COURSE BIBLIOGRAPHY

Science Communication
Bethann Garramon Merkle, MFA
bmerkle@uwyo.edu
Professor of Practice | Dept. of Zoology & Physiology
University of Wyoming

WHY A COURSE BIBLIOGRAPHY?

This bibliography is provided to:

- Present the core theoretical and applied references upon which the course is built, for students' reference beyond this course.
- Offer extended readings and resources to students interested in diving deeper into a particular aspect of the course material during the course.
- Illustrate one of the central practices of our course: developing evidence-based approaches to effective science communication. The design, content, and implementation of the course are informed by the references in this bibliography.
- Map out how each unit and module of the course relates back to the wide-ranging fields which inform the science of science communication.

CONCEPTUAL FRAMEWORK + INSPIRATION

The following references are not exhaustive, and the entire bibliography should be considered as the conceptual framework for the course. However, the citations in this section are distinct from or overarch the themes in each module. Thus, these references are listed here separately.

1. Baram-Tsabari, A., and B.V. Lewenstein. 2016. Science communication training: what are we trying to teach? *International Journal of Science Education* 7(3): 285-300. doi: 10.1080/21548455.2017.1303756
2. Brownell, S.E., J.V. Price, and L. Steinman. 2013. Science communication to the general public: Why we need to teach undergraduate and graduate students this skill as part of their formal scientific training. *The Journal of Undergraduate Neuroscience Education (JUNE)* 12(1): E6-E10.
3. Castelli, F.R., and M.A. Sarvary. 2020. Why students do not turn on their video cameras during online classes and an equitable and inclusive plan to encourage them to do so. *Ecology and Evolution* 11: 3565– 3576. https://doi.org/10.1002/ece3.7123
4. Dewsbury, B.M. 2017. On faculty development of STEM inclusive teaching practices. *Microbiology Letters* 364(18): fnx179. https://doi.org/10.1093/femsle/fnx179
5. Fischhoff, B. 2013. The sciences of science communication. *Proceedings of the National Academy of Sciences* 110 (Supplement 3): 14033-14039. doi: 10.1073/pnas.1213273110
6. Gannon, K. 2020. *Radical hope: A teaching manifesto.* Morgantown, VA: West Virginia University Press.
7. Kahneman, D. 2011. Thinking, fast and slow. New York: Penguin Random House.
8. Kelp, N.C., and B. Hubbard. 2021. Scaffolded curriculum for developing science communication skills in life science undergraduates. *Journal of Microbiology and Biology Education* 22(1): 1-8. doi: 10.1128jmbev2211.2255
9. Loehle, C. 1990. Increased creativity in research - inspiration or perspiration? *Bioscience* 40(2): 123-129.

10. Merkle, B.G., S. Bayer, P. Shukla*, and E. Valdez-Ward*. 2022. Sharing science through shared values, goals, and stories: An evidence-based approach to making science matter. *Human-Wildlife Interactions* 15(3). https://doi.org/10.26077/9wss-av78
11. National Academies of Sciences, Engineering, and Medicine. 2017. *Communicating Science Effectively: A Research Agenda*. Washington, DC: The National Academies Press. doi: 10.17226/23674
12. Trisos, C.H., J. Auerbach, and M. Katti. 2021. Decoloniality and anti-oppressive practices for a more ethical ecology. *Nature Ecology and Evolution* 5(6): 1-8. https://doi.org/10.1038/s41559-021-01460-w
13. Sword, H. 2017. *Air and light and time and space: How successful academics write.* Cambridge, MA: Harvard University Press.

MODULE 1: FOUNDATIONS OF SCIENCE COMMUNICATION

Getting Started (aka Science of SciComm 101)

