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Communicating with integrity

Supporting researchers with
best practice in communication

LEAGUE OF EUROPEAN RESEARCH UNIVERSITIES

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Executive Summary

Communicating research findings is a central part of the mission of researchers and research institutions. Researchers are expected to communicate widely, including through the traditional media, social media, and other communications formats. However, such communication is only truly effective if it is trusted. Trust can be impacted by poor quality science communication, such as a lack of transparency, over-hyping findings or failing to communicate uncertainty. This issue is particularly critical during periods of high public interest in research, shown for example during the Covid-19 pandemic, when there are pressures to disseminate findings quickly.

In this paper, we argue that communicating research with integrity is a key, and often overlooked, part of the research integrity agenda. It aims to encourage research institutions to strengthen their support, training and guidance for researchers, so that they can be well prepared to communicate their research effectively and with integrity. The paper also offers recommendations for the messages institutions should communicate to researchers, and the skills training that can best equip researchers to achieve best practice.

The paper focuses on four key areas for efforts to facilitate communication with integrity:

1. **Openness in research communication:** The succinct nature and time pressures of media and social media communication makes it more challenging to present a clear, comprehensive and transparent picture of research. Supporting researchers to communicate key information, including conflicts of interest, context, and who contributed to the work, is the key to facilitating best practice.
2. **Communicating uncertainty:** The ability to articulate uncertainty as part of compelling and effective communication is a key skill for researchers, but one that is difficult to master. Universities are encouraged to explore how they can support and train researchers to properly present any uncertainty in their work.
3. **Social media and similar communications platforms:** The short form and interactive nature of social media poses particular challenges for the communication of research. In this paper, we argue that institutions should guide their researchers on how best to communicate online and how to avoid pitfalls that could undermine their communications activities.
4. **Communications skills that facilitate integrity:** We suggest that communications skills should be part of a university's efforts to build a culture of integrity and recommend that research integrity professionals integrate key communication skills into their wider efforts to support best practices.

Finally, we have provided a quick checklist that researchers can use as an *aide-mémoire* to ensure their communications cover the relevant points for communicating with integrity.

Introduction

Why do we need to communicate with integrity?

Communicating research findings to the world is central to the mission of the higher education sector. Indeed, as often publicly funded institutions, it is a moral and often contractual obligation to communicate results and enable the public to benefit from research. It is through effective communication that universities contribute to society, culture, and the economy by sharing knowledge, ideas and innovation. This requires researchers to go beyond solely publishing their research in scholarly journals or books, to amplifying the reach of their findings through the media, social media, and other communication formats.

The transfer of research insights to real-world impacts through communication can only be effective if research communications are trusted. Through the efforts and successes of generations of researchers, trust in academic research is high. According to a Pew Research Centre study from 2019, the American public have a greater confidence in scientists than in the media, business leaders or politicians¹. This mirrors a series of studies conducted by the Rathenau Centre in the Netherlands in 2012, 2015, 2018 and 2021².

Public trust, however, can be undermined and should not be taken for granted. While the biggest threat to public trust likely comes from cases of research misconduct (fabrication or falsification of research data in particular), poor-quality science communication, such as a lack of openness, over-hyping findings or the failure to communicate about uncertainty and the provisional character of results, can also damage public trust. This has particularly been the case in times of high public interest in research, such as during the Covid-19 pandemic, when there were pressures to disseminate findings quickly. Indeed, the pandemic has led to a renewed interest in how we communicate science³. Such pressures are not, however, unique to times of crisis – a desire to speed up the impact of research has, and will, always exist⁴.

There has been considerable discussion of how to communicate research and best disseminate research findings, including an excellent paper from the OpenUP project⁵, and many universities have comprehensive training activities for researchers to help them communicate their research more effectively. The renewed interest in science communication created by the pandemic, however, provides an opportunity to consider what more we can do to help provide researchers with the skills and knowledge they need to communicate research with integrity.

