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Susan Birch-Becaas, Claire Kloppmann-Lambert, Shirley Carter-Thomas, Dacia Dressen-Hammouda, Elizabeth Rowley-Jolivet, Nedjah Zerrouki

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Research dissemination in digital media: An online survey of French researchers' practices

Diffusion de la recherche sur les médias numériques : enquête sur les pratiques des chercheurs français

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1 Introduction

- 1 In the last two or three decades, research communication practices have undergone a major upheaval. Alongside traditional communication channels (journal publication of research articles, conference presentations, etc.), an increasing number of research-related activities are now conducted via digital media, with researchers using digital tools in practically all steps of the scientific workflow, from funding to data management, to communication to peer and lay audiences (Prem *et al.* 2016). Open Access¹ and Open Science² have profoundly transformed the ways in which researchers produce, deposit, access, and share data and knowledge with their peers. These developments have also made academic research accessible to a vast, non-specialist audience worldwide. While this may require appropriately recontextualizing specialized knowledge to make it comprehensible to a lay public, digital media can also foster participatory practices such as Citizen Science initiatives, in which members of the general public are recruited via the Internet to collaborate with researchers by collecting and analyzing data (Science Europe 2017).
- 2 The affordances of digital media have also led to the evolution of existing genres and the emergence of many web-native genres such as blogs, wikis, video methods articles, video abstracts, research group videos, academic social networks, homepages and websites. These digital genres rapidly attracted strong interest from discourse and media analysts, and there is now a rich literature on their linguistic and multimodal

features, communicative purposes and generic status (see, inter alia, Giltrow & Stein 2009; Gross & Buehl 2016; Gross & Harmon 2016; Luzón & Pérez-Llantada 2019, 2022; Belcher 2023; Alastrué & Corona forthc.; Rowley-Jolivet & Carter-Thomas *This issue*). We are poorly informed, however, about the attitudes of the users themselves – the researchers – towards these new discursive affordances and about their current degree of uptake. What are the motivations, and the impediments, that influence researchers' decisions to disseminate (or not) their research via digital genres? Which publics do they primarily address? Why is the uptake of some digital genres rapid and widespread while for others it is slow and limited?

- 3 It is important to provide at least a provisional answer to these questions for several reasons. Digital skills have now become an essential element in the researcher's toolkit in order to conduct, fund, share and disseminate research: those who do not update their skillset to encompass the necessary digital abilities may find themselves getting left behind in various areas of their work. We first need to know, however, what skills researchers, or certain groups of them, lack in order to propose suitable training programs and/or technical assistance. While infrastructures exist, both in France and more generally in Europe, to assist researchers in curating and archiving their digital data (e.g. Huma-Num for HSS researchers)³, to the best of our knowledge very little help is available to train researchers in acquiring digital skills to communicate their work to the general public.⁴ Greater democratization and accountability of research are now perceived, however, as a societal need, and are increasingly demanded by funding bodies as part of the valorization of research projects. Moreover, the promotion and visibility of research nowadays require a strong digital presence on the Internet. With these objectives and questions in mind, we conducted an online survey of the current uptake of digital media by French university and CNRS researchers. This report presents the results of the survey.

2 Context and aims of the study

- 4 The aim of this study was to replicate research initially carried out at the University of Zaragoza (Spain) by the digital science action group *Campus Iberus* ("Digital Science: Sustainable, Transformative and Transversal"⁵) to gain insight into how scientists communicate their work on digital media. The survey was conducted by several international partners⁶ to allow for international comparison.
- 5 The survey objectives, as described in the final report of the Spanish digital science action group, were
 - to identify both sustainable professional and public communication of science online and, in particular, Citizen Science as an emerging paradigm;
 - to identify transformative practices, i.e. online communication practices that researchers can use to target non-specialist, diversified audiences and assess their value for educating citizens in issues of science and raising their interest in science (scientific culture);
 - to assess whether competence in communicating science online to expert and broader publics needs to be a transversal skill to be taught/learned in Higher Education Institutions (HEIs).

- 6 The *Campus Iberus* survey also explores the gender dimension to identify differences in the current practices of male and female researchers. Here, we report on the findings of the survey carried out in the French higher education context.

3 Methods

- 7 The survey produced by the *Campus Iberus* Action group was used to investigate French researchers' practices of communicating science online to peers and wider audiences. It was carried out by members of the L-ASP working group (Literacies in Academia, Science and the Professions) which is part of the French national ESP association GERAS (*Groupe d'étude et de recherche en anglais de spécialité*).
- 8 We targeted university researchers working in Science, Technology, Engineering, Mathematics, Medicine and Biological and Health Sciences (STEMM), through mailing lists, allowing comparison with the Spanish context, but also researchers in the Human and Social Sciences (HSS) in order to explore any possible disciplinary differences. A total of 310 researchers participated in the survey. The original English-language survey was translated without question modification into French so that respondents could choose to answer in either French or English. It included a total of 13 questions. Multiple choice questions collected information about respondents' profiles and their research dissemination habits. Likert-scale questions asked respondents to reflect upon the importance of online genres and media, language, and digital technology in science communication. An optional comment section concluded the survey (see Appendix for survey questions).
- 9 In January 2023, an invitation email containing a link to the web-based survey, a QR code and brief study description, was sent to researchers and doctoral students in the targeted French HEIs. The questionnaire and results are stored on the Sphinx server at the University of Bordeaux.