1. Brownell, S.E., J.V. Price, and L. Steinman. 2013. Science communication to the general public: Why we need to teach undergraduate and graduate students this skill as part of their formal scientific training. *The Journal of Undergraduate Neuroscience Education (JUNE)* 12(1): E6-E10.
2. Hundey, E.J., Olker, J.H., Carreira, C., Daigle, R.M., Elgin, A.K., Finiguerra, M., Gownaris, N.J., Hayes, N., Heffner, L., Roxanna Razavi, N., Shirey, P.D., Tolar, B.B. and Wood-Charlson, E.M. (2016), A Shifting Tide: Recommendations for Incorporating Science Communication into Graduate Training. *Limnology and Oceanography Bulletin* 25: 109-116. https://doi.org/10.1002/lob.10151
3. Jensen, E.A., and A. Gerber. 2020. Evidence-based science communication. *Frontiers in Communication* 4: 78. Doi: 10.3389/fcomm.2019.00078
4. Sword, H. 2022. The writing base. https://writersdiet.com/base/base/
5. Trench, B. 2008. Towards an analytical framework of science communication models. In: Cheng D, Claessens M, Gascoigne NRJ, Metcalf J, Schiele B and Shi S (eds) *Communicating Science in Social Contexts*: *New Models, New Practices.* Dordrecht: Springer, pp. 119–135.
6. Varner, J. 2014. Scientific outreach: Toward effective public engagement with biological science. *BioScience* 64(4): 333–340. https://doi.org/10.1093/biosci/biu021

Connecting Science + Society

1. Bohn, R., and J. Short. 2012. Measuring consumer information. *International Journal of Communication* 6: 980-1000. https://ijoc.org/index.php/ijoc/article/view/1566
2. Fiske, S.T., and C. Dupree. 2014. Gaining audiences' trust and respect about science. *Proceedings of the National Academy of Sciences* 111 (Supplement 4): 13593-13597. https://doi.org/10.1073/pnas.1317505111
3. Hilbert, M., and P. López. 2011. The world's technological capacity to store, communicate, and compute information. *Science* 332: 60-65. Doi: 10.1126/science.1200970
4. Kotcher, J.E., T.A. Myers, E.K. Vraga, N. Stenhouse, and E.W. Maibach. 2017. Does engagement in advocacy hurt the credibility of scientists? Results from a randomized national survey experiment. *Environmental Communication* 11(3): 415-429. doi: 10.1080/17524032.2016.1275736.
5. Peters HP, Brossard D, de Cheveigné S, Dunwoody S, Kallfass M, Miller S, Tsuchida S. Science communication. Interactions with the mass media. *Science* 11;321(5886): 204-5. doi: 10.1126/science.1157780

6. Polfus, J.L. D. Simmons, M. Neyelle, W. Bayha, F. Andrew, L. Andrew, B. G. Merkle, K. Rice, and M. Manseau. 2017. Creative convergence: exploring biocultural diversity through art. *Ecology and Society* 22(2):4. https://doi.org/10.5751/ES-08711-220204
7. Risien, R., and M. Storksdieck. 2018. Unveiling impact identities: A path for connecting science and society. *Integrative and Comparative Biology* 58(1): 58-66. doi: 10.1093/icb/icy011
8. Scheufele, D.A. 2013. Communicating science in social settings. *PNAS* 110(S3): 14040-14047. https://doi.org/10.1073/pnas.1213275110
9. Seethaler S, Evans JH, Gere C, Rajagopalan RM. Science, values, and science communication: 2019. Competencies for pushing beyond the deficit model. *Science Communication* 41(3): 378-388. doi:10.1177/1075547019847484
10. Simis, M.J., H. Madden, M.A. Cacciatore, and S.K. Yeo. 2016. The lure of rationality: Why does the deficit model persist in science communication? *Public Understanding of Science* 24(4): 400-414. doi: 10.1177/0963662516629749
11. Weinreich, H., H. Obendorf, E. Herder, and M. Mayer. 2008. Not quite the average: An empirical study of Web use. *ACM Transactions on the Web* 2(1): 1-31. https://doi.org/10.1145/1326561.1326566

