

What is STEM Engagement?

An Interview with Sara Yeo

On June 13, 2018, [John Besley](#), the Ellis N. Brandt Professor of Public Relations at Michigan State University, interviewed [Sara Yeo](#), to understand her thinking on the topic of engagement. Dr. Yeo is Assistant Professor of Communication at the University of Utah. She specializes in science and risk communication, and her research explores the intersection of science, media, and politics. Currently, she is interested in how humor and emotions affect the formation of public attitudes toward science and technology. A video of Dr. Yeo's interview, as well as interviews of other researchers, is available at InformalScience.org/engagement.



What led you to study engagement?

I study science communication, but more specifically I think about how people form attitudes and opinions from the science information that they might encounter in media. So engagement for me often takes the form of engagement with friends on social media—things like viewing, liking, sharing, and retweeting. Because of this broad definition of engagement, it is a large part of my own research agenda. I want to understand how and why people develop the opinions that they hold about scientific topics, so understanding how they engage with and consume information is a part of why I include that concept in my work.

What does the term “engagement” mean to you?

I think the term is really broad in its use in a lot of spaces. My flavor of engagement might differ from others because of its focus on media; I look at engagement with science on different types of

media, particularly the social interactive forms of media. That's really what it means to me. I think it can become conceptualized more as outreach than as communication, but my working definition is primarily that of communication. Engagement is a challenging concept, because it includes the outreach perspective, and there's no common agreement in what engagement means really.

What are some of your specific projects where engagement was a central concept?

I'm currently working on a project related to humor in science communication. My collaborators and I are focusing on how scientists or people who communicate science use humor online. There are two parts of the project. One part is to quantify and characterize the types of humor that we might encounter online, so it's content analysis of humor and the hashtags related to science humor. We are focusing on Twitter and Instagram right now. That's where the engagement part comes in: how many

retweets and likes various communications receive and how that changes how we think about those particular issues. Then the follow-up part is to conduct a survey and an experiment examining not only the types of humor but also the engagement, the retweets (or the favorites in the case of Twitter). We're looking at how that affects any attitudinal outcomes.

Why do you think engagement matters for science communication?

One of the reasons why it really matters is that we have to have some metrics for the success of science communication. At least, we need to start to evaluate our communication of science. Engagement can be an important one of these metrics. For my work, why I am interested in engagement and why I think it matters is that engagement in the form of social interaction can influence our attitudes, our perceptions, the risks we take, and things like that. That's why engagement matters to me, from a researcher's perspective.

How do you assess or measure engagement?

I don't necessarily measure engagement as part of assessment. But as a researcher, my focus is on the mechanistic side of things. So when I operationalize it, I think about social normative cues around engagement, such as the retweets and the likes. For example, in an experiment that we're conducting, we're going to change the number of retweets to a large number or a very small number and see how those affect outcome variables. We think that changing the number of likes somebody sees might affect how they perceive a communication, because they are some of the cues that people might use, the shortcuts that they might use to think about that information. What we know from research is that it does change how we judge, make decisions, or form opinions about that information when we see cues that represent the operationalized engagement.

So how can practitioners use your work to make better communication decisions?

I think there's a two-part answer to that. First of all, using the example of humor, I want to be able to say whether it's helpful for a practitioner to use humor in their communication. Intuitively we feel that it is, but we don't have actual data to show how it affects the effectiveness of the communication. So we're looking at different types of humor. If we think about the [#overlyhonestmethods](#) hashtag, for example, its inclusion probably has a very different outcome on the readers' attitudes toward science than just using a joke to capture their interest and attention. There's not a lot of evidence about humor in science communication. There is a lot of evidence in psychology about humor itself, particularly its use in advertising, but a lot of that may not be translatable to how we communicate science because there's no product; we're not selling a product. So figuring that out and applying it would be one recommendation.

My recommendations around the social norms or the engagement cues are less prescribed. It's not like I can say, "You should have more likes." You should, probably, but how should you attempt to get there? You should try to disseminate your communication widely so that you can hit more of these cues and shortcuts, and then you can get more likes and retweets. But maybe it's the conversation that follows that matters, maybe it's the actual engagement part of it that matters.

What are the big questions for science communication over the next 10 years when it comes to engagement?

I think the big question for me is a little bit of a metaquestion. It's more about how engagement relates to research or how research and practice can be better integrated in terms of engagement, so that research on engagement can be then used in practice. I think they should be not only integrated but integrated in an effective way, in a way that helps science communication and science endeavors. I think we need the infrastructure for this, and what CAISE is doing with this

clearinghouse idea is great. I have just been thinking recently that if you're interested in science communication, it's not obvious where to go to find information about that. We really don't have that place. So I think that some of the infrastructure is still in its infancy, in terms of both research and practice. We also need structure within that, and we need more interaction and dialogue about science communication between researchers and practitioners. We should be cocreating these projects. How can I, as a researcher, help practitioners with this communication? How can I help them with the empirical research part of it? Those are the questions I think we should tackle.

Do we have enough research on the types of advice we can give to communicators?

As a researcher, I always feel like we don't have enough research on that. But I think from a practical standpoint, I want to be able to say something about what you can and cannot do. So I think there are some rather basic pieces of advice that we can give, which a lot of training workshops already give. But giving real issue-specific advice is trickier. I think all issues are going to differ in how you communicate them, because the nature of the issues are different. That research needs to be done, and it needs to be done with the input of practitioners, because they are confronted with the challenges of communicating that. I could make up and carry out an experiment that I'm interested in, but if it doesn't really help anyone, it's not useful.



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