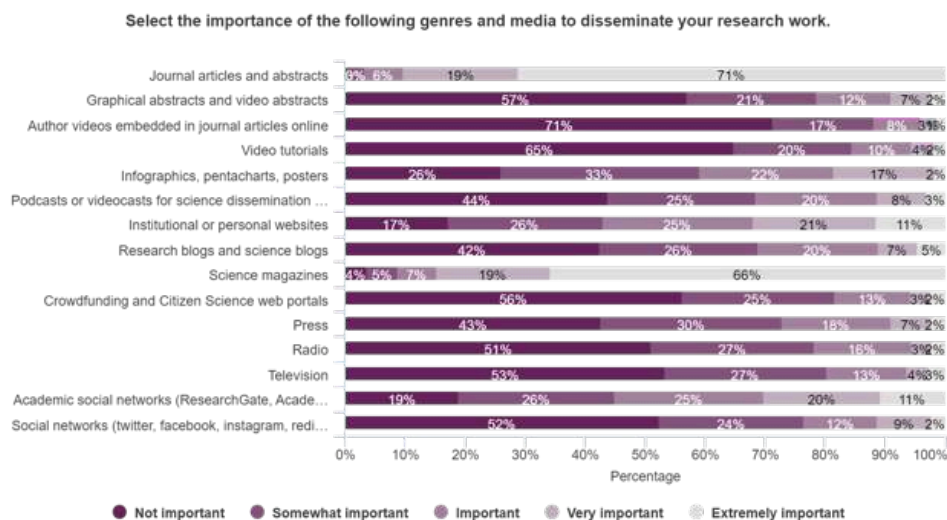
4 Results

4.1 Research dissemination practices

- 10 Concerning the profile of the survey respondents, STEMM researchers represented more than two thirds of the total number of respondents (70%), with HSS researchers accounting for slightly more than a quarter (26%). The majority of respondents were researchers (85%) and 15% were doctoral students. We received 310 responses. Publication experience was evenly distributed. A third of respondents had published more than 50 articles (33%). This is lower than the Spanish results but this may be due to the number of PhD students, the different disciplines represented or researchers at different stages in their career. Thirty-three percent of respondents had published between 20 and 50 articles and 34% fewer than 20 articles. There were more male (61%) than female (35%) respondents.
- 11 Figure 1 shows participants' opinions on the relative importance of different genres and media to disseminate their research. A list of 15 possibilities was proposed (see figure 1), including both traditional and digital genres and media. Respondents' answers revealed that the traditional journal article and abstract remained either

extremely important (71%) or very important (19%) giving a cumulative total of 90%. The distribution is similar to the Spanish survey results, with a combined figure of 93% for “important”, “very important” and “extremely important”.

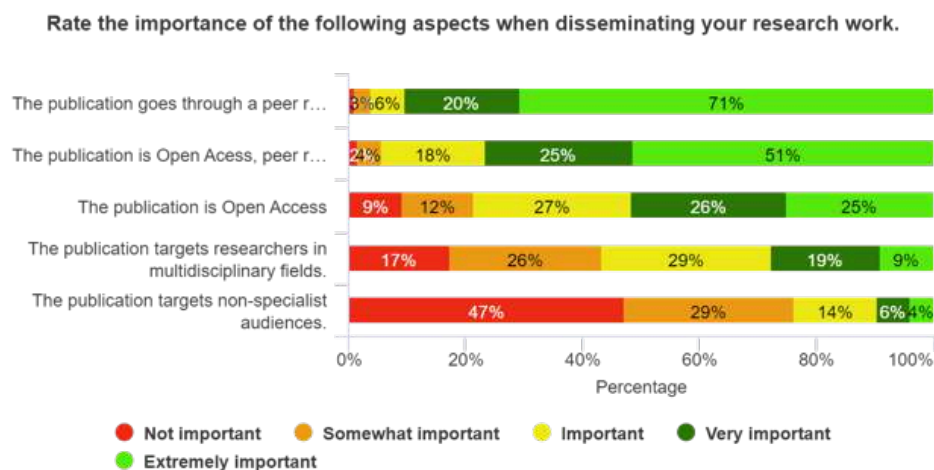
Figure 1. The importance of different genres and media in research dissemination.



- 12 This result seems logical: researchers' careers are evaluated by the number of articles published, which is the main form of peer-to-peer communication for sharing research results. The second most cited genre was, surprisingly, “science magazines”, a cumulative total of 85%, which we attribute to the fact that the French translation “*revues scientifiques*” may have been taken to refer to “scientific journals”. These two results contrast with emerging digital genres which were rated mostly as “not important”. For example, author videos were considered unimportant by 71% of respondents, video tutorials by 65%, graphical or video abstracts by 57%, and crowdfunding and citizen science by 56%, while a mass media such as TV was rated unimportant by 53%. The results are again similar to those found in the Spanish context and suggest that such genres and media are not favored by researchers for various reasons. For example, researchers may be reluctant to share their results with a wider, more diversified audience for a number of reasons such as lack of time and incentive. It is important to note here, as certain respondents indicated in their comments, that what researchers consider to be important for their careers or an important part of their job may not be what they consider to be important for science, society or themselves.
- 13 As also shown in figure 1, there is some evidence of emerging practices. Institutional or personal websites were considered “important” or “very” or “extremely important” by a cumulative total of 57% which is lower than the cumulative 81% in the Spanish report. Likewise, academic social media networks were rated “important,” “very important” or “extremely important” by a cumulative total of 56%. In contrast, certain respondents cited genres such as conference papers and proceedings as being very important in their specific field and indicated that they were not included in the questionnaire.
- 14 Figure 2 shows researchers' preferences for how and to whom their work is disseminated. When disseminating research, 71% of respondents said that it was “extremely important” or “very important” (20%) for the publication to go through the

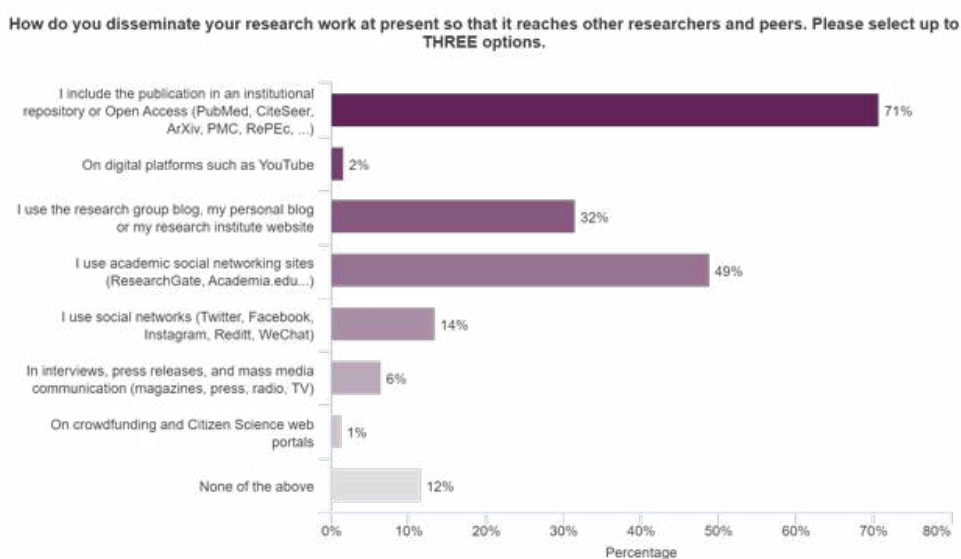
peer review process and be indexed in international databases such as ISI, JCR or Scopus, giving a cumulative total of 91% which is again in line with the Spanish results (91%).