Understanding Interest Groups, Influencers & Impacted Groups

1. Bell, K., and M. Reed. 2021. The tree of participation: a new model for inclusive decision-making. *Community Development Journal* 56(4): bsab018. https://doi.org/10.1093/cdj/bsab018
2. Better Arguments Project. 2020. Current events: Prioritize relationships and listen passionately. Accessed February 20, 2021 from https://betterarguments.org/resources/better-arguments-current-events-exercise/.
3. Better Arguments Project. 2020. Exit tickets: Principles of better arguments. Accessed February 20, 2021 from https://betterarguments.org/resources/better-arguments-exit-ticket-exercise/.
4. Carlisle, L. Activating neighborliness frames: Drawing on culturally relevant discourses of community to build a stronger and more diverse environmental movement. *Frontiers in Communication* 5:7. https://doi.org/10.3389/fcomm.2020.00007
5. Dietz, T. 2013. Bringing values and deliberation to science communication. PNAS 110: 14081-14087.
6. Humm, C. and P. Schrögel. 2020. Science for all? Practical recommendations on reaching underserved audiences. *Frontiers in Communication* 5:42. doi: 10.3389/fcomm.2020.00042
7. Iyengar, S., and D.S. Massey. 2019. Scientific communication in a post-truth society. *Proceedings of the National Academy of Sciences* 116(16): 7656-7661. https://doi.org/10.1073/pnas.1805868115
8. Noy, S., and R. Jabbour. 2020. Decision-making in local context: Expertise, experience, and the importance of neighbours in farmers' insect pest management. *Sociologia Ruralis* 60(1): 1-19. Doi: 10.1111/soru.12267
9. Knapp, C.N., J. Cochran, F.S. Chapin III, G. Kofinas, and N. Sayre. 2013. Putting local knowledge and context to work for Gunnison sage-grouse conservation. *Human–Wildlife Interactions* 7(2): 3. https://doi.org/10.26077/sttc-fb95
10. Ko, H. 2016. In science communication, why does the idea of a public deficit always return? How do the shifting information flows in healthcare affect the deficit model of science communication? *Public Understanding of Science* 25(4): 427–432. https://doi.org/10.1177/0963662516629746

11. Merkle, B.G., S. Bayer, P. Shukla*, and E. Valdez-Ward*. 2022. Sharing science through shared values, goals, and stories: An evidence-based approach to making science matter. *Human-Wildlife Interactions* 15(3). https://doi.org/10.26077/9wss-av78
12. National Science Board. 2018. Science and technology: Public attitudes and understanding. *Science and Engineering Indicators.* Washington, D.C.: National Science Foundation.
13. Rust, N.A., L. Rehackova, F. Naab, A. Abrams, C. Hughes, B.G. Merkle, B. Clark, and S. Tindale. 2021. What does the UK public want farmland to look like? *Land Use Policy* 106: 105445. https://doi.org/10.1016/j.landusepol.2021.105445

Goals + Planning

1. Barwick, M.A. (2018). Knowledge Translation Plan Appraisal Tool. Ontario: The Hospital for Sick Children. Accessed August 1, 2021 from https://www.sickkids.ca/en/learning/continuing-professional-development/knowledge-translation-training/knowledge-translation-plan-appraisal-tool-form/
2. Barwick, M.A. (2008, 2013, 2019). Knowledge Translation Planning Template. Ontario: The Hospital for Sick Children. Accessed August 1, 2021 from https://www.sickkids.ca/en/learning/continuing-professional-development/knowledge-translation-training/knowledge-translation-planning-template-form/
3. Besley, J. C., A. Dudo, A., and S. Yuan. 2018. Scientists' views about communication objectives. *Public Understanding of Science* 27(6): 708–730. https://doi.org/10.1177/0963662517728478
4. Clark, R. 2020. Goals planning: A free printable workbook for your freelance business. Accessed February 9, 2020, from https://www.byrosanna.co.uk/blog/goal-planner-workbook.
5. Donner, S.D. 2015. Finding your place on the science-advocacy continuum: an editorial essay. *Climatic Change* 124:1-8. Doi: 10.1007/s10584-014-1108-1
6. MacDonald, G. 2018. Checklist of key considerations for development of program logic models. The Evaluation Center. Western Michigan University. Accessed August 1, 2021 from https://wmich.edu/evaluation/checklists
7. MacDonald, G (2013). Criteria for selection of high-performing indicators: A checklist to inform monitoring and evaluation. . The Evaluation Center. Western Michigan University. Accessed August 1, 2021 from https://wmich.edu/evaluation/checklists
8. Merkle, B.G. 2022. Developing a SciComm Project Plan. S. Rowland and L. Kuchel, eds. *Teaching Science Students to Communicate: A Practical Guide*. Springer. https://link.springer.com/book/9783030916275.
9. Montgomery, B. L. (2019, September 30). How I work and thrive in academia – From affirmation, not for affirmation [web log]. https://lazyslowdown.com/how-i-work-and-thrive-in-academia-from-affirmation-not-for-affirmation/.
10. Risien, R., and M. Storksdieck. 2018. Unveiling impact identities: A path for connecting science and society. *Integrative and Comparative Biology* 58(1): 58-66. doi:10.1093/icb/icy011
11. Scheufele, D.A. 2014. Science communication as political communication. *Proceedings of the National Academy of Sciences* 111(S4): 13585-14592. www.pnas.org/cgi/doi/10.1073/pnas.1317516111
12. Trinidad, A. 2021. Passion planner free downloads. Accessed September 12, 2020, from https://passionplanner.com/collections/free-downloads
13. Varner, J. 2014. Scientific Outreach: Toward Effective Public Engagement with Biological Science. *BioScience* 64(4): 333–340. https://doi.org/10.1093/biosci/biu021
14. Wallace, D., G. Breakwell, I. Crewe, I. Diamond, R. Dingwall, D. Gallie, S. Hordijenko, A. Irwin, C. Matterson, M. Poliakoff, D. Young. 2006. *Survey of factors affecting science communication by scientists and engineers*. London: The Royal Society.

