



**EXPLAINING HOW WIKIPEDIA DEALS WITH CREDIBILITY
TO UNIVERSITY STUDENTS: THE CASE OF WIKIPEDIA IN
THE BASQUE LANGUAGE**

Journal:	<i>Journal of Information, Communication & Ethics in Society</i>
Manuscript ID	JICES-08-2023-0104.R1
Manuscript Type:	Journal Paper
Keywords:	Wikipedia, CREDIBILITY, Digital literacy, Ethics Education, University students

SCHOLARONE™
Manuscripts

Abstract

Purpose. This research aims to a) analyse how first-year undergraduate Audiovisual Communication students assess the credibility and reliability of information on Wikipedia in Basque and b) analyse whether the experience of being a Wikipedia editor helps to improve students' perceptions of Wikipedia's trustworthiness. The purpose of this project was to help students to better understand the credibility mechanisms of Wikipedia in Basque regarding the work of editing and creating entries. Do students' perceptions about how reliable Wikipedia is change if they receive training as Wikipedia content editors and understand Wikipedia's credibility mechanisms? What are their perceptions about the credibility of Wikipedia?

Design/methodology/approach. We observed and analysed students' behaviour and perceptions when creating Wikipedia articles and learning about the process of evaluating Wikipedia. This research was carried out at [masked for review] over four consecutive years, where 188 students in the Degree Programme in Audiovisual Communication participated through a questionnaire and in-depth interviews.

Findings. After the experience of creating content on Wikipedia and learning about Wikipedia's credibility mechanisms experientially, the majority of students reported that their perception of Wikipedia's credibility had increased, and 70% of students believed Wikipedia to be reliable or more reliable than expected. A smaller number of students stated that understanding Wikipedia's editing processes decreased their perception of Wikipedia's credibility.

Originality. The authors have been analysing the credibility of information in general and that of information on Wikipedia in particular since 2010. Based on this experience, we decided to design this study such that it was carried out while the students were creating and editing Wikipedia content as part of a project in their educational curriculum. Furthermore, the study expands the body of research carried out to date by incorporating the perspectives of Media Studies students.

Practical implications. This project will lead to a better understanding of the performance of students in editing content on Wikipedia and of the impact that this editing experience has on students' perceptions of credibility with respect to Wikipedia. It will make it possible to better incorporate Wikipedia content editing into the learning processes of students and citizens. This study provides interesting keys to improving the reliability and credibility of Wikipedia among students.

Social implications. As the study examined Basque Wikipedia, it has important social implications since Basque is a minority language and Wikipedia is the main sources of information for students who study in Basque.

Keywords: Wikipedia, Credibility, Digital literacy, Ethics education, University students.

1. Introduction

Over the past 12 years, studies have been carried out at [masked for review] on how university students seek, select, and evaluate information, as well as on high school and university students' perceptions of the credibility of information. At the university level, our participants were Teacher Education students from whom data were collected through interviews, questionnaires, and direct observation of the actions they carried out on the screen when searching for information (Egaña, 2010, 2011; Egaña *et al.*, 2012, 2013). These investigations revealed the need to analyse and understand habits created earlier, at the high school stage, through research and field work carried out while high school students worked, facing a real learning task in class (Lopez Flamarique, 2017; Lopez Flamarique *et al.*

2018). In recent years, that research line has focused on Media Studies students' habits when searching for information in the Basque language and creating content on Wikipedia (Bidegain *et al.*, 2023), since Wikipedia is one of the information resources in the Basque language most used by students (Rico and Garcia, 2022, p. 96). Considering the studies previously presented, analysing the perceptions of university students about the credibility of Wikipedia emerged as the next step to take to delve deeper into this line of research. For this purpose, it was considered necessary to first explain to the students how the Basque Wikipedia editing committee works, and then let them experiment with editing Wikipedia, to see if their knowledge of the editing process had an impact on their perception of the credibility of this collaborative encyclopaedia.

Wikipedia content editing as a learning process

Wikipedia has established itself as the first information resource in the learning processes of university students and in their information searches (Forte and Bruckman, 2006, p.12; Shen *et al.*, 2013, p.506).

According to Soler *et al.* (2018, p.43), it seems that learning to edit content on Wikipedia improves students' perceptions of Wikipedia's credibility. In Soler's study, once the editing process on Wikipedia was completed, 56% of students thought that Wikipedia was a reliable source, up from 29.2% before editing, and 53.1% believed that it is possible to identify false information (58.8% before editing).

Wikipedia is frequently used as a reference tool due to its visibility and the clarity of its information (Cuquet and García, 2019; Valverde-Crespo *et al.*, 2019). However, Wikipedia is not a simple consultation website (Blas and Zamora, 2019, p.76) and, beyond the search for information, its editing and cooperative creation processes could also be used as learning resources (Haslam 2017, p.250; Jemielniak, 2019, p.2). In this sense, Claes and Deltell (2020, p.246) point out that learning to edit on Wikipedia has proven useful in the learning process of university students and in the construction of a collaborative discourse. It is striking that, according to Garrison (2018, p.251), students first indicate that they do not consider using Wikipedia for their work, and yet subsequent questions in research show that they do use it, and use it broadly.

And what is the perception of teachers regarding the usefulness of Wikipedia in teaching-learning processes? Not all instructors have the same opinion, but most see Wikipedia as a very useful resource, that is, there is no overwhelming negative or sceptical attitude among university professors toward Wikipedia (Garrison, 2018, p.250). Most see it as a useful teaching resource in learning processes and few are uncomfortable with the fact that students use it as a source of information. This is in contrast to their opinion on academic citation standards, since half of professors oppose Wikipedia sources in citations of works (Aibar *et al.*, 2015, p.13).

Credibility of the information

The competent management of information requires the critical evaluation and selection of information, therefore, the lack of adequate evaluation of information and its sources can have a negative influence on the student's learning process (Egaña, *et al.*, 2012, pp.10-13; Egaña, *et al.*, 2013, pp.11-13; López, *et al.*, 2019, pp.108-111; Walraven, *et al.*, 2009, p.238). It is essential to continuously evaluate the credibility and reliability of information if credible information is to be available.