Figure 2. How researchers disseminate their work and to whom.



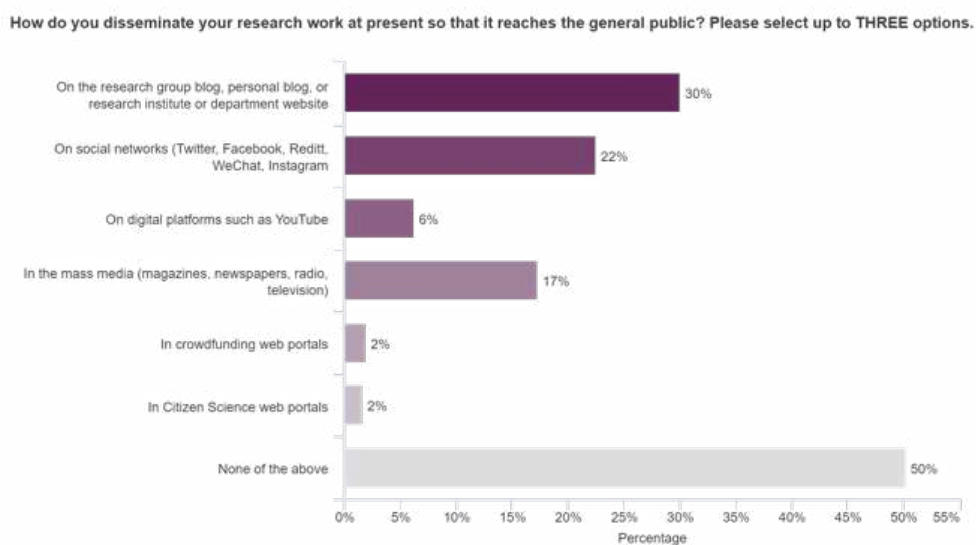
- 15 Again, this is not surprising considering the importance of quality, reliability and transparency in research production. The second item which indicated that publication should be open access, peer-reviewed and indexed in prestigious databases, rated as “very important” or “extremely important” by 76% of respondents. Fifty-one percent said it was “very important” or “extremely important” for the publication to be open access. When questioned about the target audiences for their work, however, only 28% said that it was “very” or “extremely important” to target multidisciplinary researchers and 10% that it was “very important” or “extremely important” to target non-specialist audiences. It would seem that reaching a more diverse, non-specialist audience is not a priority. This may be because dissemination activities and popularization of science, although increasingly encouraged by university administrations in France, do not carry as much weight as research articles and peer-to-peer publications for career assessment. Researchers may therefore feel that they simply do not have enough time for these activities, as they will not contribute to career promotion. Moreover, it is not a requirement for research funding in France.
- 16 In figure 3, respondents indicate how they typically disseminate their work to their peers. Seventy-one percent of respondents cited the use of institutional databases or open access, followed by academic social networks (49%) and research group blogs or personal blogs (32%) (see figure 3). Researchers in the Spanish context present a similar pattern, with figures of 78%, 69% and 45%, respectively.

Figure 3. Peer-to-peer research dissemination.



17 When asked how they disseminated their work to the general public, as shown in Figure 4, 50% responded “none of the above”, implying that this was something they did not do. For those who do disseminate to a wider audience, the main channels used were, in descending order, research group blogs/personal blogs (30%), social networks such as Twitter and Facebook (22%) and mass media (radio, TV, newspapers 17%).

Figure 4. Research dissemination to the general public.

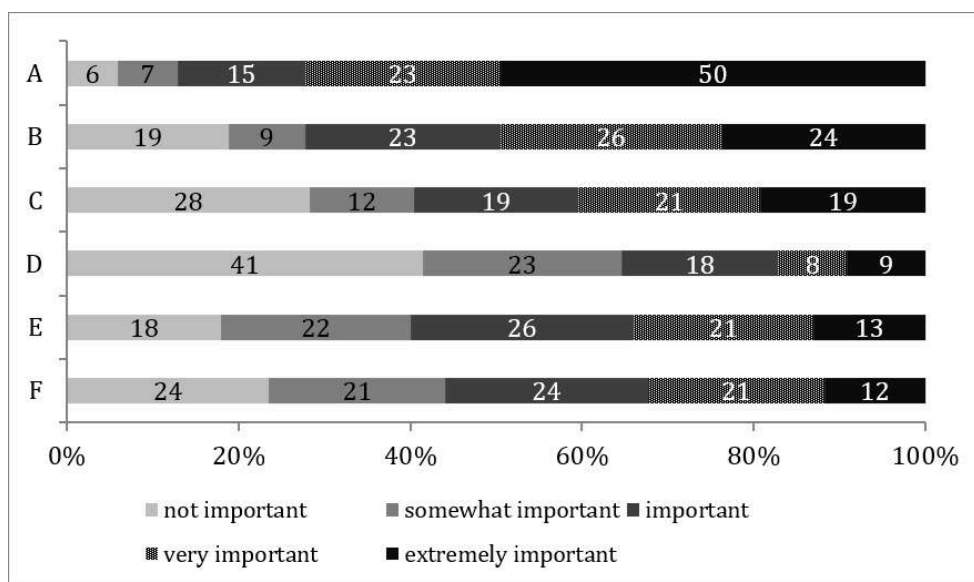


18 These results suggest that there is some evidence of transformative practices, although maybe not as extensive as in the Spanish survey, where half of the respondents reported using social networks and mass media to communicate research to broad publics.

4.2 Language and communication needs

- 19 As we can see in figure 5, the study also aimed to explore the language and communication needs of researchers involved in the digital communication of research.

Figure 5. Assessment of researchers' language and communication needs when they communicate about their work on the internet.