See module 3 for additional resources which will be used later in the semester.

Decision-Making

1. Ho, S.S., D.A. Scheufele, and E.A. Corley. 2010, Making sense of policy choices: understanding the roles of value predispositions, mass media, and cognitive processing in public attitudes toward nanotechnology. *Journal of Nanoparticle Research* 12: 2703–2715. https://doi.org/10.1007/s11051-010-0038-8
2. Inman, M. 2020. You're not going to believe what I'm about to tell you. *The Oatmeal*. Accessed August 14, 2021, from https://theoatmeal.com/comics/believe_clean.
3. Kaplan, J., S, Gimbel, and S. Harris. 2016 Neural correlates of maintaining one's political beliefs in the face of counterevidence. *Nature Scientific Reports* 6: 39589. https://doi.org/10.1038/srep39589
4. Lackoff, G. 2014. *Don't think of the elephant: Know your values and frame the debate.* London: Chelsea Green.
5. Simis, M.J., H. Madden, M.A. Cacciatore, and S.K. Yeo. 2016. The lure of rationality: Why does the deficit model persist in science communication? *Public Understanding of Science* 24(4): 400-414. doi: 10.1177/0963662516629749

Politicization of Science + Misinformation

1. Cook, J. 2021. Cranky Uncle: A game building resilience against misinformation. Accessed August 14, 2021, from https://crankyuncle.com/.
2. Farrell, J., K. McConnell, and R. Brulle. 2019. Evidence-based strategies to combat scientific misinformation. *Nature Climate Change* 9: 191-195. https://rdcu.be/c1gx8
3. Fiske, S.T., and C. Dupree. 2014. Gaining audiences' trust and respect about science. *Proceedings of the National Academy of Sciences* 111 (Supplement 4): 13593-13597. https://doi.org/10.1073/pnas.1317505111
4. Kotcher, J.E., T.A. Myers, E.K. Vraga, N. Stenhouse, and E.W. Maibach. 2017. Does engagement in advocacy hurt the credibility of scientists? Results from a randomized national survey experiment. *Environmental Communication* 11(3): 415-429. doi: 10.1080/17524032.2016.1275736.
5. Lackoff, G. 2014. *The All New Don't Think of an Elephant: Know Your Values and Frame the Debate*. Chelsea Green: White River Junction, VT.
6. Lawrence, E.K., and S. Estow. 2017. Responding to misinformation about climate change. *Applied Environmental Education and Communication* 16(2): 117-128. DOI: 10.1080/1533015X.2017.1305920
7. Lupia, A. 2013. Communicating science in politicized environments. PNAS 110(suppl. 3): 14048-14054. doi: 10.1073/pnas.1212726110.
8. Nyhan, B., and J. Reifler. 2010. When corrections fail: The persistence of political misperceptions. *Political Behavior* 32: 303–330. https://doi-org.libproxy.uwyo.edu/10.1007/s11109-010-9112-2
9. Pennycook, G., Z. Epstein, M. Mosleh, et al. 2021. Shifting attention to accuracy can reduce misinformation online. *Nature* 592: 590–595. https://doi.org/10.1038/s41586-021-03344-2
10. Sarewitz, D. 2004. How science makes environmental controversies worse. *Environmental Science & Policy* 7(5): 385-403. https://doi.org/10.1016/j.envsci.2004.06.001.
11. Shindler, B., R. Gordon, M.W. Brunson, and C. Olsen. Public Perceptions of Sagebrush Ecosystem Management in the Great Basin, *Rangeland Ecology & Management* 64(4): 335-343. https://doi.org/10.2111/REM-D-10-00012.1
12. Somerville R.C.J., and S.J. Hassol. 2011. Communicating the science of climate change. *Physics Today* 64: 48-53. https://doi.org/10.1063/PT.3.1296

