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Exploring Social Media

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Science for All Action Group Research

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Executive Summary

- Informed by concerns and queries from a workshop at the 2010 Science Communication Conference, this report discusses the current state of science communication and the social media sphere
- The underlying ethos of social media is to enable users to generate their own content (from opinion to media) and disseminate this to a network of peers and wider communities
- A wide variety of social media options are available for public engagement practitioners and all have been used to greater or lesser extent to communicate science. The case studies illustrate several examples of how social networking has been used to great effect by individuals and could be used to inform which social media solutions are relevant for individual projects – whether the aim is to broadcast, share and create content or to engage in dialogue and debate

Background

During the Science Communication Conference 2010, a workshop convened to discuss the use and role of social media in public engagement with the sciences in order to address action point 1.4 "Develop the potential for engagement through social media."

The workshop yielded questions under several headings which can be found under Appendix 1. This dossier does not attempt to answer all of these questions but they have been taken into consideration during the research process and the questions themselves could be taken into account and used to shape an organisation's social media policy.

This document is designed to provide a basic flavour of the current state of social media – an introduction to the basic features and concepts underlying social media techniques, current services and technology and specific examples from public engagement with the sciences to act as case studies.

Introduction to social media:

Addressing item 1, Appendix 1 – social media (in this context) could be defined as: "web-based technology and applications that allow the creation, exchange and consumption of user-created content". That is, platforms which allow users to interact with the aim of exchanging content which they (or others) have created be it pictures, video, comments, blogs etc.




Common features of social media and networks:








- Dialogue and democracy – equal footing and equal say (in *theory*; in practice, content is often moderated or discussion is led by an originator such as within a blog)
- User-created content – content is uploaded and shared within the community in order to spread awareness and gather feedback
- Tagging system – user-generated organisation system of searchable terms
- Commenting – other users can comment freely on contributions
- Customisation – users can 'collect' information and content that is most relevant to them in order to tailor-make their online environment

- Self-assembling and self-defining networks – marking the tendency of users to ‘congregate’ around an issue, interest or social/geographical factor and within these groups, continue to self-select information to tailor their web environment

Existing social media channels and networks (Addressing Item 4, Appendix 1):

	Type	Content	Audience	Notes
Facebook www.facebook.com 	Network	Sub-organised by geographical or institutional networks: ‘friends’ share photos, videos, links, and events and chat via a customisable profile page. Users can also join groups and ‘like’ pages (e.g. celebrities, products, businesses)	Originally university students but now encompasses younger people and adults	Most popular social network – originally designed for American colleges but has since expanded. Increasingly used to market businesses and products.
Bebo/Myspace www.bebo.com www.myspace.com 	Network	Youth-oriented networks: Myspace arranged around music, Bebo (future uncertain) around blogging	Youth market – 12-15	
Ning www.ning.com 	Network	User-defined networking: users can create their own networks (for a fee) which other users can join – based around professions or interest groups	Adult	For example: http://www.connectionfactory.org.uk/

<p>YouTube www.youtube.com</p> 	<p>Video sharing</p>	<p>View and share video clips – combination of user-made content and ‘official’ content by musicians, tv channels etc. Organised by user ‘channels’ and tagging system. Users ‘subscribe’ to channels to receive updates.</p>	<p>All</p>	
<p>Wikis (Wikia) www.wikia.com www.wikidot.com</p>  <p>WIKIPEDIA <i>The Free Encyclopedia</i></p>	<p>User-generated database</p>	<p>Based on open-source software, a ‘skeleton’ wiki is provided for communities of users to create their own information source. Pages are created by consensus – many authors. Famously, Wikipedia – online user-created encyclopaedia with over 3 million articles in English as of July 2010.</p>	<p>Adult (professional?), All</p>	<p>Enables free construction of online resources using ‘wiki’ techniques</p>
<p>Twitter www.twitter.com</p> 	<p>Microblogging</p>	<p>Users ‘follow’ contacts, celebrities etc through medium of 140-character messages. Messages can be targeted at specific users or tagged by subject.</p>	<p>All – however, early users were older adults (use in business and media communities)</p>	<p>High compatibility with mobile devices and SMS. ‘Sister’ websites such as Twitterfall exist to display trends.</p> <p>Media/Celebrity focus but used to great effect to communicate breaking news globally.</p> <p>See ‘Science on Twitter’ for specific examples</p>