A: Using English as a Lingua Franca for scientific communication; B: Using the language of my local context to communicate science to general publics; C: Using several languages to communicate science locally and globally; D: Knowing how to use tools for creating and editing videos and treating images. Templates for posters, science dissemination resources, educational resources and so on; E: Knowing how to communicate persuasively the social impact of science to the general public; F: Knowing how to communicate persuasively with the general public to engage them in scientific research (data collection, classification...).

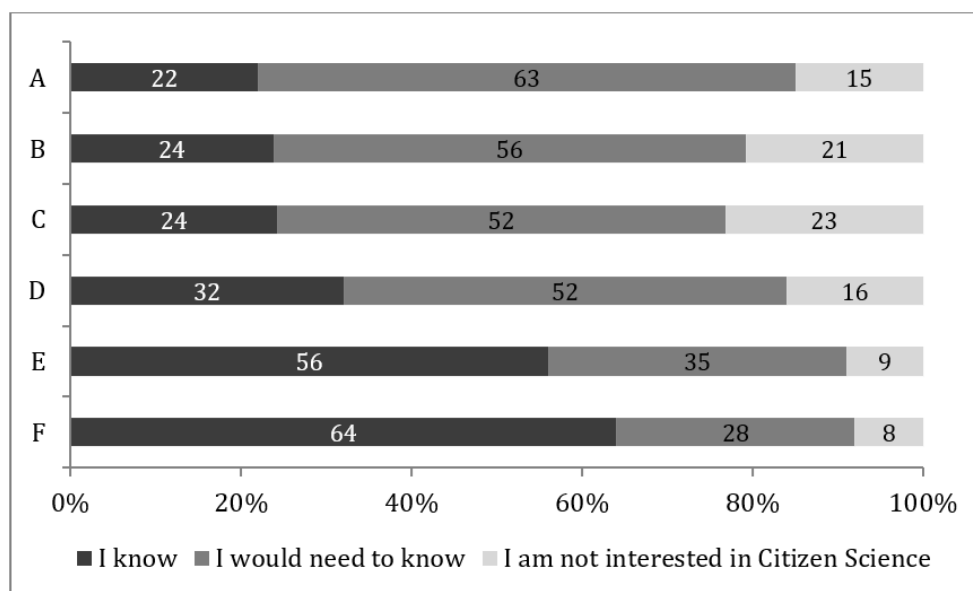
- 20 The use of English as a Lingua Franca (ELF) was deemed “important”, “very important” or “extremely important” by 88% of respondents, the use of the local language by 73% of respondents and of several languages by 59%. This is the same ranking as found in the Spanish survey, with 86%, 68%, and 58% respectively, indicating the predominance of English in this domain. Additionally, the importance of communicating the social impact of science to the general public persuasively was cited by 60%, and communicating persuasively to engage the general public in research by 57%. When asked about their current and future dissemination practice, 40% of French researchers declared that they currently disseminate their work to the general public, compared to 60% of Spanish researchers (data not reproduced here). This contrast possibly points to cultural, institutional or policy differences in higher education institutions between the two countries. Nonetheless, in our study, 37% of researchers said they were planning to get involved in this practice.

4.3 Training needs in digital science

- 21 Figure 6 provides insight into researchers' training needs in order to get involved in activities such as Citizen Science. Here, the most cited need was “knowledge of

strategies for communicating clearly and effectively” (63%), in line with the Spanish survey (63%), followed by use of ICT tools (56%), knowledge of the web portal (52%) and use of images and multimedia (52%), again very similar to the Spanish results. Moreover, 57% of respondents said that they knew what Open Science is, and 64% said they were familiar with the impact of science on society.

Figure 6. Assessment of training needs in Citizen Science.



A: Knowledge of strategies for communicating clearly and effectively; B: Use of ICT (tools for video editing, audio,...); C: Use of images and multimedia elements that can be embedded in the web portal; D: Knowledge of the web portal (types of texts, hyperlinking options, interactivity, ...); E: Knowledge of what Open Science is and its impact on society; F: Knowledge about scientific culture and its impact on society.

- 22 However, in the comments section, certain respondents said it was difficult to answer this question and to quantify their degree of knowledge or expertise in these domains. They would have welcomed more definitions and clarity about the terms used, such as Open Science and Citizen Science.
- 23 The comments made by respondents also revealed a certain degree of reluctance or frequently a lack of time and incentive to get involved in sharing their research results with the general public.

Scientific mediation is a profession in its own right. The more teachers and researchers are asked to multitask/multifunction, the less time they will have to devote to their core business, i.e. doing scientific research. [our translation]

These aspects of communication seem to me to be time-consuming and the people I work for find it superfluous, these dissemination practices are not supported at all. [our translation]

- 24 Other comments concerned the lack of public interest in scientific research, whatever the efforts made by researchers to communicate to the general public:

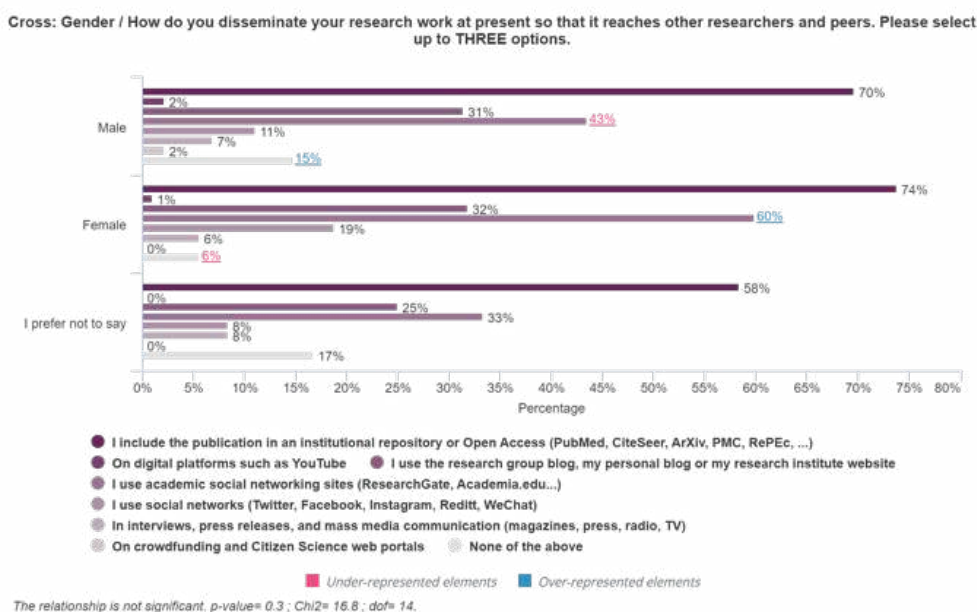
There has always been a group of scientists/teachers who bridged the gap between the experts and the public or industry. The explosion of technologies and medicine are evidence of this highly productive communication. The main limitation of productive communication is the curiosity of the public, how open society is to scientific findings.