13. Yeo, S.D., and M. McKasy. 2021. Emotion and humor as misinformation antidotes. PNAS 111(15): e2002484118. https://doi.org/10.1073/pnas.2002484118

Proposals + Annotated Bibliographies

1. Beauchamp, G. 2016. "What is the academic 'voice'" from Writing and reporting the research (ch. 14). *Doing Research Education – Theory and Practice*, I Palaiologou, D. Needham, and T. Male (eds.). London: SAGE Publications.
2. Merkle, B.G. 2021. Writing science: Leveraging the annotated bibliography as a writing tool. *The Bulletin of the Ecological Society of America* 102(4). *In press*.
3. Academic Skills. 2020. Voice in academic writing. The University of Melbourne. Accessed September 15, 2020 from https://services.unimelb.edu.au/.
4. Varner, J. 2014. Scientific outreach: Toward effective public engagement with biological science. *BioScience* 64(4): 333–340. https://doi.org/10.1093/biosci/biu021
5. Wiggins, G. and J. McTighe. 1998. Chapter 1: What is backward design? Understanding by Design, 1st ed.. Pearson: London. pp. 1-11

MODULE 2: TOOLS FOR SCIENCE COMMUNICATION

Plain Language

1. Locke, J. 2003. The plain language movement [and plain language at the FDA]. *American Medical Writers Association Journal* 18(1): 1-8. http://users.clas.ufl.edu/msscha/whp_plain_lg_medicine.pdf
2. My Byline Media. (n.d.). Automatic readability checker, a free readability formula consensus calculator. https://readabilityformulas.com/free-readability-formula-tests.php.
3. Rakedzon T., E. Segev, N. Chapnik, R. Yosef, A. Baram-Tsabari. 2017. Automatic jargon identifier for scientists engaging with the public and science communication educators. *PLOS ONE* 12(8): e0181742. https://doi.org/10.1371/journal.pone.0181742
4. Rodgers, P. 2017. Plain-language summaries of research: Writing for different readers. *eLife* 6: e25408. https://doi.org/10.7554/eLife.25408
5. Sharon, A. J., and A. Baram-Tsabari. 2014. Measuring mumbo jumbo: A preliminary quantification of the use of jargon in science communication. *Public Understanding of Science* 23(5), 528–546. https://doi.org/10.1177/0963662512469916
6. Sick Kids Learning Institute. 2014. Plain Language Writing Checklist. The Hospital for Sick Children. Accessed August 1, 2021 from https://www.sickkids.ca/en/learning/continuing-professional-development/knowledge-translation-training/

Graphic Design Essentials

1. Andreasen, N.C., and K. Ramchandran. 2012. Creativity in art and science: Are there two cultures? *Dialogues in Clinical Neuroscience* 14(1): 49-54. https://dx.doi.org/10.31887%2FDCNS.2012.14.1%2Fnandreasen
2. Brewer, C., and M. Harrower. 2013. ColorBrewer 2.0: Color advice for cartography. Accessed August 18, 2019 from https://colorbrewer2.org/
3. Ganea, P. A., C.F. Canfield, K. Simons-Ghafari, and T. Chou. 2014. Do cavies talk? The effect of anthropomorphic picture books on children's knowledge about animals. *Frontiers in Psychology* 5: 283. https://doi.org/10.3389/fpsyg.2014.00283
4. Jenny, B., and N.V. Kelso. 2007. Color Design for the Color Vision Impaired. *Cartographic Perspectives* 57: 61-67. https://doi.org/10.14714/CP58.270