Today, self-publication online is simple and fast, both the information and the format can be edited quickly, and the server on which the information is located can be changed. All of this makes it difficult

1
2
3 for students to evaluate and select the information they seek and need in order to carry out their academic
4 work (Kiili, *et al.*, 2008; Walraven, *et al.*, 2009). However, it seems that in the middle stages of
5 education, students are not being adequately trained to properly evaluate information from the Internet
6 (Kohnen and Mertens, 2021, p.50).
7

8 9 *Credibility of Wikipedia*

10 Wikipedia is not a traditional encyclopaedia, so it does not seem appropriate to approach its evaluation
11 according to criteria established for sources of scientific information that fit the classic typology of the
12 academic world and the printed word (Magnus, 2009). Although the more bibliographic references a
13 Wikipedia article has, the more likely students are to judge it to be credible, like other collaboratively
14 created digital information resources, Wikipedia presents credibility problems related to the origin and
15 creation of its content since that creation depends on a community of editors. Traditionally, content was
16 always created by an expert, while in Wikipedia the creator's identity is masked or hidden (Magdaleno
17 and García, 2013, p.22). To this we must add the problem of context, since users make assessments and
18 judgments of credibility but are influenced by their environment, an environment in which other users,
19 teachers, external opinions and acquired or learned behaviours intervene (Meseguer-Artola, 2015, p.26).
20
21
22

23 It is also the case that, although students may have a positive perception of Wikipedia, the same students
24 may rate its information and credibility as weak (Garrison, 2018, pp.246-248). Lim and Simon (2011)
25 analysed factors influencing the credibility of Wikipedia articles among university students, and found
26 that when students doubted the credibility of content, they tended to rely on criteria such as the length
27 of the article, its structure, and the number of external references used. In smaller numbers, they used
28 criteria such as the presence of notices about content, Talk pages or the Revision History.
29
30

31
32 A study by Rowley and Johnson (2013, pp.500-504) examined the trust in Wikipedia of a group of
33 undergraduate and Master's students and found that the factors on which they based their trust or lack
34 of trust were authorship, the use of verifiable external references, writing style and the usefulness of the
35 content, together with external factors such as recommendations from experts or professors and
36 comparison with their own knowledge. The influence of faculty on Wikipedia's perceived credibility
37 was analysed by Garrison (2015; 2018) in a group of first-year undergraduates, and he found that faculty
38 has an important influence on students' opinions of Wikipedia's credibility.
39
40

41
42 Comparative credibility studies have also been conducted between Wikipedia and Encyclopaedia
43 Britannica (Flanagin *et al.*, 2020; Messner and DiStaso, 2013). In the study by Flanagin *et al.* (2020),
44 the experiment involved an evaluation of the credibility of different versions of the same information
45 in different encyclopaedias. The data obtained confirmed that users give more credibility to information
46 apparently created by experts, demonstrating that reputation and authority influence the evaluation of
47 credibility. They also note that, in certain contexts, user-generated information was preferred to
48 information produced by experts.
49
50

51
52 Menchen-Trevino and Hargittai (2011), in their study on perceptions of Wikipedia among university
53 students, point out that the students expressed a certain level of concern about the reliability of the
54 content, but their patterns of checking information are neither homogeneous nor continuous, but rather
55 depend on the context and on the type of information they need at any given time. The same study also
56 confirms that most students claim to be unaware of the processes of preparation, writing and revision
57 of Wikipedia articles, but that those who demonstrate a knowledge of editing generally develop better
58 fact-checking tactics for verifying information.
59
60

1
2
3 A related issue is that of disinformation. Kumar *et al.* (2016, pp.597-599) studied how the presence of
4 false facts in Wikipedia's texts affects its credibility. Although most false data are corrected in a
5 relatively short time, the few that remain uncorrected migrate to other web information resources and
6 are then often cited in third-party publications.
7

8
9 With all of this in mind, the following research questions were established:
10

11 RQ1. What perception do students have of Wikipedia's credibility?

12 RQ2. Does the students' perception of Wikipedia's credibility change after they work as
13 Wikipedia writers or editors?
14

15 RQ3. What perception do students have of the credibility of Basque Wikipedia?
16
17
18

19 2. Methodology

20

21 Following the recommendations of Coscollola *et al.* (2014, pp.157-164), the present research aimed to
22 listen to young people, investigate their real practices and better understand their motivations with
23 reference to the research questions.
24
25

26 *Participants*

27 The participants were 188 first-year students in the degree programme in Audiovisual Communication
28 at [masked for review]. Data collection was carried out during the months of May and June of 2019,
29 2020, 2021 and 2022. Between 42 and 52 students participated each year.
30
31

32 *Materials*

33 In the design of the present research, two techniques were used for data collection: a questionnaire and
34 in-depth interviews.
35
36

37 The works of Menchen-Trevino and Hargittai (2011) and Mothe and Sahut (2018) were taken into
38 account in designing the questionnaire. The questionnaire consisted of two blocks with a total of eight
39 questions, some closed-ended and some open-ended. The first part asked participants about their
40 opinions and habits before they became Wikipedia editors (whether they thought it had reliable
41 information, whether they thought that Basque Wikipedia was ample, what use they made of it, and
42 how often they consulted Wikipedia pages in various languages). In the second part they were asked
43 about their opinions after having become Wikipedia editors (whether it seemed more reliable after the
44 experience than they had previously thought and why, whether Basque Wikipedia seemed more reliable
45 and why). In the latter case, they were asked more open-ended questions. The in-depth interviews were
46 designed and conducted following the recommendations made by Kvale and Brinkmann (2009) and
47 Huisman *et al.* (2021) based on interviews they conducted in their study with adults about the credibility
48 of Wikipedia. In the present interviews, the student participants were asked to delve deeper into their
49 opinions of Wikipedia, providing arguments and examples from their own experience.
50
51
52
53

54 *Procedure*

55 Kuiper *et al.* (2009) state that information evaluation strategies should not be taught in a linear and
56 consecutive way, but integrated into a didactic project in which the student has a real need to use the
57 Internet to look for reliable information. Therefore, to observe and analyse the behavior of students
58 when evaluating Wikipedia information and learning about the process of creating Wikipedia resources,
59
60

1
2
3 the present research was carried out as part of an educational curriculum module in which students had
4 to create and edit Wikipedia content in Basque. In this editing project, students had to create content for
5 Basque Wikipedia and edit content on it, for which one of the main tasks was to search for and evaluate
6 information to incorporate into Wikipedia content.
7
8