To me, communication is far too important nowadays. It is given too much time (and resources) compared to science itself. Moreover, as science has been denigrated in education, the "general public" increasingly lacks the basics to be interested in and understand science. It would be better to reassess science in education (primary, secondary and high school) in order to give everyone the basics and to develop critical thinking rather than doing "low-level" communication ... [our translation]

4.4 Gender differences

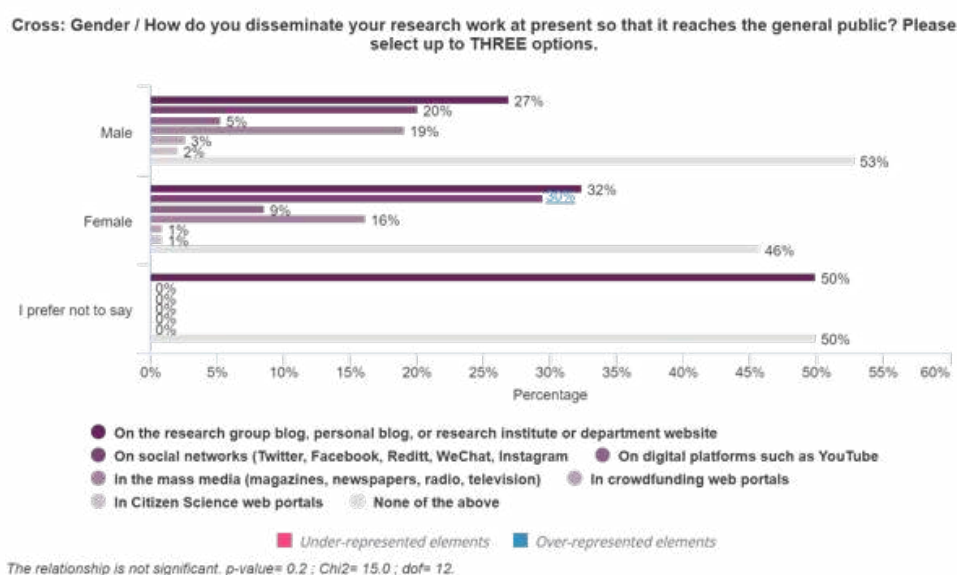
- 25 We also compared responses from male and female respondents to bring to light any possible gender differences. Our results show that gender does not seem to significantly impact the genres and media used in research or aspects of research dissemination, such as peer review, open access, multidisciplinary or targeting non-specialist audiences.
- 26 In fact, male and female researchers are seen to disseminate their work to other researchers and peers in a similar way (use of institutional repositories or Open Access, research group blogs, personal blogs or research institute websites, social networking, interviews, press releases and mass communication, crowdfunding and Citizen Science web portals, digital platforms such as YouTube). In contrast, as shown in Figure 7, female researchers say they use academic social networking sites such as Researchgate and Academia more frequently than men (60% of females, 43% of men).

Figure 7. Gender differences in peer-to-peer research dissemination.



- 27 When it comes to disseminating their research work to the general public, results are similar for men and women, except for the greater use of social networks (Twitter, Facebook, Reddit, WeChat, Instagram) by women (30% for women, 20% for men), as indicated in Figure 8.

Figure 8. Gender differences in research dissemination to the general public.



28 Table 1 shows some interesting differences in terms of how men and women rate language and communication needs.

Table 1. Gender differences in researchers' language and communication needs (multiple cross).

Importance*	MALE						FEMALE					
	1	2	3	4	5	Sub-total	1	2	3	4	5	Sub-total
Using English as a Lingua Franca for scientific communication	6	6	14	23	50	61	6	8	17	20	49	35
Using the language of my local context to communicate science to general publics	22	9	26	25	18	62	13	7	18	27	35	35
Using several languages to communicate science locally and globally	31	13	22	20	14	61	24	10	14	22	30	35
Knowing how to use tools for creating and editing videos & image processing; templates for posters, science dissemination resources, educational resources, etc.	48	23	16	7	7	61	28	25	22	12	13	35
Knowing how to communicate persuasively the social impact of science to the general public	20	25	25	23	8	61	14	15	27	20	24	35

Scale of Importance: 1 = Not important; 2 = Somewhat important; 3 = Important; 4 = Very important; 5 = Extremely important

- 29 While male and female researchers rated the importance of English for research dissemination similarly, female researchers attached more importance to using the language of their local context to share their science with the general public. Female researchers also considered that using several languages to communicate science locally and globally was important, as were using tools for creating and editing videos, images, posters, and the ability to communicate persuasively the social impact of science to the general public. Again, this is similar to the Spanish results.
- 30 While men and women both described having similar practices regarding research communication with the general public at the present time (39% of women involved, 41% of men), 45% of women said they were thinking of doing so in the future, compared with 32% of men. Moreover, only 16% of women said they were not doing so and not planning to do so in the future, versus 28% of men (see table 2).

Table 2. Gender differences in science dissemination.

Do you do science dissemination at present?	Male (%)	Female (%)	I prefer not to say (%)
Yes	41	39	33
No, but I am thinking of doing it in the future	32	45	42
No, and I don't plan to do it in the future	27	16	25

Under-represented elements
Over-represented elements
<i>The relationship is weakly significant: p-value= 0.1; Chi2= 7.3; dof= 4</i>

- 31 Concerning their training needs, men and women similarly rated their current knowledge (on Open Science, scientific culture and its impact on society, web portals, use of ICT, use of images and multimedia elements that can be embedded in a web portal, etc.), but women rated slightly higher their need to know about these matters while men tended to indicate they were less interested (in particular in web portals, ICT, images and multimedia elements).