This short paper is aimed at research universities and seeks to encourage them to strengthen their support, training and guidance for researchers to enable them to communicate their research effectively and with integrity. It also encourages universities to consider the integrity of their own university research communications and to avoid creating perverse incentives that encourage poor communications practice. The paper also offers recommendations for researchers, which it is hoped universities will communicate to their academic communities. It suggests that skills training is central to tackling the challenge of improving integrity in research communications and that both research integrity and research communications professionals within universities should review whether they provide sufficient support and guidance to their researchers.

The increased pressure to communicate and potential for unintended consequences

Research impact is now well established as a key goal of research in Europe and integral to the assessment of researchers and their work. It uses a broad range of indicators, rather than journal impact factors or indices, to measure how research has impacted society including economic benefit, influence on policy and health or cultural impacts⁶. In the UK, for example, the 2021 Research Excellence Framework dedicated 25% of its scoring to impact⁷. Research communication is vital to achieving impact, enabling findings to reach those who may utilize research outputs, be they the public, businesses or government, more effectively.

- 1 Funk, C., Hefferon, M., Kennedy, B., Johnston, C. (2019) Trust and Mistrust in American's Views of Scientific Experts. Pew Research Center. https://www.pewresearch.org/science/wp-content/uploads/sites/16/2019/08/PS_08.02.19_trust.in_.scientists_FULLREPORT_8.5.19.pdf
- 2 Rathenau Instituut (2024). Public Trust in Science. <https://www.rathenau.nl/en/science-figures/impact/trust-science/public-trust-science>
- 3 For more on research communications challenges during the pandemic, see: World Economic Forum (2021) What the Pandemic has Taught us About Science Communication. <https://www.weforum.org/agenda/2021/06/lessons-for-science-communication-from-the-covid-19-pandemic/>; León, B., López-Gofí, I., & Salaverría, R. (2022). The Covid-19 catastrophe: A science communication mess? *Church, Communication and Culture*, 7(1), 6–22. <https://doi.org/10.1080/23753234.2022.2031236>; Mede, N.G. (2023) Rethink Science Communication for the Post-Pandemic Era. UNESCO Inclusive Policy Lab. <https://en.unesco.org/inclusivepolicylab/analytics/rethink-science-communication-post-pandemic-era>
- 4 Lipworth W, Kerridge I, Stewart C, Silva D, Upshur R. The Fragility of Scientific Rigour and Integrity in "Sped up Science": Research Misconduct, Bias, and Hype and in the COVID-19 Pandemic. *J Bioeth Inq*. 2023 Dec;20(4):607-616. doi: 10.1007/s11673-023-10289-w. Epub 2023 Dec 8. PMID: 38064166.
- 5 Ross-Hellauer T, Tennant JP, Banelytè V, Gorogh E, Luzi D, Kraker P, Pisacane L, Ruggieri R, Sifacaki E, Vignoli M. Ten simple rules for innovative dissemination of research. *PLoS Comput Biol*. 2020 Apr 16;16(4):e1007704. doi: 10.1371/journal.pcbi.1007704. PMID: 32298255; PMCID: PMC7161944.
- 6 Coalition for Advancing Research Assessment (CoARA). see <https://coara.eu> for more information.
- 7 The Research Excellence Framework (REF) is the UK's system for assessing the excellence of research in UK higher education institutions (HEIs).

More broadly, we see that the public exposure of scientific publications in the media is increasingly tracked (MeSH data) with the 'reach' of a publication increasingly being seen as an alternative metric for scientific quality⁸. Furthermore, Open Science encourages researchers to make their findings available to all, and as quickly as possible⁹. Researchers are therefore under an increasing pressure to communicate their research findings quickly and widely.

While the push to communicate findings more widely and achieve impact is laudable, it also has the potential to lead to unintended consequences. In particular, there is a danger that it adds to the widely known pressure to 'publish or perish' a new need to 'communicate or perish'. As increasing numbers of researchers look to take active steps to communicate their research to the widest possible audience, it is vitally important that they are aware of the potential pitfalls they might encounter. In particular, researchers need to be prepared to balance the need to present a succinct summary of their findings in a way that is interesting to their target audience while ensuring that the integrity and accuracy of their communications are not compromised.