5. Merkle, B.G., B. Barber, and M. Carling. 2020. Drawn to natural history: enhancing field courses with drawing and field journal instruction. *Natural Sciences Education* 49(1): e200019, 1-14. doi.org/10.1002/nse2.20019.
6. Merkle, B.G. 2019. Writing Science: Best Practices for the Images that Accompany Your Writing. The Bulletin of the Ecological Society of America 100(2): e01536. https://doi.org/10.1002/bes2.1536
7. Merkle, B.G. 2018. Perspective: Drawn to Science. Outlook: Science and Technology Education. *Nature* 562: S8-S9. doi.org/10.1038/d41586-018-06832-0.
8. Polfus, J.L. D. Simmons, M. Neyelle, W. Bayha, F. Andrew, L. Andrew, B. G. Merkle, K. Rice, and M. Manseau. 2017. Creative convergence: exploring biocultural diversity through art. *Ecology and Society* 22(2):4. https://doi.org/10.5751/ES-08711-220204

Social Media for SciComm

1. Côté, I.M. and E.S. Darling. 2018. Scientists on Twitter: Preaching to the choir or singing from the rooftops? FACETS3:682-694. Doi:10.1139/facets-2018-0002.
2. Jarreau, P.B., I.A. Cancellare, B.J. Carmichael, L. Porter, D. Toker, S.Z. Yammine. 2019. Using selfies to challenge public stereotypes of scientist. PLoS One 14(5): e0216625. Doi: 10.1371/journal.pone.0216625.
3. Yeo, SK., L. Yi-Fan Su, M.A. Cacciatore, M. McKasy, and S. Qian. 2020. Predicting intentions to engage with scientific messages on Twitter: The roles of mirth and need for humor. Science Communication 42(4): 481-507. https://doi.org/10.1177%2F1075547020942512

Fine-Tuning SciComm Messaging

1. AAAS. A reference guide for how to advocate for science. Association for the Advancement of Science. Accessed August 14, 2021 from https://aas.org/advocacy/get-involved/a-reference-guide-for-how-to-advocate-for-science.
2. Aurbach, E.L., K.E. Prater, B. Patterson, and B.J. Zikmund-Fisher. 2018. Half-life your message: A quick, flexible tool for message discovery. *Science Communication* 40(5): 669-677. Doi: 10.1177/1075547018781917
3. COMPASS Science Communication, Inc. 2017. The Message Box Workbook. Accessed July 28, 2021, from https://www.COMPASSscicomm.org/.
4. Dahlstrom, M.F. 2014. Storytelling in science. *Proceedings of the National Academy of Sciences* 111 (S4): 13614-13620. Doi: 10.1073/pnas.1320645111
5. Neely, L., E. Barker, S.R. Bayer, R. Maktoufi, K.J. Wu, and M. Zaringhalam. 2020. Linking scholarship and practice: Narrative and identity in science. *Frontiers in Communication* 5: 35. https://doi.org/10.3389/fcomm.2020.00035

One-Pagers

1. Anderson, S., and A. Hettinger. 201
2. International Society for Technology in Education. (n.d.). How to create a one-pager for policymakers: Tips and template. Arlington, VA. Accessed August 1, 2021 from https://www.iste.org/advocacy/advocacy-toolkit. *Note: see "Your policy position" under Templates subheader.*
3. Izumi, B.T., A.J. Schulz, B.A. Israel, A.G. Reyes, J. Martin, R.L. Lichtenstein, C. Wilson, S.L. Sand. 2010. The one-pager: a practical policy advocacy tool for translating community-based participatory research into action. *Progress in Community Health Partnerships* 4(2), 141–147. https://doi.org/10.1353/cpr.0.0114
4. Kostanecki, E. 2018. Creating a one-pager: Writing for a policymaker and stakeholder audience. Institute for Healthcare Policy and Innovation. University of Michigan. Accessed