4.5 Disciplinary differences

- 32 As our survey was sent out to both STEMM and HSS researchers, we were able to explore potential disciplinary differences. Male and female researchers were evenly represented in HSS (male 48%, female 49%). However, in the Health Sciences we had more female respondents (56% v 42%) whereas in Science and Technology there were more male than female respondents (72% v 23%). These distinctions need to be taken into account when interpreting these results.
- 33 Table 3 details disciplinary differences in peer-to-peer research dissemination. For example, while STEMM researchers make more use of Open Access (Health Sciences 82%, Science and Technology, 72%, HSS, 62%), HSS researchers disseminate

more via research group blogs/websites (HSS 47%, health sciences 24% Science and Technology 26%) (see table 3)

Table 3. Disciplinary differences in peer-to-peer research dissemination.

Cross: Please indicate your teaching and/or research field/How do you disseminate your research work at present so that it reaches other researchers and peers. Please select up to THREE options	A	B	C	D	E	F	G	H
Health Sciences	82	2	24	53	16	4	0	13
Human and Social Sciences	62	1	47	56	23	10	2	11
Science and Technology	72	1	26	45	7	6	1	11
Law, Political Science, Economics & Management	64	0	36	45	27	0	0	9

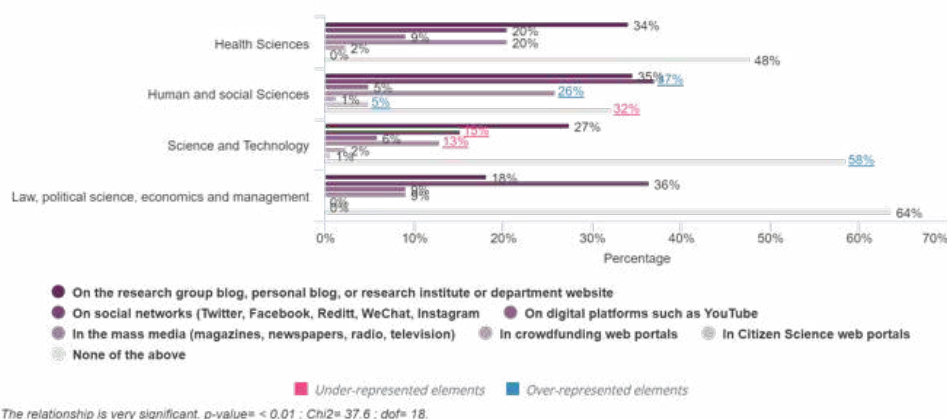
A: I include the publication in an institutional repository or Open Access (PubMed, CiteSeer, ArXiv, PMC, RePEc,...); B: On digital platforms such as YouTube; C: I use the research group blog, my personal blog, or my research institute website; D: I use academic social networking sites (ResearchGate, Academia.edu...); E: I use social networks (twitter, Facebook, Instagram, Reditt, WeChat); F: In interviews, press releases, and mass media communication (magazines, press, radio, TV); G: On crowdfunding and Citizen Science web portals; H: None of the above

Under-represented elements
Over-represented elements
<i>The relationship is weakly significant: p-value= 0.1; Chi2= 31.6; dof= 21</i>

- 34 Based on the results shown in Figure 12, it would seem that STEMM researchers disseminate less to the general public. The percentage of researchers who said they used none of the listed media/genres to disseminate to the general public was 58% for Science and Technology, 48% for the Health Sciences and 32% for Human and Social Sciences. In addition, more researchers in HSS are currently involved in science dissemination or planning to become involved in the future, than those in STEMM.

Figure 12. Disciplinary differences in research dissemination to the general public.

Cross: Please indicate your teaching and/or research field / How do you disseminate your research work at present so that it reaches the general public? Please select up to THREE options.



- 35 Figure 12 also indicates that HSS researchers reported using social networks to disseminate to the general public (37%) more than STEMM researchers (Health Sciences 20%, Science and Technology 17%) and they also reported more use of mass media (26%) than Health Sciences (20%) and Science and Technology (13%). With regard to disciplinary differences, it is finally worth noting that, as far as languages are concerned, the use of English as a Lingua Franca seems more important in STEMM fields than in HSS (Science and Technology 84%, Health Sciences 79%, HSS 51%), whereas using several languages seems more important in HSS (55%) compared with 36% in Science and Technology and 33% in the Health Sciences (data not reproduced here).

Conclusion

- 36 The purpose of this study was to gain a better understanding of current digital science communication practices in the French context compared with recent results in other European contexts (e.g. Spain, Perez-Llantada *et al.* 2022). Learning more about these practices is important because of the changing conditions for conducting, funding, and sharing research. However, the extent to which new communicative affordances are appropriated into everyday practice, and researchers' attitudes toward them, are relatively unknown. Our survey study aimed to fill this gap in the French context by describing the use of digital media and genres and examining reasons for researchers' attitudes toward them. We further investigated which publication languages researchers consider important, and whether gender and disciplinary differences are discernible in current digital science communication practices.
- 37 Overall, our findings are very similar to those of the Spanish survey. Our survey shows the importance of publishing in prestigious peer-reviewed journals for researchers' careers and suggests a lack of time and incentive to engage in other digital practices. Some evidence of emerging practices (e.g. open access, academic social networks, research group sites/blogs) is observed, but less extensively than in the Spanish context. The survey also highlights the importance of language and communication skills, specifically the use of English as a Lingua Franca. The need to master communicative strategies for clarity, effectiveness and persuasion, and engage the

general public is also considered important. Results further show that women attach more importance to using different languages and to communicating with the general public, e.g. via social networks. They are also more likely to express an intent to engage in digital science dissemination. Disciplinary differences are also apparent: for example, research dissemination is more common in HSS than in STEMM fields in the French context, and English as a *Lingua Franca* is more important in STEMM researchers' science communication.