9 The name of the module was Participatory Multimedia Communication (6 ECTS credits). It had a
10 duration of seven weeks and was intensive since all the classes during the seven weeks, from the end
11 of April to the beginning of June, were devoted to the module. The Wikipedia articles were published
12 at the end of May.
13
14

15 The following are the module's learning outcomes related to communication. At the end of the module,
16 the student:

- 17 • is aware of the impact of participation in collaborative initiatives and is able to reflect
18 on the importance of his or her contribution;
- 19 • is familiar with and nurtures collaborative initiatives in favour of the Basque language;
- 20 • has been involved in teamwork and, in addition to carrying out tasks responsibly, has
21 demonstrated willingness to help others, prioritizing the needs of the team;
- 22 • identifies and uses appropriate sources, selects the most representative parts, and
23 integrates them in a consistent manner in essays, citing their origin in an appropriate
24 and standardized way and following the criteria provided by the university's guide for
25 writing university papers;
- 26 • writes appropriately and correctly, producing relatively long, but well-structured texts
27 that clearly explain social issues;
- 28 • is proficient in the use of static graphics software; and
- 29 • knows how to promote and distribute a project on the internet.
30
31
32
33
34

35 The aim of the module was to work on all of these learning outcomes. It was thought that
36 participating in the Wikipedia project could be an interesting way to do this, since Wikipedia is a
37 collaborative initiative to which the students could contribute. Furthermore, the work required by an in-
38 depth Wikipedia article provides the opportunity to develop written communication and documentation
39 work, which are two of the essential skills in the module.
40
41

42 The purpose of the module was for the students, in groups of three or four, to create a new long article
43 for Basque Wikipedia, or edit an existing entry. Before starting work on longer Wikipedia articles, they
44 were introduced to how Wikipedia works. For this purpose, one of the managers of the Basque
45 Wikipedia Cultural Association (*Euskal Wikilarien Kultur Elkarte*) attended class for 4 hours to
46 provide detailed explanations about Wikipedia and to answer technical questions about editing. He also
47 answered questions by email after the workshop. In class, he first explained the details of the
48 collaborative nature of Wikipedia, the current status of Basque language on Wikipedia, the nature
49 of an encyclopaedia, Wikipedia's credibility policy, etc. Then he taught the students how to create a
50 Wikipedia user account and how to create and edit an article. The Basque Wikipedia Cultural
51 Association was founded in 2016 to develop of Basque Wikipedia and the projects supported by the
52 Wikimedia Foundation in the Basque language. Basque Wikipedia had 422,887 entries in November of
53 2023, making it the 34th language by volume of articles of the 339 languages on Wikipedia, and it holds
54 18th place on the "List of articles every Wikipedia should have as a sample" and 20th place on the "List
55 of Wikipedias by expanded sample of articles".
56
57
58
59
60

The students had to find information about their chosen subject, write a paragraph or two, add pictures, if any, and include references. After the students had done their work, the teachers and the Basque Wikipedia editors, members of the Basque Wikipedia Cultural Association, read the articles and made detailed corrections.

The aspects that were evaluated, among other things, were written communication, the quality of the sources used, and the inclusion of bibliographic references.

The total production of the students over the four years analysed included 209 new Wikipedia entries and the further development of another 209 existing entries, 412 articles in total, and the participating students had written an average of 39,757 characters each. The articles were of two types: biographies of women (e.g., Fatou Diome, Tsitsi Dangarembga, Kim Jong-suk) that had not previously been available in the encyclopaedia and entries on topics that Wikipedia should have in all languages (e.g., tea, violin, childhood, city).

Table 1
Number and length of Wikipedia articles written or edited by students

	Students	New entries	Editing of existing entries	Total	Characters produced
2019	47	38	17	55	406,553
2020	52	97	93	190	4,139,859
2021	45	68	99	167	1,829,680
2022	44	70	25	90	1,098,194
Total	188	209	209	412	7,474,286

Once the Wikipedia editing project was completed, the questionnaire was given to all participating students. In addition, personal interviews were conducted with six students each year, that is, a total of 24 in-depth interviews. In the sample selected for the interviews, the gender balance of the students, the quality of the previous work carried out by the students, and the theme of those works were taken into account. They were asked their opinions about Wikipedia and Basque Wikipedia, whether they thought the information on Wikipedia was reliable, and what perception they had of Wikipedia's reliability. They were also asked open-ended questions so that they could explain their answers.

3. Results

Wikipedia usage patterns

The most common practice among students when using Wikipedia is that they first consult Wikipedia in different languages to get a general idea of the subject and then, should the need for information

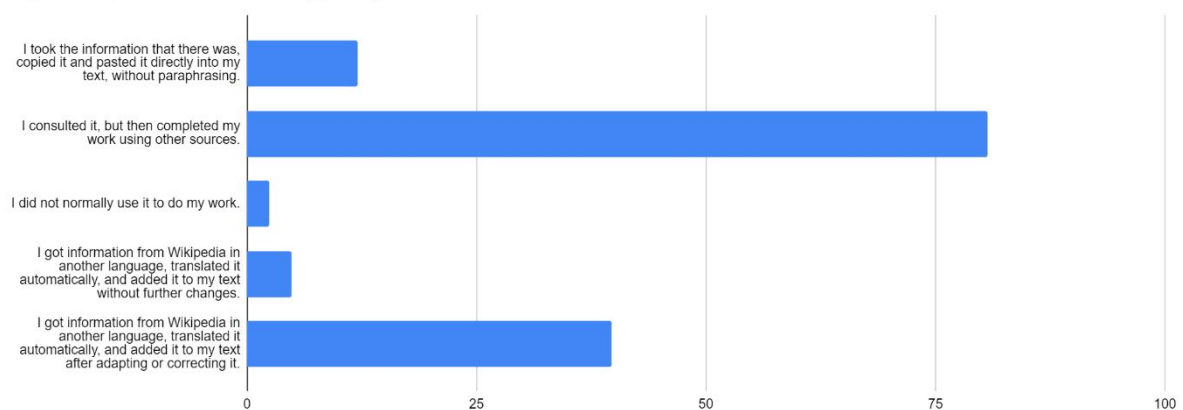
require it, they complement their search with other sources of information in order to carry out their academic work properly. As seen in Figure 1, 80% of students follow this pattern when searching for information on Wikipedia. This is also reflected in statements made by the interviewees: “I always used it in high school and it’s very good for classwork or to look up facts. There’s a lot of information.” They also highlight the ease of searching on Wikipedia: “The easiest way to find something is on Wikipedia, it’s good for looking things up quickly.” But students also say that Wikipedia is not sufficient for university-level work since their information needs are greater because university assignments are more demanding than tasks at previous educational stages: “There’s a lot of information, but for university work it’s not enough, nor is it good enough for reflection. You have to compare information.” And along the same lines: “It’s good for getting an idea of a topic, for starting the topic, getting a general idea, but not for thorough or serious work. For example, if I have to do a paper about a theory, the first thing I do is go to Wikipedia to get a sense of it and then I go to other sources.”