Given the increasing centrality of scientific communication and public engagement to the role of the researcher, it is important that institutions strive to empower all researchers to communicate in an effective and honest manner, whilst not overexaggerating findings which can leave researchers exposed when claims are scrutinized.

How does this relate to research integrity codes?

The growing recognition of the importance of communicating with integrity is demonstrated in several European codes of conducts for research integrity.

The European Code of Conduct for Research Integrity (2023)¹⁰ outlines how researchers should demonstrate:

- Honesty in developing, undertaking, reviewing, reporting and communicating research in a transparent, fair, full and unbiased way;
- Research institutions and organisations ensure that researchers receive vigorous training in research design, methodology, analysis, dissemination and communication;
- Authors are accurate and honest in their communication to colleagues, policymakers, and society at large;
- Authors are transparent in their communication, outreach and public engagement about the assumptions, and values influencing their research as well as the robustness of the evidence, including remaining uncertainties and knowledge gaps.

The Netherlands Code of Conduct for Research Integrity goes one step further in terms of stipulating that researchers should "Only communicate to the general public about the research results if there is sufficient certainty about them"¹¹. The Danish Principles of Good Research Communications, meanwhile, underline that research communication should explain the status of the research in question. They encourage researchers to state whether there is broad backing for the findings in the scientific community or whether they deviate from the general consensus in the area¹².

So, how do we communicate research with integrity and what tools do researchers need? The rest of this document will outline four key focus areas for efforts to facilitate communication with integrity. Our aim is to provide a high-level overview of the topics that institutions are encouraged to focus on when developing guidance or training for researchers, to highlight the importance of communicating with integrity, and to act as a primer for further discussions in this area.

8 Bosman, J., Debackere, K., Cawthorne W.P. (2024) Next Generation Metrics for Scientific and Scholarly Research in Europe. LERU. <https://www.leru.org/publications/enhancing-research-evaluation-with-next-generation-metrics>

9 Dienlin, T., Johannes, N., Bowman, N.D., et al, (2021) An Agenda for Open Science in Communication, *Journal of Communication*, Volume 71, Issue 1, Pages 1–26, <https://doi.org/10.1093/joc/jqz052>

10 ALLEA (2023) The European Code of Conduct for Research Integrity. <https://allea.org/code-of-conduct/>

11 NWO (2018) The Netherlands Code of Conduct for Research Integrity.

https://www.nwo.nl/sites/nwo/files/documents/Netherlands%2BCode%2Bof%2BConduct%2Bfor%2BResearch%2BIntegrity_2018_UK.pdf

12 Danske Universiteter (2019) Danske Universiteters Principper for God Forskningskommunikation.

<https://dkuni.dk/analyser-og-notater/danske-universiteters-principper-for-god-forskningskommunikation/>

The four key areas of focus for efforts to facilitate communication with integrity

1. Openness in research communication

The need to be open, honest and transparent in research has long been a key part of the research integrity expectations that apply to research. Significant progress has been made in ensuring that scholarly publications provide the reader with relevant information they need to know to understand, for example:

- How the research findings were produced, including any animal research or use of tools such as artificial intelligence;
- Any conflicts of interest that a researcher might have;
- Who contributed to the work underpinning the research;
- What the findings mean in light of the current state of research in the respective field.

The succinct nature and time pressures of wider communication, particularly through the traditional media or social media, however, offers far fewer opportunities to provide the level of transparency that a formal research paper might do. It also exposes researchers to pressures from third parties or mediators in the communications process to present a simplified version of the research that might lack the level of transparency and nuance that is normally expected.

A focus on specific scientific results or papers without broader context can also contribute towards a confusing and non-transparent offering to the public. Research communicators may wish to focus more on specific problems or themes than just the latest scientific results. They should also focus less on showcasing the researcher, their research group and the university, and more on seeking to present a clear and contextualized message to the public.