- 38 In terms of study limitations, our investigation into French STEMM and HSS researchers' digital science dissemination practices could be improved in several ways. Firstly, the study relied on self-reported data, provided by respondents, and thus could be subject to response bias. Furthermore, the survey was carried out in several French HEIs, but is not representative of all researchers currently working in France. It mainly targeted STEMM researchers, with only 26% of respondents working in HSS fields, limiting the generalizability of the findings to other fields. In addition, only 15% of respondents were doctoral students, possibly creating an inaccurate representation of the experiences and viewpoints of early-career researchers who may be more familiar with online genres. Finally, this study described particular aspects of research dissemination, such as media and language use, and did not account for such factors as funding and institutional support, that could have an impact on researchers' science communication practices.
- 39 To address such concerns and meet researchers' future needs in digital communication skills, further research is required on researcher motivations and institutional constraints, which may impact their practices and attitudes toward the public communication of science. Moreover, professional development resources for digital, language and communication skills are needed. Such concerns and issues are currently being addressed by the DILAN Erasmus+ project (Digital language and communication resources for EU scientists, KA220-HED⁷). A large-scale qualitative study is currently underway across six European countries (Spain, France, Romania, Norway, Albania, UK) to collect relevant data on digital practices in the public communication of science. The impact of the training resources subsequently produced will be evaluated through quantitative indicator tracking of participants' scientific research productivity and altmetric (alternative metrics) indicators regarding their use of social networks. The aim is to better enable EU scientists to digitally communicate their research results to their specialized communities and beyond, including diversified and non-specialist audiences.

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ANNEXES

Questionnaire

Digital Science Communication

The following questionnaire is part of an empirical study conducted by researchers of the GERAS (Studies and Research in English for Specific Purposes) as partners of the action group **Campus Iberus** "Digital Science: Sustainable, Transformative and Transversal". The aim of this study is to know more about the communication practices in digital environments of researchers in our institutional context. It should not take more than **5 minutes** to complete. The answers to the questionnaire are anonymous and no identifiable information will be collected by answering this questionnaire, you give your consent for the processing of the data in accordance with regulations for the protection of personal data, and notably Regulation EU 2016/679 of the European Parliament and Council 27th April 2016. The information gathered from this questionnaire will be processed by the different members of the project for analysis, for the above-mentioned objectives and in respect of confidentiality, consentment is the legal base for processing; the information will be stored in the University of Bordeaux server for a period of three years.

Please indicate your institution.

- University of Bordeaux
- University Clermont Auvergne
- University Grenoble Alpes
- ENS Paris Saclay
- University Paris Cité
- CNRS
- Other. Please specify. : _____

Please indicate your teaching and/or research field

- Health Sciences
- Human and social Sciences
- Science and Technology
- Law, political science, economics and management

What is your discipline?

Are you a PhD student?

- Oui
- Non

Please indicate your experience in science dissemination via scientific journals.

- Less than 20 articles published.
- Between 20-50 articles.
- More than 50 articles.

Gender

- Male
- Female
- I prefer not to say

Select the importance of the following genres and media to disseminate your research work.

	Not important	Somewhat important	Important	Very important	Extremely important
Journal articles and abstracts	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Graphical abstracts and video abstracts	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Author videos embedded in journal articles online	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Video tutorials	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Infographics, posters, charts, posters	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Podcasts or videocasts for science dissemination to the general public	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Institutional or personal websites	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Research blogs and science blogs	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Science magazines	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Crowdfunding and Citizen Science web portals	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Press	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Radio	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Television	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Academic social networks (ResearchGate, Academia.edu...)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Social networks (twitter, facebook, instagram, reddit, wechat)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Rate the importance of the following aspects when disseminating your research work.

	Not important	Somewhat important	Important	Very important	Extremely important
The publication goes through a peer review process and/or is indexed in prestigious databases (ISI, JCR, Scopus...)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
The publication is Open Access, peer reviewed and is indexed in prestigious databases (ISI, JCR, Scopus...)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
The publication is Open Access.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
The publication targets researchers in multidisciplinary fields.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
The publication targets non-specialist audiences.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

How do you disseminate your research work at present so that it reaches other researchers and peers. Please select up to THREE options.

- I include the publication in an institutional repository or Open Access (PubMed, CiteSeer, ArXiv, PMC, RePEc, ...)
- On digital platforms such as YouTube
- I use the research group blog, my personal blog or my research institute website
- I use academic social networking sites (ResearchGate, Academia.edu...)
- I use social networks (Twitter, Facebook, Instagram, Radio, WeChat)
- In interviews, press releases, and mass media communication (magazines, press, radio, TV)
- On crowdfunding and Citizen Science web portals
- None of the above

How do you disseminate your research work at present so that it reaches the general public? Please select up to THREE options.

On the research group blog, personal blog, or research institute or department website

On social networks (Twitter, Facebook, Reddit, WeChat, Instagram)

On digital platforms such as YouTube

In the mass media (magazines, newspapers, radio, television)

In crowdfunding web portals

In Citizen Science web portals

None of the above

Rate the importance of the following aspects when communicating your research work on the internet.

	Not important	Somewhat important	Important	Very important	Extremely important
Using English as a Lingua Franca for scientific communication	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Using the language of my local context to communicate science to general publics	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Using several languages to communicate science locally and globally	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Knowing how to use tools for creating and editing videos and treating images. Templates for posters, science dissemination resources, educational resources and so on	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Knowing how to communicate persuasively the social impact of science to the general public	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Knowing how to communicate persuasively with the general public to engage them in scientific research (data collection, classification, ...)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Do you do science dissemination at present?

Yes

No, but I am thinking of doing it in the future.

No, and I don't plan to do it in the future.

Please indicate what you know or need to know to use Citizen Science

	I know	I would need to know	I am not interested in Citizen Science
Knowledge of what Open Science is and its impact on society	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Knowledge about scientific culture and its impact on society	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Knowledge of the web portal (types of texts, hyperlinking options, interactivity, ...)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Use of ICT (tools for video editing, audio, ...)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Use of images and multimedia elements that can be embedded in the web portal	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Knowledge of strategies for communicating clearly and effectively	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Please add any comments here (optional)

NOTES

1. Open Access means the free availability of publications on the public internet, permitting any users to read, download, copy, distribute, print, search, or link to the full content of the digital document.
2. Open Science is a participatory approach to the scientific process that aims to make data and knowledge transparent and accessible by sharing and developing them through collaborative networks.
3. <www.huma-num.fr>
4. One exception is the course in scientific mediation offered by Grenoble Alpes University: <<https://culture.univ-grenoble-alpes.fr/menu-principal/culture-scientifique/formations-et-stages/ateliers-de-la-culture-scientifique/ateliers-de-la-culture-scientifique-693402.kjsp>>
5. <<https://data.mendeley.com/datasets/2yv5brwxg5>>
6. Academia de Studii Economice din Bucuresti, Romania, Universitatea Ovidius din Constanta, Romania, University of Vlora, Albania, Oslomet – Storbyuniversitetet, Norway.
7. <<https://dilan4scientists.eu>>