The participating students have been familiar with Wikipedia since childhood; practically all said that they have always used Wikipedia, and that it is a tool that was part of their school programme: “When I was little, we used Wikipedia a lot in Compulsory Secondary Education, since it’s the first thing that comes up when you do a search...”

Regarding the way they select information, most students reported that they do not search in Wikipedia directly, that is, it is not usually their first direct or conscious choice, but the fact that Wikipedia appears among the first options in the search engine results has an impact: “It’s always been my main source of information, the one that showed up in any search, and I made do with that.” But sometimes, students go straight to Wikipedia: “It’s an important source of information at school; for any question or assignment, we always turned to Wikipedia.”

These data on the use of Wikipedia are shown in Fig. 1:

Fig.1. Wikipedia use before beginning the module



Wikipedia is also very much appreciated in some cases as an information resource on a personal level, and some subjects mentioned that they spend a lot of time browsing it: “I love Wikipedia, I’ve defended it many times even though I know it doesn’t have a good reputation. But since I’m very curious, I look up a lot of things and spend a lot of time browsing Wikipedia. You learn things and it’s fun.”

1
2
3 Regarding the language used to search for and select information, the language variable is very
4 important for the participating students, since in most cases they did their classwork in Basque in high
5 school: “When you search in Basque, the first thing you get is Wikipedia. I used it a lot in high school.
6 You could say that it was our first source of information. It’s also true that the assignments are not so
7 demanding in high school.” Another student explained how he searches for information: “I think there’s
8 information in Basque, though a few times I couldn’t find any entries in Basque. If Wikipedia doesn’t
9 have enough information in Basque, I look in another language and translate it automatically. You have
10 to do it well, otherwise they’ll notice that you copied from Wikipedia. You have to hide it.” Most of the
11 students stated that Basque Wikipedia is more comprehensive than they thought, and that they believe
12 that Basque Wikipedia has a promising future.
13
14
15

16 *Perception of Wikipedia’s credibility*

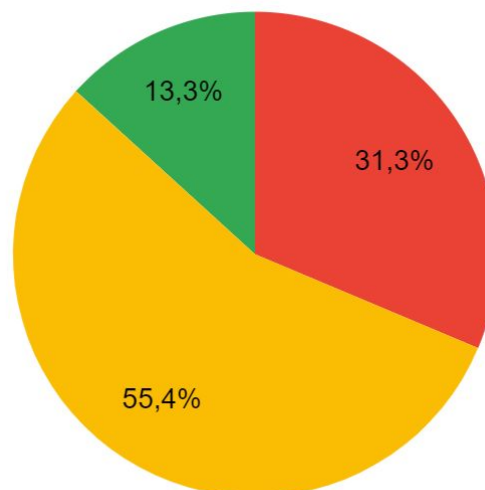
17 In this section, we first present the results obtained before the editing project, and then those obtained
18 after the project.
19
20

21 When asked before they started the Wikipedia project, 30% of students said they fully trusted Wikipedia
22 information, 13.5% said they did not trust Wikipedia, and 56.8% said they trusted the credibility of
23 Wikipedia information, but added that that information should always be confirmed. These data were
24 homogeneous over the four years of the study and there were no significant deviations.
25
26

27 These data on the reliability of Wikipedia are shown in Fig. 2 and Fig. 3:
28
29
30

31 Fig.2. Students’ opinions on the reliability of Wikipedia before
32 beginning the module
33

34 ● The information is reliable. ● The information should be confirmed.
35 ● The information is not reliable.

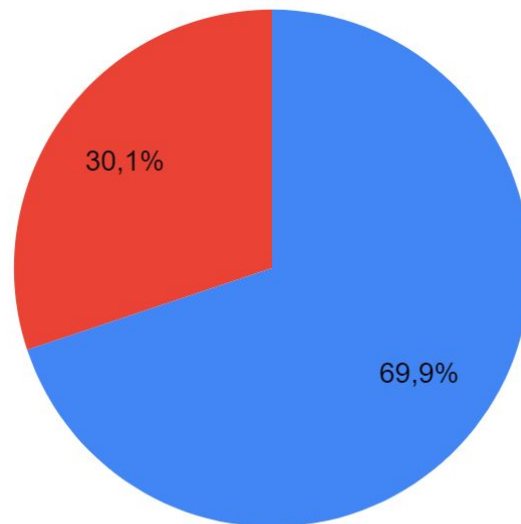


36
37
38
39
40
41
42
43
44
45
46
47
48
49
50
51
52
53
54
55 In the interviews with the students, their perception of Wikipedia as a reliable source was verified, but
56 with the caveat that the information must always be confirmed. Some explained that they did not know
57 that Wikipedia could be edited or that it was a collaborative project by citizens: “I didn’t know that
58 anyone could write, I thought it was an organization and that someone wrote everything, a kind of
59
60

1
2
3 encyclopaedia or an association, and that it was digitized.” Some students thought that Wikipedia was
4 written only by experts and realizing that it is not made them think it was advisable to confirm the
5 information on Wikipedia: “I’ve always used Wikipedia, but I had noticed before that strange things
6 were on it.”
7
8

9 The experience of editing on Wikipedia had a positive impact on the students’ perceptions of
10 Wikipedia’s credibility: “Before, it was Wikipedia and that was it. You used it for assignments knowing
11 that teachers don’t like it very much. But now that I’ve done the module, I see that it’s an open source,
12 but it’s not chaos since there are a lot of people working on it and confirming the information.” As
13 shown in Fig. 3, after the experience of creating and editing articles on Wikipedia, the percentage of
14 students who rated Wikipedia as reliable rose to 70%, while 30% of students considered Wikipedia
15 unreliable.
16
17

18
19 Fig.3. Students’ opinions on the reliability of Wikipedia after
20 completing the module
21



22
23
24
25
26
27
28
29
30
31
32
33
34
35
36
37
38
39
40
41
42
43
44
45
46
47
48
49
50
51
52
53
54
55
56
57
58
59
60

● It is more reliable than I thought. ● It is less reliable than I thought.

