70.4	79.4	83.1
Manipulation of photos, videos, or official documents.	Not serious	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	Slightly serious	0.4	0.0	0.0	0.0	1.9	0.0	0.8
	Serious	9.3	6.8	10.0	10.2	11.1	10.3	8.5
	Quite serious	18.9	20.3	16.0	18.4	20.4	19,6	18.5
	Very serious	71.4	73.0	74.0	71.4	66.7	70,1	72.3
Deception based on the fabrication of content.	Not serious	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	Slightly serious	1.3	1.4	0.0	0.0	3.7	0.0	2.3
	Serious	7.9	9.5	6.0	2.0	13.0	11.3	5.4
	Quite serious	28.2	32.4	28.0	26.5	24.1	30.9	26.2
	Very serious	62.6	56.8	66.0	71.4	59.3	57.7	66.2
Biassed interpretations of images or content (conspiracy theories).	Not serious	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	Slightly serious	4.0	1.4	4.0	8.2	3.7	5.2	3.1
	Serious	14.1	16.2	14.0	12.2	13.0	17.5	11.5
	Quite serious	37.0	35.1	34.0	32.7	46.3	38.1	36.2
	Very serious	44.9	47.3	48.0	46.9	37.0	39.2	49.2

Table A1. *Cont.*

		Total	1st	2nd	3rd	4th	M	W
Lies about the location or date of a certain event.	Not serious	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	Slightly serious	2.6	2.7	2.0	4.1	1.9	1.0	3.8
	Serious	20.7	23.0	20.0	20.4	18.5	27.8	15.4
	Quite serious	30.8	35.1	30.0	22.4	33.3	25.8	34.6
	Very serious	45.8	39.2	48.0	53.1	46.3	45.4	46.2
Decontextualization of facts, statements, photos, or videos.	Not serious	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	Slightly serious	4.4	6.8	0.0	6,1	3,7	3.1	5.4
	Serious	29.1	33.8	24.0	28.6	27.8	29.9	28.5
	Quite serious	33.9	39.2	38.0	26.5	29.6	29.9	36.9
	Very serious	32.6	20.3	38.0	38.8	38.9	37.1	29.2
Clickbait (use of headlines or images that do not correspond to the content).	Not serious	0.4	1.4	0.0	0.0	0.0	0.0	0.8
	Slightly serious	11.9	13.5	8.0	8.2	16.7	15.5	9.2
	Serious	43.6	35.1	44.0	46.9	51.9	42.3	44.6
	Quite serious	32.6	41.9	38.0	28.6	18.5	32.0	33.1
	Very serious	11.5	8.1	10.0	16.3	13.0	10.3	12.3
Reuse of old photos or videos from other places.	Not serious	5.3	8.1	2.0	8.2	1.9	7.2	3.8
	Slightly serious	24.7	16.2	28.0	24.5	33.3	26.8	23.1
	Serious	28.2	29.7	24.0	26.5	31.5	24.7	30.8
	Quite serious	24.2	29.7	24.0	22.4	18.5	24.7	23.8
	Very serious	17.6	16.2	22.0	18.4	14.8	16.5	18.5
Exaggeration based on a fact or data linked to the truth.	Not serious	1.3	1.4	0.0	0.0	3.7	2.1	0.8
	Slightly serious	20.7	25.7	14.0	24.5	16.7	22.7	19.2
	Serious	51.1	43.2	58.0	57.1	50.0	47.4	53.8
	Quite serious	20.7	21.6	26.0	12.2	22.2	18.6	22.3
	Very serious	6.2	8.1	2.0	6.1	7.4	9.3	3.8
Jokes, satire, or parody.	Not serious	34.8	36.5	30.0	34.7	37.0	45.4	26.9
	Slightly serious	37.9	31.1	34.0	46.9	37.9	30.9	43.1
	Serious	18.1	21.6	18.0	16.3	18.1	12.4	22.3
	Quite serious	6.6	9.5	14.0	0.0	6.6	9.3	4.6
	Very serious	2.6	1.4	4.0	2.0	2.6	2.1	3.1

Note: M = men; W = women.

Table A2. Importance of fact-checking practices by academic year and gender (%).