August 1, 2021 from https://ihpi.umich.edu/member-resources/ihpis-guide-creating-one-pager-policymakers-other-stakeholders
5. Sunu, S., Mannix, H., & Nakahara, M. (2018, January 9). How to craft a great one-pager [web log]. https://www.compassscicomm.org/how-to-craft-a-great-one-pager/

SciComm Blogs

1. Gardiner, A., M. Sullivan, and A. Grand. 2018. Who Are You Writing for? Differences in Response to Blog Design Between Scientists and Nonscientists. *Science Communication* 40(1): 109–123. https://doi.org/10.1177/1075547017747608
2. Jarreau, P.B., and L. Porter. 2018. Science in the social media age: Profiles of science blog readers. *Journalism and Mass Communication Quarterly* 95(1): 142-168. https://doi.org/10.1177%2F1077699016685558
3. Jarreau, P.B. 2015. Science bloggers' self-perceived communication roles. *Journal of Science Communication* 14(04): A02. https://doi.org/10.22323/2.14040202
4. Saunders, M.E., M.A. Duffy, S.B. Heard, M. Kosmala, S.R. Leather, T.P. McGlynn, J. Ollerton, and A.L. Parachnowitsch. 2017. Bringing ecology blogging into the scientific fold: measuring reach and impact of science community blogs. *Royal Society Open Science* 4: 4170957170957. https://doi.org/10.1098/rsos.170957

MODULE 3: THE PRACTICE OF SCIENCE COMMUNICATION

Implementation, Reflection & Assessment

1. Baram-Tsabari, A., and B.V. Lewenstein. 2013. An instrument for assessing scientists' written skills in public communication of science. *Science Communication* 35(1): 56-85. doi: 10.1177/1075547012440634
2. Barwick, M.A. (2018). Knowledge Translation Plan Appraisal Tool. Ontario: The Hospital for Sick Children. Accessed August 1, 2021 from https://www.sickkids.ca/en/learning/continuing-professional-development/knowledge-translation-training/knowledge-translation-plan-appraisal-tool-form/
3. Barwick, M.A. (2008, 2013, 2019). Knowledge Translation Planning Template. Ontario: The Hospital for Sick Children. Accessed August 1, 2021 from https://www.sickkids.ca/en/learning/continuing-professional-development/knowledge-translation-training/knowledge-translation-planning-template-form/
4. Brown, Sandra, Angela Phillips Diaz, Ali Esraghi, Howard Gobstein, Robin Kaler, Sheila Martin, Janet E. Nelson, Sherine Obare, Jim Reecy, Sarah Rovito, Neil Sharkey, and Scott Slovic. 2019. Typology for public impact-focused research: Ways universities might describe their research projects, appendix 6b in Public impact research: Engaged universities making the difference. Association of Public and Land-Grant Universities.
5. Center for Advancing Research Impacts in Society. (n.d.). How will I know if my broader impacts project is successful?: Broader Impacts (BI) Wizard. Accessed February 17, 2021 from https://aris.marine.rutgers.edu/wizard/evaluation.php.
6. Center for Advancement of Informal Science Education. (n.d.). Developing an evaluation plan. Informal Science. Accessed February 17, 2021 from https://www.informalscience.org/evaluation/developing-evaluation-plan.
7. Center for Advancement of Informal Science Education. (n.d.). Evaluation tools and instruments. Informal Science. Accessed February 17, 2021 from https://www.informalscience.org/evaluation/evaluation-tools-instruments.