After the editing experience: reasons in favour of reliability

Most of the students did not know of the existence of that mechanism for supervising the content published on Wikipedia and they rate this very positively: “I learned that there’s a group of supervisors even though the article could have been written by anyone, and they’re quite strict. They even deleted a part of our article because it was wrong.” Along the same lines, they add: “We saw how the supervisors worked, since they deleted some things of ours because they weren’t correct or weren’t definitely true. There’s a filter. So it’s reliable.” “I didn’t know the proofreaders were so strict,” said one student. Another student noted that corrections are made quickly: “A lot of people say that it’s not reliable, that anyone can change things. But it’s well organized and if something is wrong, they change it immediately. I see it as a reliable and rigorous place.” This verification by supervisors who monitor the content gave many students peace of mind and changed their opinion about the reliability of Wikipedia.

The main reason that almost all subjects gave for Wikipedia’s reliability is that it has a group of supervisors who monitor the edits that are made and quickly correct errors. They also rate the

1
2
3 collaborative aspect of Wikipedia highly: “The truth is that there’s a huge community involved in
4 Basque Wikipedia. There are a lot of people behind it and that gives confidence.”
5

6 Although they note that Wikipedia can be edited by anyone, they have come to realize that it is not easy
7 to include incorrect information: “I learned that there are a lot of guidelines to follow and that you leave
8 a lot of traces when you edit. It’s not that easy to change a page, so I think it’s more reliable than I
9 thought before.” In addition, the students saw that those who usually write about a topic tend to be
10 experts and trustworthy people.
11
12

13 The students also realized that in order to create on Wikipedia, abundant bibliographic references must
14 be provided and sources must be cited: “I think Wikipedia articles are reliable. There are more and more
15 reliable references. It matters a lot to me that there are bibliographic references, especially when they’re
16 theses and university-level articles.” Another student explains it this way: “Thanks to the references,
17 you know what the original source is, that is, you can prove that the information is true by following
18 the trail of the references.”
19
20

21 The students became more aware that a Wikipedia article requires a lot of work as well as aware of the
22 amount of information that must be searched for, evaluated, selected and cited to create an article on
23 Wikipedia: “In the end, you have a great piece of research. My opinion has improved and I think it’s a
24 reliable and important source.”
25
26

27 The organization of Wikipedia articles by sections, the incorporation of images or infographics, and the
28 inclusion of references are important guarantees of the articles’ credibility: “If they have images,
29 infographics and references, they seem reliable, though I couldn’t say why.” Students believe long
30 articles on Basque Wikipedia are more credible: “Articles that have been worked on and organized in
31 sections are more reliable.”
32
33

34 The score that appears on Basque Wikipedia below the title of each article (from 0 to 10 as a measure
35 of quality) is a guarantee of credibility according to the students: “Each article has a score and that helps
36 you assess its quality and credibility.”
37
38

39 After their experience editing Wikipedia, 36.9% of students believed that Basque Wikipedia was more
40 comprehensive than they had thought, and 16.2% believed it was more reliable than they had previously
41 thought. A total of 53.1% of students had a more favourable opinion of Basque Wikipedia after their
42 editing experience.
43
44

45 *After the editing experience: reasons against reliability*

46 Although most students saw Wikipedia as more reliable than they had thought before the editing project,
47 this experience has also had the opposite effect in some students. “I saw that it’s easy to edit the
48 information, even if there are people who then review it,” said one student. “I thought the articles were
49 written by experts, not that just anyone could write them. Now after seeing that anyone can write them,
50 even myself, I don’t trust them so much,” said another. In the same vein, another student adds: “Before,
51 I thought it was a kind of encyclopaedia, I thought it was an absolute truth. And then you analyse it and
52 you see that there may be errors and that you have to confirm the information.” According to another
53 student: “Before doing the editing project, I thought it was more reliable, that it was done by experts.
54 Now I realize I have to look at other sources as well.”
55
56
57
58
59
60

1
2
3 The students expressed mistrust about the credibility of their own work as Wikipedia editors: “I looked
4 up information for the article I wrote, but I’m not an expert and I don’t know if I did it right. I don’t
5 think it’s that reliable. Wikipedia is fine to get an idea, but it’s not good for rigorous academic work.”
6 Another student was critical of Wikipedia’s reliability because she believes that no one looks at the
7 references: “In the end, the bibliographic sources are there, but you don’t look at them, you look at the
8 text, but you don’t know if the references are reliable.” Along the same lines, another student says:
9 “Yes, okay, you look at the references and that’s fine, but you don’t confirm the references, you trust
10 them and that’s it. It depends on the type of assignment and how personally involved you are.” Thus,
11 one of the motivations for students to use sophisticated source-checking devices may stem from their
12 personal investment in the assignment or topic, or may depend on the level of their need for information.
13
14
15

16 The advice of secondary school teachers has had a negative influence on students’ perceptions about
17 the credibility of Wikipedia: “At school they always told us that we had to be careful, that anyone could
18 write.” Nevertheless, some students continued to use Wikipedia the same way: “At school, they told us
19 not to use it because it was not reliable, but the truth is that we almost always used it.” Other students
20 point out that they stopped using Wikipedia due to pressure from teachers who told them not to use it:
21 “We were always told not to use it, that it was copy-and-paste, and had errors.”
22
23
24

25 At the university as well, they heard the same kind of negative opinions about Wikipedia from
26 professors. One student commented that he had started in a different university degree programme
27 before enrolling in Audiovisual Communication: “And there, they also told us that a Wikipedia article
28 was no good.” In the same vein: “This year, I included Wikipedia articles on an assignment and the
29 professor told me not to use Wikipedia. I’ve been told that many times.”
30
31

32 Beyond what their teachers tell them, the students say that they have always commented to each other
33 that anyone can write for Wikipedia, and therefore not everything on Wikipedia is true or there may be
34 misinformation. They believe that the standing of Wikipedia’s credibility is questioned in society,
35 sometimes unjustifiably: “I think we shouldn’t criticize Wikipedia so much. Sometimes we joke that
36 anyone can edit it, but I now realize that that’s not fair.” And they again mention that the influence of
37 secondary school teachers has been negative: “In high school, they always told us that it was not very
38 reliable, that anyone can edit it, and many teachers told us not to use it.”
39
40
41
42