<p>Bookmarking (Delicious, StumbleUpon, Reddit, Digg) www.delicious.com www.stumbleupon.com www.digg.com</p>   	Site sharing	Enables users to mark a webpage in order to recommend it to peers – pages are tagged and then are searchable within the community	All	
<p>LinkedIn www.linkedin.com</p> 	Network	Professional networking site – business contacts and introductions	Adults (professional)	
<p>Flickr/Picasa www.flickr.com www.picasa.com</p>  	Photo sharing	Users can create virtual photo albums to share and be commented upon.	All	
<p>Second Life www.secondlife.com</p> 	Virtual World	Users create an avatar to inhabit a virtual world – real world/ virtual world crossovers include music and products	All	

Science on Twitter:

New users to the microblogging service Twitter are presented with a digest of the service as 'suggestions' to start users' list of 'follows'. Within the 'Science' category, there are 52 Twitter users ranging from:

- Science news outlets: BBC Science and Technology (@bbcscitech), Reuters Science News (@Reuters_Science) and New Scientist (@newscientist)
- Institutions: Smithsonian (@smithsonian), the White House Office of Science and Technology Policy (@whitehouseostp) and the National Geographic Society (@natgeosociety)
- Scientists in the media: Brian Cox (@profbriancox), Ben Goldacre (@bengoldacre) and Soichi Noguchi (@astro_Soichi) [Astronaut in International Space Station]

Science Blogging:

In June 2010, *the Guardian* released a list of 'the hottest science blogs' (<http://www.guardian.co.uk/science/blog/2010/jun/03/wanted-best-science-blogs>) with a call for readers to add their own. Taking these blogs as a microcosm of the 'science blogosphere', the blogs can be grouped into categories:

Science for the public – i.e. science reporting, discussion

Examples:

layscience.net – 'sceptical' science for an 'evidence-driven' public

dailygalaxy.com – image-based astronomy blog

blogs.discovermagazine.com/notrocketscience – science news and commentary

newscientist.com/blogs/shortsharpscience/ - science news summaries from newscientist.com

nhs.uk/news/Pages/NewsIndex.aspx – NHS health news blog

mindhacks.com – neuroscience and psychology articles and news digest

lifeunbounded.blogspot.com – astrobiology articles

Science for scientists and other 'practitioners' – i.e. science for consumption within the community

Examples:

labspace.net – science news which uses press releases from university research departments

lifeandphysics.wordpress.com – physics, PE and politics blog

realclimate.org – Climate science articles

Science 'humour' – light-hearted science and humorous non-science articles by scientists

Examples:

sciencepunk.com – science news including 'Awesome Science Videos'

blogs.discovermagazine.com/cosmicvariance – the universe according to a group of bloggers who 'happen to be physicists'

Science for students – up to undergraduate level science

Examples:

scienceblogs.com/moleculeoftheday/ - semi-technical blog placing molecules in day-to-day life

'Institutional' blogs – written in-house by institutions

Examples:

scienceblog.cancerresearchuk.org – Cancer research and health news articles

Science blog portals (examples: www.scienceblogs.com and www.scientificblogging.com) are purpose-made blog providers for science blogging. Blogs are organised by scientific field and authors tend to be active scientists in the field, blogging about their research or recent developments within their community. Science magazines such as Nature, New Scientist and Discover also host science blogs – Nature, for example, distinguishes that the blogs are written both by in-house writers and bloggers from the wider 'Nature' network.

Social Media in practice and implications for science communication

Science and social media case studies:

“For Simon Singh and Free Speech” – Various sites

Facebook groups represent a popular component of the networking site. Simple and free to establish, groups and pages exist for a huge array of reasons and subjects. For example, a group arguing in support of the recent Simon Singh libel case has over 10,000 members who are sharing links about similar topics and lending their support to the case. These groups represent a form of activism (similar to a petition) in that joining the group adds their name to the cause and demonstrates their support but also serves an administrative role in recruiting more people to the cause and sharing information within that community. For example, followers were invited to attend public sections of the trial in order to lend their support and links were shared to media coverage about the case and related issues.