Universities should look to prepare researchers for these challenges. In particular, they are encouraged to:

- Work to support their researchers to understand that the standards of research integrity apply to all forms of communication, not just formal publication, and what sorts of information are considered essential to ensuring communication has integrity;
- Provide researchers with guidance on how to communicate key information regarding their research in various contexts (e.g. to a journalist, on social media, etc.);

- Support and empower researchers to resist any undue pressure to communicate findings where it is not appropriate to do so;
- Provide guidance on how to balance the need for openness with the need to avoid inappropriate sharing of sensitive or confidential data.

2. Communicating uncertainty

A key challenge in effective research communication is articulating uncertainty. Presenting a clear and compelling narrative regarding research can lead to its simplification. The desire to achieve impact can lead to overemphasizing the importance of research. This is understandable, but also perilous. Particularly when research is of significant interest to the public, as it was seen during the Covid-19 pandemic, the potential for research findings to be widely communicated in a way that does not articulate uncertainty can impact public perceptions of research if findings are later found not to be upheld or of less significance than originally thought¹³.

The ability to succinctly articulate uncertainty as part of compelling and effective communication in various fora (including in media interviews, press releases and social media) should be a key skill for researchers. Researchers should also be able to challenge public communication by others who over-hype their findings. This can only be achieved through effective media training. As such, universities are encouraged to make such training easily accessible to all who require it, and to also ensure that their training includes consideration of how to properly present uncertainty in their work.

Support for researchers can also usefully cover appropriate communication of pre-prints. A pre-print is a scientific paper which has been made publicly available, but has not yet been peer-reviewed by a journal. Pre-prints are a way to make the findings of research available quickly to the scientific community, but they have not been subject to the rigor of peer review which underpins the scientific publication process and helps to address errors or inadequacies in research. As such, many universities have adopted a cautious approach to the communication of results from pre-prints. It is important that the university's approach to pre-print communication is known to their academic community so that they can take similar precautions.

13 Leonard, M.B., Pursley, D.M., Robinson, L.A. et al. The importance of trustworthiness: lessons from the COVID-19 pandemic. *Pediatr Res* 91, 482–485 (2022). <https://doi.org/10.1038/s41390-021-01866-z>

3. Social media and similar communication platforms

Social media and similar communication and media platforms allow the fast dissemination of research findings to a broad public. Articles exposed to social media were cited more than the articles not posted on social media¹⁴. However, the speed at which messages spread through social media can be challenging regarding research integrity – especially when inaccurate or misinformation spreads. A study of verified true and false news stories on social media demonstrated that falsehoods diffused significantly further, faster, deeper, and more broadly than the truth for all categories of information¹⁵.

Official social media communications from a university or journal will have been written by professional communications experts. Many researchers, however, will have their own accounts, to keep up with news, to produce and debate ideas, share real-time information, spread their research, and find collaborators¹⁶. While most of us use social media regularly, scientific communication on social media is a skill and researchers are not necessarily experts.

The short form and interactive nature of social media can encourage researchers to overemphasize their findings, advocate certain positions more vehemently than they might in real life and sometimes involve themselves in discussions far beyond their own expertise. In the extremely public forum of social media, any poor research communication can have a significant impact and reach.

Researchers engaging in social media use should be made aware of the potential pitfalls which they may encounter and to recognize when social media is not the appropriate forum for the debate. Universities are encouraged to provide researchers with guidance on how best to engage with social media. Such guidance will often also apply in other circumstances, but is particularly important when communicating online.

Key messages include:

1. Use simple messages and where possible explain nuances or uncertainties – not all readers will be experts and know technical terms or the subtleties of issues; thus academics should not assume any prior knowledge in the area, even from journalists;
2. Where possible, refer the reader to more detailed information in papers or university press releases where the nuances and uncertainties of research can be explained clearly;
3. Think carefully about the type of content proposed to be published – would the author be happy if they saw this attributed to them at a later date?;
4. Consider how social media posts will be perceived by the public. Are the posts professional and polite? Are they unduly argumentative or aggressive? Could they be misinterpreted?;
5. Authors should exercise caution in using their academic credentials to comment on topics outside of their area of expertise and clearly distinguish professional comments from opinions based on personal views or comments not relating to their area of research expertise;
6. Unless it is obvious from context, where voicing a personal opinion ensure that they include a statement declaring that this is personal, e.g. "The views expressed here are the author's own, and do not necessarily reflect those of the University of xxx.";
7. Know where to seek support within the university should they become subject to personal attacks;
8. Know when to step back from a particular conversation either because it is outside their area of expertise, or because the questioning / debate has turned toxic.