43 **4. Discussion**

44
45
46 The aim of this study was to investigate whether students’ perceptions of Wikipedia’s credibility change
47 after they work as Basque Wikipedia writers or editors. It represents a further link in the authors’
48 research journey regarding the credibility of information among university students.
49

50
51 The research was conducted while the students were enrolled in a module to learn to edit on Wikipedia
52 as part of their curriculum. This real experience in editing on Wikipedia helped the students to
53 understand the reliability mechanisms of Wikipedia in Basque. It was an enriching and authentic
54 experience for the students, and had a positive impact on most students’ perceptions of Basque
55 Wikipedia’s credibility since it helped them to better understand the mechanisms of credibility of this
56 collaborative encyclopaedia. However, it should be noted that for several students, the fact that they
57 themselves were editors of Basque Wikipedia led them to be more suspicious of its reliability.
58
59
60

1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
16
17
18
19
20
21
22
23
24
25
26
27
28
29
30
31
32
33
34
35
36
37
38
39
40
41
42
43
44
45
46
47
48
49
50
51
52
53
54
55
56
57
58
59
60

Becoming familiar with the Wikipedia editing processes generally improved the students' perceptions of Wikipedia's credibility, but not in all cases. After participating in the Wikipedia editing project, the students' perceptions of Wikipedia's credibility changed in many cases (Menchen-Trevino and Hargittai, 2011, pp.14-17). Most had a better opinion of Wikipedia's reliability after the editing project since they became more aware of the work that must be done to incorporate the sources and references that guarantee the quality of an article, and furthermore, they learned of the existence of a supervisory group that monitors what is created and edited on Wikipedia. However, for some students, becoming more familiar with the editing process led them to believe that the credibility of Wikipedia information was weaker, and help may be needed to learn how to overcome that perception of weakness. In this sense, it is interesting to note that, as pointed out by Bidegain, *et al.* (2022, p.66) and James (2009, pp.79-85), many young people know how to act responsibly in their online interactions and they can apply this knowledge when editing and using Wikipedia.

Although Wikipedia seems to students to be a reliable source of information (Haslam 2017, pp.250-252), they believe that to carry out academic work, the information must be confirmed with other sources; this is consistent with the results reported by Francke and Sundin (2010, p.10). Most participants were of the opinion that Wikipedia content is diverse and relevant, but is not stable and is susceptible to change (Amina and Warraich, 2022, pp.25-29). Nevertheless, it was noted that while students are aware of Wikipedia's credibility issues regarding the accuracy of information, they continue to use it extensively to carry out their academic work (Amina and Warraich, 2022, pp.25-29). In short, they believe Wikipedia to be a useful source (Bravo and Young, 2011, pp.14-15), especially to get a general idea of a subject, to begin the investigation of a topic to be developed, and to learn concrete data.

The students believe that Wikipedia's credibility is supported primarily by the fact that content is verified by editors and experts. It is important to bear in mind that, as Kuznetsov *et al.* (2022, p.15) point out, while Wikipedia's success is based on its openness to recruiting volunteers from around the world to edit content to make Wikipedia a resource with millions of entries in a multitude of languages, this openness has also brought a persistent lack of trust in its content from its own users.

Despite several attempts to develop trust indicators to help readers more quickly and accurately assess the credibility of content on Wikipedia, challenges remain for the practical implementation of such information credibility support mechanisms. According to the participants in the present study, Wikipedia needs to offer more help and keys to users so that they may evaluate the credibility of its information; this result is in line with the conclusions presented by Lim (2013, p.415). Amina and Warraich (2022, pp.25-29) also believe that it is important for the perception of reliability that the content have images, figures and references.

The influence of the teachers they have had throughout their academic history has had a negative influence on the students' perceptions of the credibility of Basque Wikipedia. Perhaps because Wikipedia lost credibility in its early years due to a lack of centralized control over the creation and editing of articles, the anonymity of the authors, the very purpose of its mission and the ease of access, many educators were suspicious of Wikipedia to the point of prohibiting students from using it (Johinke and Lauro, 2020, p.947). In this sense, it is also interesting to note that, in line with Menchen-Trevino and Hargittai (2011, p.14) and Amina and Warraich, (2022, pp.25-27), although teachers advised many of the present participants not to cite Wikipedia articles in their school assignments, many students have continued to use Wikipedia in their academic and daily lives.

We can assume that becoming adults also leads students to be more aware of the credibility problem when using Wikipedia information and leads them to use more criteria to judge credibility and evaluate information (Sahut and Mothe, 2019; Svenson *et al*, 2023, pp.316-319).

In line with Francke and Sundin (2010) in the study they did on Swedish Wikipedia that compared its use with that of English Wikipedia, several participants stated that they use Spanish Wikipedia more than Basque Wikipedia, perhaps due to the great difference in the volume of information between the two languages on Wikipedia. Likewise, they recognize that there is greater volume of information in Basque than they thought and a quality control group that they did not expect.

Finally, it should be noted that the present study lasted four years and no significant differences were detected in the perceptions of the student subjects over time.

Future research

This work updates the field of study of the credibility of Wikipedia in general and particularly that of Basque Wikipedia. It would be interesting to collect more qualitative data by observing the actual behavior of students when using Wikipedia, for example, by recording what they do on the screen while using it.

More studies must be carried out to learn about the opinions and performance of professors from different higher education institutions with regard to the use of Wikipedia in teaching and learning processes (Amina and Warraich, 2022, p.17; Haslam 2017; Lladós-Masllorens *et al*, 2017; Alcazar *et al*, 2018, p.30), and to examine the influence of Wikipedia use on their perceptions of the credibility of Wikipedia information.

It would also be interesting to investigate the use of the Wikipedia Talk Pages tool since it can be used as a discussion tool or to clarify confusing information when needed (Bubendorff *et al*, 2021, p.213). Regarding the supervision of editing, more research is needed to develop automated tools to detect potentially dangerous content, which will allow supervisors to deal with attacks that are increasingly complex and sophisticated, and that alter people's perceptions of Wikipedia's credibility.

Further research on the gender variable is also important in order to confirm what is inferred from the study by Amina and Warraich (2022, p.19), i.e., that gender is not a decisive factor in the perception of Wikipedia's credibility.