The case spread to other networks and media; most notably from the blogger ‘Jack of Kent’ (a legal blog writer who championed the Singh case and helped to lead the support for the defence). Singh also regularly communicated about the case through his Twitter account and a regular e-newsletter. Although a complex case, comprising aspects of legal reform, health reporting and the freedom of the press, it concerned a science writer and a science topic and the campaigning by social media practitioners was acknowledged by Singh after the appeal in a Guardian article:

“Although the newspapers back then were largely ignoring the issue of libel and the need for libel reform, the blogosphere ... managed to spread the word.”

@CERN – The Large Hadron Collider on Twitter (twitter.com/CERN)

With over 151,000 followers, CERN prolifically ‘tweets’ the progress of the Large Hadron Collider, news and acts as a mouthpiece for the LHC individual experiments (most of which have their own Twitter feeds).

The feed combines serious (and very high level) physics (“Running with successful ‘squeezed’ beams, the LHC is providing 10 times more luminosity, giving more collisions for the experiments.”) as well as whimsical stories from CERN (“More a Capybara than a mouse? Here’s what happened when CERN ordered bowling balls in 1972”). The feed is a good example of an organisation on Twitter – a mix of diverting stories and updates which are either complete in themselves (“Adding the tally from last weekend’s runs, the LHC experiments have observed around half a

billion collisions to date.”) or, like an opening line of a press release, urge the reader to continue (“With tens of millions of collisions recorded, LHC experiments spot rarer members of the particle family. See LHCb: <http://bit.ly/cqcBvj>”). The stories are also mixed by ‘level’ – some are obviously designed for the academic physics community, others are at a more accessible level to accommodate (or possibly accounting for?) their numerous following.

Bang goes the theory (bbc.co.uk/bang)

The Open University/BBC science television series also connects to a strong web presence: “Ask Dr Yan” enables viewers to engage directly with the show’s content and answer burning science questions. The questions are answered by a team of experts with selected enquiries answered via video by Dr Yan.

This also enables users to upload their own answers and explanations via video, picture and text in order to encourage engagement and provide further material for the broadcast. Initiatives such as this allow participation in science communication projects and although on a large scale, it shows a way of using the ‘user contribution’ factor to good effect by engaging the audience in a meaningful way.

I’m a scientist, get me out of here (imascientist.org.uk)

“X-Factor meets school science lessons” – Wellcome Trust funded initiative to connect researchers with school children to enrich curriculum. The competition involves 100 scientists competing for a £500 public engagement grant by interacting with 8,000 school children who can ask scientists questions in live chats and vote for their favourite scientist.

Each scientist has a profile page with more information about their research and a series of questions to provide some background colour to their personality. The project uses a social-network-style approach to provide a familiar environment for students to interact with scientists in order to enrich learning and engage students with ‘real life’ science. The project also introduces a competitive element by using the familiar ‘voting off’ method to award the grant as opposed to a more traditional peer-review process. However, it could be argued that the grant is awarded via ‘audience review’ and the competition provides a clear, engaging framework for this.

Lord Drayson and Dr Ben Goldacre: Science Reporting: Is it good for you?

In August 2009, former Science Minister Lord Drayson (a prolific Tweeter) entered into a Twitter-based debate with 'Bad Science' columnist, blogger and doctor Ben Goldacre about the state of UK science journalism. This debate then transferred into a real-life format with an on-stage debate at the Royal Institution in September 2009.

Lord Drayson at the time was quoted as saying that "the debate would not have happened without Twitter" and the debate was also participated in by Twitter users outside the venue.

Non-science

Battlefront (www.battlefront.co.uk)

"20 Campaigners save the world (with your help)" – Channel 4 project enabling young people to create their own campaigns for social change (ranging from environmental to political to crime). The project is cross-platform (i.e. television and web components) with a second series of the project due in 2010.

Users can upload and view 'viral'-style campaign videos, comment and start their own campaigns. A selected 20 have more complete 'campaign' pages combining video-logs, blogs, posts from other social media and interfaces with Flickr and Bebo.