Importantly, universities should not limit researchers' academic freedom or the freedom to communicate and get involved in debates. Rather they should empower researchers with the tools to engage responsibly and provide support where needed.

14 Özkent Y (2022) Social media usage to share information in communication journals: An analysis of social media activity and article citations. PLoS ONE 17(2): e0263725. <https://doi.org/10.1371/journal.pone.0263725>

15 Leonard, M.B., Pursley, D.M., Robinson, L.A. et al. The importance of trustworthiness: lessons from the COVID-19 pandemic. *Pediatr Res* 91, 482–485 (2022). <https://doi.org/10.1038/s41390-021-01866-z>

16 Özkent Y. Social media usage to share information in communication journals: An analysis of social media activity and article citations. PLoS One. 2022 Feb 9;17(2):e0263725. doi: 10.1371/journal.pone.0263725. PMID: 35139134; PMCID: PMC8827420.

4. Communications skills that facilitate integrity

As has been indicated in points 1-3, universities are encouraged to recognize that wider communication skills are a key part of ensuring research integrity. As such, we recommend that research communication skills guidance and training are re-emphasized by institutions as part of their efforts to build a culture of integrity.

Of particular importance is training researchers to communicate complex topics in public fora. For example, the appropriate presentation of statistics is often key to enabling audiences to understand the nuances and uncertainties inherent in research.

Other key skills that form a part of many existing communications training modules or toolkits include:

1. A reminder that research integrity expectations and codes apply to wider communication activities;
2. How to remain on message in interviews and online, and not being led by others to communicate in a way in which the author is not comfortable or to speculate beyond their area of expertise;
3. Handling difficult questions and responses in various fora;
4. Communicating with the press or social media users for the right reasons and at the right stage of the research process;
5. Appropriate use of visual communication (for example ensuring that graphical representation of findings are not misleading when presented out of context);
6. How to deal with short notice requests for information;
7. Appropriate use of post-publication peer review platforms and how to respond to concerns raised through such platforms¹⁷;
8. Effectively working with the media and communication offices at the university;
9. How to adapt a message to be suitable to different audience, including specialists in the field, members of the public, industry, government, etc.

University communications offices provide much of this support and guidance. A range of resources are available for communications offices to support their work¹⁸.

Conclusion

This paper has sought to make the case for research universities redoubling their efforts to support their academic community to communicate their research findings with integrity. Public communication is vital to the mission of universities, and universities should encourage researchers to bring the insights from their work to as wide an audience as possible. However, the act of communication alone is not sufficient, it should be done in a way that helps the public understand the true nature of research findings, without exaggerating their importance or obscuring important facts.

While public communication, particularly through fast-paced methods such as social media, will always be challenging and tend towards simplification of complex information, there are steps research universities can take to mitigate the risks of poor-quality communications. By investing in skills development and support, universities can give researchers the best chance to communicate with integrity. This paper provides some ideas of how this can be done, particularly through the development of guidance and training. It is recommended that universities develop guidance and training as part of an action plan to support integrity in research communication.

To support universities in implementing some of the ideas in this paper, the appendix outlines a simple check box form which can be offered to researchers to help them consider integrity aspects in their communications, regardless of the audience.

