Harnessing Social Media for Science

Colin Donihue
SCCS-NY

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Social Media

“How many of you have a Facebook account? A twitter account? A blog? How many use those accounts to talk about research-related conversations?

Social media is increasingly becoming the primary way people interact. Did you know more than half of Americans say they talk with people online more than they talk with people in person? We can argue about whether that’s good or bad, but the fact of the matter is the internet is increasingly being used for communication and scientists should want to be a part of those conversations, especially if we want to inform people about the science we’re doing.”
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- Reach Out to the Public | **Education**
- Raise Research Funds | **Donation**
- Collect Data and Facilitate Research | **Deputization**
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Next step: a framework for ‘Social’ Scientists
Let’s talk about Facebook first; it’s the largest and was the first to truly achieve global proportions
Facebook just passed its one billionth active user!
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How much time would you estimate the average Facebook user spends online each day? <click>
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55 minutes per day
55 minutes per day

<click> Imagine what scientists could do with even a percentage of that kind of attention!
55 minutes \[\text{day}\] \times 1,000,000,000 \text{ people} \approx 100,000 \text{ people-years of attention every day}

\(<\text{click}>\) Imagine what scientists could do with even a percentage of that kind of attention!
Those billion active users are spread all over the world. Here’s a map of the connections <click> and a list of the 80 or so languages Facebook now has native interfaces for.
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Let’s talk a little bit about Twitter. Twitter is called a micro-blogging environment where people can post “tweets” to their “followers” and start conversations. The trick is that each of those posts must be less than 140 characters long.
1,000,000 global active users = 1,000,000 global active users

<click> there are over 500 million active twitter users!
Twitter has 500 million active users

= 1,000,000 global active users

<click> there are over 500 million active twitter users!
And twitter too has global reach
Starting in 2010 Twitter began growing faster than Facebook in the US and that trend is predicted to continue into the future. It's interesting to note that Facebook’s growth is so low and that both Twitter and Facebook’s growth is plateauing. That’s likely indicative of the fact that Facebook’s starting proportion of users is so large and because its market capitalization is nearly complete.
Sectors Capitalizing on Social Media

Let’s talk a bit about the sectors already capitalizing on Social Media
Celebrities and politicians.
Celebrities and politicians.
Brands!
Brands!
Social media has even spawned completely new industries that are reaching millions of people and generating billions of dollars. No need to belabor this point. Social media is being used by hundreds of millions of people and lots of folks are capitalizing on that attention... Scientists could do the same.
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The way I see it Social Media has at least four really exciting potential benefits for scientists.
Collaboration
Networking with peers
We all know that networking is important. That’s one of the reasons we go to conferences. On twitter, you can spark conversations with researchers from all over the world, find out what they’re up to, share ideas and brainstorm. It’s also a good way to keep up with publications and links; people post when they publish a paper and so you can get the cutting edge in your feed.
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Social Network for Scientists

There are too many papers published to be able to scan or read them all. F1000 recommends articles based upon post-publication peer-reviews. Great way to find exciting new research published in your field.

These are just two easy ideas for collaborating through social networks. These are fairly obvious though... and networking is one of the clearest uses of social media...

I want to push us a little farther today.
Education

Reaching out to the Public
72% of Americans fail a basic science literacy test

Jon Miller, Michigan State University, 2007
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Test Questions Include:
Did modern humans live alongside dinosaurs?
Does the Earth revolve around the sun?
Name a living scientist

Failed: 66%

Succeeded: 34%

Name a living scientist

Failed 66%

- Stephen Hawking 15%
- James Watson 1%
- Jane Goodall 1%
- Bill Nye 1%
- Michio Kaku 1%
- Neil Degrasse Tyson 1%
- Other 14%

40,000,000

Americans rely on the internet as their primary source of news and information about science.

And note, this is based on a survey taken in 2006. I’m sure the number is higher now!
Many people are looking for science information online but relatively few scientists have a significant online presence.

If scientists aren’t at work online who are all these people getting their science news from?
Who do scientists rely on to publicize their findings?