8. Center for Public Engagement. Public Engagement Evaluation Toolkit. Queen Mary University of London. https://www.qmul.ac.uk/publicengagement/goodpractice/evaluation-toolkit/
9. Doran, G. T. (1981). There's a S.M.A.R.T. Way to Write Management's Goals and Objectives. *Management Review*, 70, 35-36.
10. Driver, S. (Ed.). (n.d.). What makes great evaluation. *The Impact Field Guide and Toolkit*. Accessed August 1, 2021 from https://impactguide.org/measuring-impact/what-makes-great-evaluation/.
11. Irwin, A. 2008. Risk, science and public communication: Third-order thinking about scientific culture. In Bucchi, M., & Trench, B. (Eds.). *Handbook of Public Communication of Science and Technology* (1st ed.). Routledge: 199-212.
12. Louder, E. C. Wyborn, C. Cvitanovic, and A.T. Bednarek. 2021. A synthesis of the frameworks available to guide evaluations of research impact at the interface of environmental science, policy and practice. *Environmental Science and Policy* 116: 258-265. https://doi.org/10.1016/j.envsci.2020.12.006.
13. MacDonald, G. 2018. Checklist of key considerations for development of program logic models. The Evaluation Center. Western Michigan University. Accessed August 1, 2021 from https://wmich.edu/evaluation/checklists
14. MacDonald, G (2013). Criteria for selection of high-performing indicators: A checklist to inform monitoring and evaluation. . The Evaluation Center. Western Michigan University. Accessed August 1, 2021 from https://wmich.edu/evaluation/checklists
15. Martins, J. (2021, May 12). What is a key performance indicator (KPI)? Asana. Accessed Agust 1, 2021 from https://asana.com/resources/key-performance-indicator-kpi.
16. Marr, B. (2022, February 4). A sample KPI template. Bernard Marr. Retrieved from https://bernardmarr.com/a-sample-kpi-template/
17. Merkle, B.G., S. Bayer, P. Shukla*, and E. Valdez-Ward*. 2022. Sharing science through shared values, goals, and stories: An evidence-based approach to making science matter. *Human-Wildlife Interactions* 15(3). https://doi.org/10.26077/9wss-av78
18. Neresini, F., and G. Pellegrini. 2008. Evaluating public communication of science and technology. In Bucchi, M., & Trench, B. (Eds.). *Handbook of Public Communication of Science and Technology* (1st ed.). Routledge: 237-252.
19. Olesk, A., B. Renser, S. Franks, B. Schofield, R. Villa, F. Zollo, A.L. Schmidt, J. Roche, L. Bell. 2021. Twelve quality indicators for science communication: Guide for science communicators. QUEST: Quality and Effectiveness in Science and Technology Communication. European Union Horizon 2020 Research and Innovation Programme. Accessed July 17, 2021, from https://questproject.eu/12-quality-indicators-for-science-communication/.
20. Peterman, K., J.R. Evia, E. Cloyd, and J.C. Besley. 2017. Assessing public engagement outcomes by the use of an outcome expectations scale for scientists. *Science Communication* 39(6): 782-797. doi: 10.1177/1075547017738018
21. Reed, M.S., Duncan, S., Manners, P., Pound, D., Armitage, L., Frewer, L., Thorley, C. and Frost, B. 2018. A common standard for the evaluation of public engagement with research. *Research for All* 2 (1): 143–162. Doi: 10.18546/RFA.02.1.13.
22. Reed, M.S., R. Bryce, and R. Machen. 2018. Pathways to policy impact: a new approach for planning and evidencing research impact. *Evidence and Policy* 14(3): 431-458.
23. Reed, M.S., A. Graves, N. Dandy, H. Posthumus, K. Hubacek, J. Morris, C. Prelle, C.H. Quinn, L. C. Stringer. 2009. Who's in and why? A typology of stakeholder analysis methods for natural resource management. *Journal of Environmental Management* 90(5): 1933-1949. https://doi-org.libproxy.uwyo.edu/10.1016/j.jenvman.2009.01.001

24. University of Colorado-Boulder. (2021, May 6). Broader Impacts Project Evaluation. Research and Innovation Office. Accessed August 1, 2021 from https://www.colorado.edu/researchinnovation/research-development/other-resources/broader-impacts-network/broader-impacts-project-evaluation.
25. Varner, J. 2014. Scientific Outreach: Toward Effective Public Engagement with Biological Science. *BioScience* 64(4): 333–340. https://doi.org/10.1093/biosci/biu021
26. Western Michigan University. 2021. Evaluation checklists. Evaluation Center. Accessed August 1, 2021 from https://wmich.edu/evaluation/checklists.
27. Wingate, L., & Schroeter, D. (2007). Evaluation questions checklist for program evaluation. . Evaluation Center. Accessed August 1, 2021 from https://wmich.edu/evaluation/checklists.

Recommended citation: Merkle, B.G. 2022. Science communication bibliography. Applied Principles of Science Communication class handout. Laramie, WY.