¹⁷ KU Leuven (2023) KU Leuven guidelines for handling allegations on public post-publication peer review platforms such as PubPeer. <https://research.kuleuven.be/en/integrity-ethics/integrity/practices/publication-and-authorship/pppr-en>

¹⁸ For example: Science Media Centre (no date) The AMS press release labelling system for new medical research. <https://www.sciencemediacentre.org/wp-content/uploads/2018/01/AMS-press-release-labelling-system-GUIDANCE.pdf>; Morosan, S., (2000) Good Practice in Communicating Animal Research in Universities. LERU <https://www.leru.org/files/Good-Practice-in-Communicating-Animal-Research-in-Universities.pdf>

Appendix: Checklist – Communicating with integrity

	Yes	No	Not Relevant
Preparing to communicate			
Have you:			
Received training and guidance appropriate for your communications plans (particularly if appearing in the media)?			
Considered the skills you need to communicate effectively (e.g. statistical skills or skills in visual communication)?			
If communicating through the media, have you requested the opportunity to review any interview or reporting to ensure accuracy?			
Communicating Openly			
Have you:			
Appropriately acknowledged the role of co-authors and contributors?			
Disclosed potential conflicts of interest including the funding of research?			
Considered whether you need to cite and link to sources used in your research?			
Attributed content you have replicated (respecting copyright and fair use)?			
Disclosed any other affiliations you may have?			
Been clear on the model used (i.e. are the findings from animal research or research in humans?)			
Disclosed any use of Artificial Intelligence in the writing of your communication?			
Balanced openness with preservation of the anonymity of participants and communities involved in the research (where applicable)?			
Communicating Uncertainty			
Have you:			
Considered whether you are qualified to comment on this issue?			
Acknowledged potential sources of uncertainty? E.g. <ul style="list-style-type: none"> • Population differences (translating from mice to people, racial differences, age differences etc)? • Sample size? • Statistical uncertainty? • Whether it is early stage or not yet peer reviewed research? • Considered whether the communication format allow for appropriate nuance? 			
Explained whether your research reflects or deviates from the consensus in the scientific community?			
Provided links or direction to sources of further information? (where possible)			

	Yes	No	Not Relevant
Communicating Through Social Media and Similar Platforms			
Have you:			
Considered whether this research is appropriate for social media communication (i.e. is the topic very controversial, what impact could communication have on you? etc.)?			
Planned your communication in advance to ensure accuracy and nuance?			
Considered whether you are commenting on an issue related to your area of expertise. If not, is it appropriate to use your academic credentials to comment on this topic?			
Considered whether a professional or personal social media account would be appropriate to post the particular comment?			
Clearly distinguished personal and professional opinions?			
Planned for getting support should there be any issues or challenges?			

About LERU

The League of European Research Universities, better known as LERU, is a network of 24 leading research-intensive universities based in 12 countries around Europe. LERU universities share the values of high-quality teaching within an environment of internationally competitive research and are committed to the advancement of knowledge and the promotion of research across a broad front.

LERU is a prominent advocate for the promotion of basic research at European research universities. We strongly believe that basic research plays an essential role in the innovation process and significantly contributes to the progress of society. LERU aims at furthering politicians', policymakers' and opinion leaders' understanding of the important role and activities of research-intensive universities.

Our 24 LERU members bring together representatives to work on LERU policy development and engage in mutual learning in many areas. To pursue its goals effectively, LERU also maintains contacts with institutions around the world that contribute to science policymaking and research funding, including European and global partner networks such as seven leading Central European Universities (CE7) and the Global Council of Research-Intensive Universities (GCRIUN).



842,489

Total number of students at LERU universities in 2022-2023



230,558

Total number of staff at LERU universities in 2022-2023



18,422

Number of doctoral degrees conferred by LERU universities in 2022-2023



2,767

Number of MSCA fellows in Horizon 2020 from LERU universities



20%

Of ERC grants awarded to researchers at LERU universities



11.6 billion euro

Total amount of research income in 2022-2023 at LERU universities



10,038

Number of research grants from Horizon 2020 awarded to LERU universities



5,384

Total number of start-ups and spin-out companies created at LERU universities

LERU Universities



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UNIVERSITAT DE BARCELONA



UNIVERSITY OF CAMBRIDGE



UNIVERSITY OF FREIBURG



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