The project collaborates with 'mentors' from the world of campaigning who provide guidance for the featured campaigners and notes on effective campaigning. For users starting a campaign, a comprehensive handbook guides young people with tips on legal matters, methods and advertising. Written in an accessible style, the handbook provides useful links and background information on the campaigning scene.

Predictions for the future of social media and public engagement

Augmented reality

(Short- to medium-term)

Advances in smartphone and webcam technology could make Augmented Reality a more feasible prospect in many areas. Augmented Reality enhances a user's experience of the *real* world by using technology to add elements from the *virtual* world. For example, a smartphone with internet access, webcam, GPS and integrated compass could, when viewing, say, a street for example, overlay information from virtual maps and location data to notify a user where the nearest train station is and program a route for them to follow, overlaid onto the view of the street as seen on the screen.

This technology could have applications in science centres and museums – to enable visitors to view exhibits with far greater amounts of information to hand which could be tailored to each individual, for example. In the home, users could use a webcam to conjure virtual objects that could appear on the computer screen's view of the room which they could then interact with – technology which is already being used in games consoles to create a virtual pet.

Barriers between traditional and social media

The presence of traditional media within the 'social' media space is well-documented (the Guardian science blog, BBC News on Twitter etc) however, the roles of contributor and consumer could be reversed in the future, making social media a more important source for the traditional media. Examples of this are already visible – Twitter feeds being quoted during breaking news stories or phone camera footage being aired in the broadcast media. The ubiquity of social media could mean that the barriers between the two 'tribes' could begin to dissolve entirely or, alternatively, polarise the differences as the traditional media evolves to continue to compete against a free democracy.

The phenomenon of citizen journalism is not new but its effects are not particularly felt within the science community; however, in the future this could possibly change as social media could democratise the process of publishing findings and could circumvent the traditional peer-review process. In the wake of Climate-Gate and similar controversies, researchers may choose to open the entire research process to public scrutiny from the very beginning in order to maximise public trust in the sciences – it is not known, however, if the call for this openness would originate from within the scientific community or from the public.

Conclusions

- Social media, at its core, is based around the creation, sharing and discussion of content and opinion by users through web-based networks
- The public engagement community is well-represented across the field of existing social networking services by both practising researchers and professional communicators and is being used to great effect by many of the examples quoted above and elsewhere
- The future of social media is dependent on advances in technology and early examples as shown in smartphones and games consoles could have implications for the social media sphere in general, presenting further opportunities and challenges for public engagement with the sciences

Further Reading:

Use and Relevance of Web 2.0 for researchers – a report by the Research Information Network about the adoption (and incentives and barriers towards adoption) of web 2.0 (and social media) techniques by researchers.
(<http://www.rin.ac.uk/news/use-and-relevance-web-20-researchers>)

Appendix 1: Questions from Science Communication Conference Workshop

What is social media	<ul style="list-style-type: none"> • What do we mean by social media? • Is this a fleeting medium? Where is the archive? • How can we keep up with use of social media?
Protection and control	<ul style="list-style-type: none"> • How much do you exert control when using social media? • How can you protect individuals and organisations and ensure against libellous content? • What are the limits of use? • How do you protect reputation? • How comfortable is your organisation with lack of control? • How do you manage the dangers – legal issues and reluctance to release personal information?

<p>Audiences</p>	<ul style="list-style-type: none"> • What/who are the best audiences to target using social media? • Is it restrictive in reach? • How do you generate an audience or define a community? • Is the greatest value and engagement with younger audiences? • What audiences are engaged with social media? • How do we avoid disenfranchising groups and ensure that social media is not used in isolation?
<p>When to use social media in public engagement</p>	<ul style="list-style-type: none"> • What social media are best to use and in which contexts? • What is the most appropriate social space for communicating science messages? • Why do people want/not want to use social media in communication? • Can we improve understanding of how and when to use social media? • Do people use social media to get in touch with other stakeholders?

Benefits and impacts of social media	<ul style="list-style-type: none">• What is the impact of using social media?• How do we evaluate use of social media and measure impact?• How do you get the benefits from social media for public engagement – (recruit contributors)?
Ways of using social media	<ul style="list-style-type: none">• How can you separate fact from opinion?• How do you separate PR and public engagement?• Does social media have the capacity to engage large numbers of scientists to report their work to the public and/or to science communicators?