		Total	1st	2nd	3rd	4th	M	W
Consult expert sources and documentary sources.	Not important at all	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	Of little importance	1.3	1.4	2.0	0.0	1.9	0.0	2.3
	Of average importance	6.6	8.1	4.0	4.2	9.3	8.2	5.4
	Very important	38.1	31.1	40.0	35.4	48.1	37.1	38.8
	Absolutely essential	54.0	59.5	54.0	60.4	40.7	54.6	53.5

Table A2. *Cont.*

		Total	1st	2nd	3rd	4th	M	W
Consult official sources, impersonated, or cited in fake content.	Not important at all	1.3	2.7	2.0	0.0	0.0	1.0	1.6
	Of little importance	3.1	2.7	4.0	2.1	3.7	1.0	4.7
	Of average importance	16.8	13.5	12.0	29.2	14.8	13.4	19.4
	Very important	35.0	36.5	32.0	29.2	40.7	42.3	29.5
	Absolutely essential	43.8	44.6	50.0	39.6	40.7	42.3	45.0
Consult the original source of the manipulated content or out of context content.	Not important at all	3.5	5.4	2.0	2.1	3.7	4.1	3.1
	Of little importance	3.1	1.4	2.0	2.1	7.4	4.1	2.3
	Of average importance	14.2	12.2	16.0	16.7	13.0	10.3	17.1
	Very important	40.7	37.8	36.0	58.3	33.3	44.3	38.0
	Absolutely essential	38.5	43.2	44.0	20.8	42.6	37.1	39.5
Use of computer tools to verify the age of photos and videos.	Not important at all	0.4	1.4	0.0	0.0	0.0	1.0	0.0
	Of little importance	6.2	8.1	6.0	6.3	3.7	6.2	6.2
	Of average importance	35.4	43.2	34.0	29.2	31.5	37.1	34.1
	Very important	36.3	29.7	36.0	45.8	37.0	39.2	34.1
	Absolutely essential	21.7	17.6	24.0	18.8	27.8	16.5	25.6
Consult fact-checking services in the country of origin of the fake.	Not important at all	0.9	0.0	0.0	2.1	1.9	2.1	0.0
	Of little importance	10.2	17.6	6.0	2.1	11.1	10.3	10.1
	Of average importance	31.0	43.2	28.0	31.3	16.7	35.1	27.9
	Very important	37.2	31.1	44.0	39.6	37.0	40.2	34.9
	Absolutely essential	20.8	8.1	22.0	25.0	33.3	12.4	27.1
Use of computer tools to verify the geolocation of an event.	Not important at all	0.9	0.0	0.0	0.0	3.7	1.0	0.8
	Of little importance	10.2	9.5	2.0	12.5	16.7	10.3	10.1
	Of average importance	38.5	45.9	42.0	31.3	31.5	36.1	40.3
	Very important	35.8	33.8	42.0	39.6	29.6	41.2	31.8
	Absolutely essential	14.6	10.8	14.0	16.7	18.5	11.3	17.1
Use of computer tools to track suspicious user accounts.	Not important at all	1.8	1.4	0.0	2.1	3.7	1.0	2.3
	Of little importance	17.3	20.3	20.0	12.5	14.8	18.6	16.3
	Of average importance	36.3	35.1	46.0	31.3	33.3	38.1	34.9
	Very important	25.2	25.7	20.0	37.5	18.5	24.7	25.6
	Absolutely essential	19.5	17.6	14.0	16.7	29.6	17.5	20.9
Consult other media.	Not important at all	0.4	0.0	0.0	2.1	0.0	1.0	0.0
	Of little importance	13.7	6.8	12.0	25.0	14.8	16.5	11.6
	Of average importance	39.8	40.5	42.0	33.3	42.6	43.3	37.2
	Very important	35.8	44.6	32.0	29.2	33.3	30.9	39.5
	Absolutely essential	10.2	8.1	14.0	10.4	9.3	8.2	11.6

Note: M = men; W = women.

Table A3. Knowledge and skills for fact checking by academic year and gender (%).