5. References

- Aibar, E., Lladós-Masllorens, J., Meseguer-Artola, A., Minguillón, J. and Lerga, M. (2015), "Wikipedia at university: what faculty think and do about it", *The Electronic Library*, Vol. 33 No. 4, pp.668-683.
- Alcazar, C., Bucio, J. and Ferrante, L. (2018), "Wikipedia Education Program in higher education settings: actions and lessons learned from four specific cases in Mexico and Argentina", *Páginas de Educación*, Vol. 11 No. 1, pp.23-39.
- Amina, W. and Warraich, N.F. (2022), "Use and trustworthiness of Wikipedia information: students' perceptions and reflections", *Digital Library Perspectives*, Vol. 38 No. 1, pp.16-32.

- 1
2
3 Bidegain, E., Arroyo Sagasta, A., Diaz Bizkarguenaga, K., Zuberogoitia, A., Antón, E. and Rozas, I.
4 (2022), “Youth and online privacy: a cross-border study in the Basque Country”, *Journal of*
5 *Information, Communication and Ethics in Society*, Vol. 20 No. 1, pp.54-71.
6
7 Bidegain, E., Alonso, I., and Mentxakatorre, J. (2023). “Ikasleak Wikipedian editore izatearen onurak
8 ikasketa prozesuan = [The benefits in the learning process of being a student editor on
9 Wikipedia]”, *Ikastorratza: e-Revista de Didáctica*, 31, 24–45.
10 Blas, S.D. and Zamora, M. (2019), “El uso de wikipedia en entornos educativos como método
11 pedagógico”, *Pedagogías Emergentes en la Sociedad Digital*, Vol. 1, pp.73-80.
12
13 Bravo, V.J. and Young, M.F. (2011), “The impact of a collaborative Wikipedia assignment on teaching,
14 learning, and student perceptions in a teacher education program”, *Canadian Journal of*
15 *Learning and Technology*, Vol. 37 No. 3, pp.1-24.
16
17 Bubendorff, S., Rizza, C. & Prieur, C. (2021). Construction and dissemination of information veracity
18 on French social media during crises: Comparison of Twitter and Wikipedia. *Journal of*
19 *Contingencies and Crisis Management*, Vol. 29 No. 2, pp.204-216.
20
21 Claes, F. and Deltell, L. (2020), “Wikipedia y universidades: trabajo colaborativo en torno a
22 universidades iberoamericanas”, *Revista de Educación*, Vol. 389, pp.243-266.
23
24 Coscollola, M.D., Sanchez i Valero, J.A. and Sancho Gil, J.M. (2014), “Investigar con y sobre los
25 jóvenes colaborando y educando”, *Comunicar*, Vol. 42, pp.157-164.
26
27 Cuquet, M. and García San Pedro, M.J. (2019), “Perceptions and usage of Wikipedia among secondary
28 education students”, *Education in the Knowledge Society*, Vol. 20, pp.15-26.
29
30 Egaña, T. (2010). *Nola bilatzen, ebaluatzen eta aukeratzten dute informazioa unibertsitate-ikasleek? =*
31 *[How university students search, evaluate and select information?]* [Doctoral dissertation]
32 Eskoriatza: Mondragon Unibertsitatea. ISBN: 978-84-693-9646-9
33
34 Egaña, T. (2011). How do university students evaluate Internet information? *Gogoia*, 10.
35
36 Egaña, T., Bidegain, E. and Zuberogoitia, A. (2013), “How university students seek academic
37 information on internet? What students say and what their teachers say”, *EduTec. Revista*
38 *Electrónica de Tecnología Educativa*, Vol. 43, pp.227-251.
39
40 Egaña, T., Zuberogoitia, A., Pavón, A. and Brazo, L. (2012), “How university students evaluate
41 information found on the internet? What students say and what their teachers say”, *EduTec.*
42 *Revista Electrónica de Tecnología Educativa*, Vol. 42, pp.221-242.
43
44 Flanagin, Andrew J.; Metzger, Miriam J (2011). From Encyclopaedia Britannica to Wikipedia:
45 Generational differences in the perceived credibility of online encyclopedia
46 information. *Information, Communication & Society*, Vol. 14 No 3, pp.355-374.
47
48 Flanagin, A., Winter, S. and Metzger, M. (2020), “Making sense of credibility in complex information
49 environments: the role of message sidedness, information source, and thinking styles in
50 credibility evaluation online”, *Information, Communication & Society*, Vol. 23 No. 7, pp.1038-
51 1056.
52
53 Forte, A. and Bruckman, A. (2006), “From Wikipedia to the classroom: exploring online publication
54 and learning”, *Proceedings of the 7th International Conference on Learning Sciences*, pp.182-
55 188.
56
57 Francke, H. and Sundin, O. (2010), “An inside view: credibility in Wikipedia from the perspective of
58 editors”, *Information Research*, Vol. 15 No. 3.
59
60 Garrison, J.C. (2015), “Getting a ‘quick fix’: first-year college students’ use of Wikipedia”, *First*
Monday, Vol. 20 No. 10.
61
62 Garrison, J.C. (2018), “Instructor and peer influence on college student use and perceptions of
63 Wikipedia”, *The Electronic Library*, Vol. 36 No. 2, pp.237-257.
64
65 Haslam, T.J. (2017), “Wikipedia and the humanities in higher education: past time to renegotiate the
66 relationship”, *International Journal of Information and Education Technology*, Vol. 7 No. 4.