RÉSUMÉS

Aujourd'hui, les chercheurs sont encouragés à améliorer l'accessibilité à leurs résultats et à toucher un public profane plus large grâce au numérique. Le groupe d'action *Campus Iberus* a

mené une première étude sur la manière dont les chercheurs espagnols communiquent sur leurs travaux par le biais de médias numériques (Perez-Llantada *et al.* 2022). En tant que partenaires internationaux, les membres du groupe de travail du GERAS *Littératies en milieux académiques, scientifiques et professionnels* ont reproduit l'enquête en ligne dans plusieurs établissements d'enseignement supérieur en France. Nous présentons ici les résultats de l'enquête concernant à la fois les chercheurs en STIMM et SHS. L'objectif est d'identifier les types de communication scientifique en ligne utilisés par les chercheurs dans le contexte français, notamment lorsque le public cible est non spécialisé. Les résultats de l'enquête mettent en évidence des différences selon la discipline et le genre des auteurs et permettent d'analyser les besoins de ces chercheurs en matière de développement des compétences linguistiques, communicationnelles et numériques.

Researchers are currently encouraged to make their results more accessible and transparent for their peers and to engage wider, lay audiences in science through new digital media. The *Campus Iberus* digital science action group carried out a first study to investigate how Spanish scientists communicate their work through digital media (Perez-Llantada *et al.* 2022). As international partners of this action group, members of the GERAS working group *Literacies in Academia, Science and the Professions* have replicated the online survey across several Higher Education Institutions in France. Here, we report on the results of the survey concerning both STEMM and HSS researchers. The aim is to identify the types of online science communication used by researchers in the French context, especially those targeting wider, non-specialist audiences. The survey results point to disciplinary and gender differences and allow us to analyze the needs of these researchers in terms of developing the necessary language, communication and digital skills to communicate effectively in this context.

INDEX

Keywords : Digital media, disciplinary differences, emerging genres, French researchers, gender differences, non-specialist audiences, online survey, research dissemination, STEMM and HSS.

Mots-clés : Chercheurs français, différences disciplinaires, diffusion de la recherche, disparités entre les sexes, enquête en ligne, genres émergents, media numériques, publics non spécialistes, STIMM et SHS.

AUTEURS

SUSAN BIRCH-BECAAS

Susan Birch-Becaas is a senior lecturer in English for Specific Purposes at the *Département Langues et Cultures*, University of Bordeaux, where she was previously head of the language department and its language centre. She is a member of LACES (*Laboratoire Cultures, Education, Sociétés*) EA7437. She coordinates courses for students of public health and research writing modules for doctoral students. Her research interests are the analysis of scientific discourse and its applications for written and oral scientific communication courses. She has published mostly in the domain of English for Research and Publication Purposes and is also interested in multimodal digital genres in science and content and language integrated courses (CLIL) courses. Recent publications include work on student production of video abstracts (ASp 80, 2021) and a blended learning programme (RPPLSP, 2022, Birch-Becaas *et al.*). <susan.becaas@u-bordeaux.fr>

CLAIRE KLOPPMANN-LAMBERT

Claire Kloppmann-Lambert is a lecturer in English for Specific Purposes at ENS Paris Saclay. Her research examines the discourse of architects and researchers, and more specifically the way in which professional culture and the history of these professions influence genres. In her PhD and in recent publications, she explores what happens to traditional specialised genres, on a linguistic, multimodal and rhetorical level, when they migrate online. She teaches Scientific English and works in several projects to identify students' needs in scientific writing and adapt training and assessments to these needs. <claire.kloppmann@ens-paris-saclay.fr>

SHIRLEY CARTER-THOMAS

Shirley Carter-Thomas is Emeritus Professor of English linguistics and Communication at Institut Mines-Télécom and a member of the research team LATTICE (CNRS/École Normale Supérieure/Sorbonne Nouvelle). Her research areas span functional and contrastive linguistics, genre analysis and the linguistic analysis of written and oral academic discourse. With Elizabeth Rowley-Jolivet, she has recently co-authored a series of articles focusing on the specificities of a number of web-mediated genres, including science podcasts, electronic notebooks, research group videos and three-minute thesis presentations published on YouTube. <shirley.Thomas@imt-bs.eu>

DACIA DRESSEN-HAMMOUDA

Dacia Dressen-Hammouda is a Senior Lecturer in English for Specific Purposes at Université Clermont Auvergne, and research member of ACTé: Activité, Connaissance, Transmission, Education (UR n° 4281). Her research examines the interactions between sociocultural context and situated communication practices. Her most recent publications have focused on teaching and evaluating professional and multimodal digital literacies ('Evaluating multimodal literacy', with C. Wigham, 2022, *System*; 'Repurposing spoken professional genres to teach workplace video-based activity', 2022, *ASp*) as well as the implications of indexicality for international writers' ability to negotiate their positions through writing ('Revealing indexicality in situated writing', 2022, *Literatura y Lingüística*). <dacia.hammouda@uca.fr>

ELIZABETH ROWLEY-JOLIVET

Elizabeth Rowley-Jolivet is a research member of the Laboratoire Ligérien de Linguistique, University of Orleans. Her research covers the multimodal and linguistic features of spoken and written scientific discourse, genre analysis, academic literacies, and the epistemology of science. Her interest in genre evolution and in Open Science led her to turn to digital genres in the early 2010s, when she co-convened two ESSE seminars on the topic and co-edited the volume *Evolving Genres in Web-mediated communication* (Peter Lang, 2012). She has since then published internationally on various digital genres: open science laboratory protocols, open lab notebooks, science podcasts and videos, research group videos, and three-minute thesis presentations. <elizabeth.jolivet@univ-orleans.fr>

NEDJAH ZERROUKI

Nedjah Zerrouki is a Ph.D. student in English language and literature at LLSHS Doctoral School (ED 370) (Lettres, Langues, Sciences Humaines et Sociales), at Clermont Auvergne University. She is affiliated with the ACTé (Activité, Communication, Transmission, Education) research unit. Her research focuses on examining multimodality in English-language travel blogs to characterize this genre and contribute to the theorization of multimodality in English for Specific Purposes. <nedjah.zerrouki@doctorant.uca.fr>