		Total	1st	2nd	3rd	4th	M	W
Journalistic attitudes: curiosity, analysis, reflection, critical thinking, honesty, etc.	None	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	Little	1.3	0.0	2.0	2.1	1.9	1.0	1.6
	Indeterminate	7.1	6.8	6.0	6.3	9.3	6.2	7.8
	Quite	53.1	52.7	52.0	60.4	48,1	62.9	45.7
	A lot	38,5	40,5	40,0	31,3	40.7	29.9	45.0
Social skills and emotional thinking (communication, empathy).	None	0.9	0.0	2.1	0.0	1.9	1.0	0.8
	Little	2.2	2.7	0.0	2.1	3.7	3.1	1.6
	Indeterminate	9.8	6.8	12.5	10.4	11.1	16.5	4.7
	Quite	49.6	51.4	45.8	56.3	44.4	54.6	45.7
	A lot	37.5	39.2	39.6	31.3	38.9	24.7	47.2
Ability to work collaboratively and in multidisciplinary teams.	None	1.3	1.4	2.0	0.0	1.9	2.1	0.8
	Little	2.2	4.1	2.0	0.0	1.9	4.2	0.8
	Indeterminate	17.8	15.1	14.0	22.9	20.4	20.8	15.5
	Quite	44.4	49.3	48.0	41.7	37.0	43.8	45.0
	A lot	34.2	30.1	34.0	35.4	38.9	29.2	38.0
Ability to be flexible and adapt quickly to changes.	None	0.4	0.0	2.0	0.0	0.0	0.0	0.8
	Little	4.4	6.8	0.0	6.3	3.7	6.2	3.1
	Indeterminate	16.8	21.6	8.0	20.8	14.8	20.6	14.0
	Quite	48.7	45.9	54.0	47.9	48.1	45.4	51.2
	A lot	29.6	25.7	36.0	25.0	33.3	27.8	31.0
Ability to enjoy learning and take advantage of the opportunities offered by the digital environment.	None	1.3	0.0	4.0	0.0	1.9	1.0	1.6
	Little	4.4	4.1	2.0	2.1	9.3	4.1	4.7
	Indeterminate	14.6	10.8	8.0	25.0	16.7	16.5	13.2
	Quite	52.7	60.8	54.0	45.8	46.3	60.8	46.5
	A lot	27.0	24.3	32.0	27.1	25.9	17.5	34.1
Knowledge of the basic principles and practices of journalism: credibility, impartiality, objectivity, etc.	None	1.3	0.0	0.0	0.0	5.6	1.0	1.6
	Little	0.9	1.4	2.0	0.0	0.0	1.0	0.8
	Indeterminate	11.9	16.2	12.0	14.6	3.7	15.5	9.3
	Quite	68.6	67.6	76.0	68.8	63.0	68.0	69.0
	A lot	17.3	14.9	10.0	16.7	27.8	14.4	19.4
Continuous learning and rapid updating in the use of new computer tools.	None	1.8	0.0	4.0	2.1	1.9	1.0	2.3
	Little	4.4	5.4	0.0	6.3	5.6	6.2	3.1
	Indeterminate	22.1	21.6	22.0	18.8	25.9	24.7	20.2
	Quite	47.3	50.0	46.0	50.0	42.6	47.4	47.3
	A lot	24.3	23.0	28.0	22.9	24.1	20.6	27.1
Ability to innovate and be creative.	None	0.4	0.0	2.0	0.0	0.0	0.0	0.8
	Little	8.0	8.1	6.0	8.3	9.3	9.3	7.0
	Indeterminate	23.5	18.9	22.0	25.0	29.6	29.9	18.6
	Quite	42.0	47.3	46.0	39.6	33.3	43.3	41.1
	A lot	26.1	25.7	24.0	27.1	27.8	17.5	32.6

Table A3. *Cont.*

		Total	1st	2nd	3rd	4th	M	W
Mastery in the use of computer applications useful for verification.	None	7.2	4.1	6.1	13.0	7.4	3.2	10.2
	Little	27.8	32.4	26.5	26.1	24.1	29.5	26.6
	Indeterminate	32.7	33.8	34.7	26.1	35.2	28.4	35.9
	Quite	29.1	25.7	30.6	34.8	27.8	33.7	25.8
	A lot	3.1	4.1	2.0	0.0	5.6	5.3	1.6
Specialised knowledge in data journalism, big data, and algorithms.	None	7.5	8.1	8.0	6.3	7.4	5.2	9.3
	Little	37.2	32.4	46.0	41.7	31.5	38.1	36.4
	Indeterminate	40.7	45.9	42.0	37.5	35.2	40.2	41.1
	Quite	12.4	12.2	4.0	10.4	22.2	12.4	12.4
	A lot	2.2	1.4	0.0	4.2	3.7	4.1	0.8

Note: M = men; W = women.

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