- 1
2
3 Huisman, M., Joye, S. and Biltereyst, D. (2021), "Health on Wikipedia: a qualitative study of the
4 attitudes, perceptions, and use of Wikipedia as a source of health information by middle-aged
5 and older adults", *Information, Communication & Society* Vol. 24 No. 12, pp.1797-1813.
- 6 James, C. (2009), *Young People, Ethics, and the New Digital Media: a Synthesis from the GoodPlay*
7 *Project*, MIT Press, London, UK.
- 8 Jemielniak, D. (2019), "Wikipedia: why is the common knowledge resource still neglected by
9 academics?", *GigaScience*, Vol. 8 No. 12.
- 10 Johnke, R. and Lauro, F.D. (2020), "Wikipedia in higher education: practice what you teach", *Studies*
11 *in Higher Education*, Vol. 45 No. 5, pp.947-949.
- 12 Kiili, C., Laurinen, L., & Marttunen, M. (2008). Students evaluating Internet sources: From versatile
13 evaluators to uncritical readers. *Journal of Educational Computing Research*, 39, 75–95.
- 14 Kohonen, A. M., Mertens, G. E., Dawson, K., Hampton, J., & Fu, D. (2021). A study of middle school
15 students' online credibility assessments: Challenges and possibilities. *Research in the Teaching*
16 *of English*, Vol. 56 No 1, pp. 33-59.
- 17 Kuiper, E., Volman, M. and Terwel, J. (2009), "Developing web literacy in collaborative inquiry
18 activities", *Computers & Education*, Vol. 52 No. 3, pp.668–680.
- 19 Kumar, S., West, R. and Leskovec, J. (2016), "Disinformation on the web: impact, characteristics, and
20 detection of Wikipedia hoaxes", *Proceedings of the 25th International Conference on World*
21 *Wide Web*, pp.591-602.
- 22 Kuznetsov, A., Novotny, M., Klein, J., Saez-Trumper, D. and Kittur, A. (2022), "Templates and trust-
23 o-meters: towards a widely deployable indicator of trust in Wikipedia", *Proceedings of the*
24 *2022 CHI Conference on Human Factors in Computing Systems*, pp.1-17.
- 25 Kvale, S. and Brinkmann, S. (2009), *InterViews: Learning the Craft of Qualitative Research*
26 *Interviewing* (2nd ed.), Sage Publications, Inc.
- 27 Lim, S. (2013), "College students' credibility judgments and heuristics concerning Wikipedia",
28 *Information Processing & Management*, Vol. 49 No. 2, pp.405-419.
- 29 Lim, S., & Simon, C. (2011). Credibility judgment and verification behavior of college students
30 concerning Wikipedia. *First Monday*.
- 31 Lladós-Masllorens, J., Aibar, E., Meseguer-Artola, A., Minguillón, J. and Lerga, M. (2017),
32 "Explaining teaching uses of Wikipedia through faculty personal and contextual features",
33 *Online Information Review*, Vol. 41 No. 5, pp.728-743.
- 34 López Flamarique, M. (2017). *Buscar, evaluar y seleccionar información digital: una experiencia*
35 *didáctica en Educación Secundaria Obligatoria = [Finding, evaluating and selecting digital*
36 *information: a didactic experience in Compulsory Secondary Education]*. [Doctoral thesis].
37 Mondragon University, Mondragón.
- 38 López Flamarique, M., Garro Larrañaga, E. and Egaña Osa, T. (2019), "La lectura digital en un aula
39 de Secundaria: prácticas reales y dificultades del alumnado", *Pixel-Bit*, Vol. 55, p.99-116.
- 40 Magdaleno, M. and García, J. (2013), "Colaboración activa en Wikipedia como método de
41 aprendizaje", *RIED: Revista Iberoamericana de Educación a Distancia*, Vol. 16 No. 1, pp.13-
42 26.
- 43 Magnus, P. D. (2009). On trusting Wikipedia. *Episteme*, Vol 6 No 1, pp.74-90.
- 44 Menchen-Trevino, E. and Hargittai, E. (2011), "Young adults' credibility assessment of
45 Wikipedia", *Information, Communication & Society*, Vol. 14 No. 1, pp.24-51.
- 46 Meseguer-Artola, A. (2015), "Wikipedia en la universidad: una guía de buenas prácticas", *Oikonomics:*
47 *Revista de Economía, Empresa y Sociedad*, Vol. 3, pp.90-99.
- 48 Messner, M. and DiStaso, M. (2013), "Wikipedia versus Encyclopedia Britannica: a longitudinal
49 analysis to identify the impact of social media on the standards of knowledge", *Mass*
50 *Communication and Society*, Vol. 16 No. 4, pp.465-486.
- 51
52
53
54
55
56
57
58
59
60

- 1
2
3 Mothe, J. and Sahut, G. (2018). "How trust in Wikipedia evolves: a survey of students aged 11 to 25",
4 *Information Research*, Vol. 23 No. 1.
5
6 Rico, A. and Garcia, A. (2022), "Wikipediaren pertzepzio eta erabilera DBHko ikasleen eta irakasleen
7 artean = [Perception and use of Wikipedia among secondary school students and teachers],
8 *Tantak*, Vol. 34- No.2, pp.93-120.
9
10 Rowley, J. and Johnson, F. (2013), "Understanding trust formation in digital information sources: the
11 case of Wikipedia", *Journal of Information Science*, Vol. 39 No. 4, pp.494-508.
12
13 Sahut, G. and Mothe, J. (2019), "Epistemic vs. non-epistemic criteria to assess Wikipedia articles:
14 evolution of young people perceptions", *Information Literacy in Everyday Life: 6th European
15 Conference, ECIL*, pp.329-339.
16
17 Shen, X., Cheung, C. and Lee, M. (2013), "What leads students to adopt information from Wikipedia?
18 An empirical investigation into the role of trust and information usefulness", *British Journal of
19 Educational Technology*, Vol. 44 No. 3, pp.502-517.
20
21 Soler, J., Pavlovic, D. and Font, P.F. (2018), "Wikipedia in higher education: changes in perceived
22 value through content contribution", *Comunicar: Revista Científica Iberoamericana de
23 Comunicación y Educación*, Vol. 54, pp.39-48.
24
25 Svenson, F., Ballová Mikušková, E. and Launer, M.A. (2023), "Credibility and trust of information
26 privacy at the workplace in Slovakia. The use of intuition", *Journal of Information,
27 Communication and Ethics in Society*, Vol. 21 No. 3, pp.302-321.
28
29 Valverde-Crespo, D., González-Sánchez, J., & de Pro-Bueno, A. (2019). Wikipedia en la Universidad:¿
30 Cómo la utilizan los estudiantes de 1º curso de Grado de titulaciones del área de Ciencias
31 Experimentales? Un estudio sobre sus percepciones. *Revista Eureka sobre enseñanza y
32 divulgación de las ciencias*, Vol. 16 No 3, pp.310101-310118.
33
34 Walraven, A., Brand-Gruwel S. and Boshuizen H. (2009), "How students evaluate information and
35 sources when searching the World Wide Web for information", *Computers & Education*, Vol.
36 52 No. 1, pp.234-246.
37
38
39
40
41
42
43
44
45
46
47
48
49
50
51
52
53
54
55
56
57
58
59
60