“This begs the question:”
Many journalists don’t have science training. We shouldn’t assume that they’ll read our scientific papers and interpret and present them absolutely correctly.
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What to do?
Communicating your own research in searchable, and digestible ways online is the safest way to make sure it’s being presented correctly.
The answer then, I think, is a blog for your research where you discuss it more thoroughly in an easier to digest format. Here’s one example I like. It’s run by many Anole biologists and covers a wide array of topics from the dense and esoteric: Anole Genome Research to the user-friendly: Ask the Experts.
Here’s an example blog post from last week. There are three reasons this gets me really excited. The first is it’s a post about a debate going on in the field. It demonstrates science as a process of discussing ideas, hashing them out and coming to a consensus. More people must understand that science is a process. Second, the links allow the interested reader a web of further information to keep them learning and asking questions about the topics. Third, this conversation is now archived online, and could be revisited in one, five or ten years from now.
Donation
Raise Research Funds
Funds from NSF and NIH are getting harder and harder to get. In answer, crowd funding draws on social networking to enable research. The idea is you get lots and lots of people to give a little bit of money and all of a sudden that money starts adding up.
There are some 450 platforms worldwide, let me illustrate with an example from petridish.
Note, this researcher raised more than twice his goal!
In 2011

More than 1,000,000 successfully funded projects

More than $1,500,000,000 raised
So I think the connections between social media and networking or education are clear. You post things, try to make sure your audience is as broad as possible, and little by little you get your research spread to a larger audience. I think social networking can also be a powerful way to facilitate research that couldn’t really be done in any other way.
Facebook tagging fish in Guyana
Watch video here

(Links to vimeo)
Citizen Science

Citizen science is getting a lot of attention lately.
It was featured in a special issue of Frontiers recently... Yet there was almost no mention of social networks.
Here’s an example of a citizen science project

Put up a feeder

Count the birds that visit!

Send your data to scientists
Active Feeder Watchers

They have a huge network of feeder watchers throughout North America.
Eastern Bluebird
(Sialia sialis)

And are collecting interesting and important data!

Photo: allaboutbirds.org
http://www.birds.cornell.edu/pfw/DataRetrieval/trendgraphs/easblu.html
Eastern Bluebird - Current Season - Allegheny

Mean group size

- 0
- <=1
- 1-2
- 2-3
- 3-5
- > 5

Cornell Lab of Ornithology - 10 Oct, 2012
Citizen science projects are getting increasingly good at training data collectors to improve the accuracy of the data collected. Here’s an example with a required online certification program.
There are lots of citizen science projects – these are just a sampling from Cornell! Imagine if more scientists knew how to tap into this type of resource and could use social networks to expand the scope of their citizen science project!
There are lots of citizen science projects – these are just a sampling from Cornell! Imagine if more scientists knew how to tap into this type of resource and could use social networks to expand the scope of their citizen science project!
So let me wrap up so we can have a bit of discussion. I’ve just given some examples where social tools have been and can be used by scientists to collaborate, educate, raise money and facilitate research that couldn’t have been done without social media.
Do you have the time?
Let’s take as an example my lab. With 12 people we would have a fairly substantial social media presence!
Two tweets a month a blog post once every third month

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Six tweets and a blog post every week

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The bottom line is, science illiteracy is rampant and seemingly contagious. In order for people to make informed decisions in their personal lives and all the way to voting for representatives weighing major policy decisions, we need to have an educated populace. We can argue that it’s the fault of the school systems, but saying that isn’t going to help the issue, the only thing in our control that will is reaching out to as many people as we can and trying to tell them a little bit about what we do.

I don’t actually think that every scientist can or should have a twitter account. But I do think that every scientist should actively engage in disseminating their research in approachable ways and I think that social media techniques, can be an extremely effective, and increasingly efficient, means of doing so.
In the time it’s taken me to give this talk...
20,833,350 queries
198,000 pictures
18,000 videos uploaded
20,850,000 status updates,
2,380,920 wall posts,
15,301,200 comments on FB
5,250,000 tweets were sent

In the time it’s taken me to give this talk...
Let’s keep the conversation going
@colindonihue
colindonihue.com
colin.donihue@yale.edu
Sources influential in creating this presentation:

Deep Sea News Blog: “What is twitter and why scientists need to use it”

Science of Blogging: “Social Media for Scientists”

Science Sushi by Christie Wilcox: “Social Media for Scientists”

Mendeley Blog: “Four perspectives on communicating your research”

Southern Fried Science: “How to live-tweet a conference”

Social Media for Science on Google+