Using Web 2.0 technologies to enable practice change in Australian agriculture

John James

Department of Employment, Economic Development and Innovation, Queensland. 203 Tor Street (PO Box 102) Toowoomba Qld 4350
Email: john.james@deedi.qld.gov.au

Abstract: Web 2.0 technologies (such as blogs, wikis and podcasts) allow faster and more flexible communication between all those involved in the Australian agricultural RD&E system. This more flexible and engaging mode of communication can allow greater and quicker levels of adoption and practice change. This paper presents a categorisation of Web 2.0 tools using a traditional communication systems schema. It then outlines a hypothetical scenario that compares the traditional approach of organising a farmer workshop with a blended approach using several of the Web 2.0 tools currently available. A better understanding and utilisation of these Web 2.0 tools will help enable greater practice change in Australian agriculture.

Introduction

The Internet has moved from being a very large collection of static information (a virtual library) to being a large collection of people interacting and collaborating online. This 'new' Internet is being referred to as Web 2.0 (O'Reilly 2007) to indicate the significant change that has occurred. Web 2.0 technologies or social media (e.g. wikis, blogs and podcasts) are enabling online sharing, collaboration and networking. These 'weapons of mass collaboration' (Tapscott and Williams 2006) allow organisations to better engage, connect and interact – with minimal cost and time commitment.

These social media are becoming increasingly popular, enabling greater collaboration, engagement and networking. There has been a dramatic rise in the use of social networking in popular culture, so that as at the end of 2008, there were a reported 184 million blogs, 150 million Facebook users and 5 billion videos stored on YouTube (Scribd 2009).

Categorisation of Web 2.0 tools

There is already a bewildering array of Web 2.0 tools available, and this is growing at an almost exponential rate. There appears to be significant overlap with what various eTools offer, and this has created a confusing environment for users to make informed choices. In an attempt to simplify the situation, the traditional communication two-by-two matrix of one-way versus two-way communication and text versus audio-visual communication is utilised in this paper.

A range of traditional extension activities are categorised in this manner in Table 1. The more common Web 2.0 technologies are similarly categorised in Table 2. The aspects of each of the four approaches will now be discussed in more detail.

Table 1. Categorisation of traditional extension approaches

Communication approach	Examples of traditional extension activities
One-way communication	
One-way text	Newsletter, FarmNote, book
One-way audio-visual	Movie/ video, field day, seminar
Two-way communication	
Two-way text	Letter, survey
Two-way audio-visual	Workshop, forum

Table 2. Categorisation of common Web 2.0 technologies

Communication approach	Examples of Web 2.0 technology
One-way communication	
One-way text	Web page, Targeted email campaign, SMS messaging
One-way audio-visual	Podcast, Webcast
Two-way communication	
Two-way text	Blog, eSurvey, Wiki, Twitter
Two-way audio-visual	Web-conference, Social networking

One-way communication

One-way text

Communicating an urgent message to a target audience in a timely, cost effective manner is often difficult. A recent example is the Equine influenza outbreak in August 2007 where various government departments needed to share information as quickly as possible with members of the public to dispel myths and rumours. While media releases to newspapers were extensively used, the final content of each article was at the discretion of newspaper editor. Paid advertising overcomes this problem, but it is an expensive option. If printed fact sheets or similar were used, a significant time lag (for graphic design, production of proofs and then the printing and distribution of the material) needs to be factored in, as this may take several weeks.

Web page This is where the use of the Internet is such an effective means of communication, as once the material is written it can be available for viewing within minutes and is accessible to millions of viewers. While web pages are not as personal or engaging as other means of electronic communication (also known as eCommunication), they are still far better than the absence of quality information which can raise unfounded fears and concerns. They are an example of 'pull technology', which expect the user to take the initiative to visit the pages to gain the desired information.

Targeted email campaign The opposite is a 'push technology' which actively sends information to the user. If the email addresses of a target audience (such as members of an industry group) are known, then targeted email campaigns can be used. These allow a series of smaller, personalised communications to be sent on a regular basis using proprietary software (e.g. www.vision6.com.au). It is desirable to use a segmented database, so that specific, relevant messages are sent to sub-groups of the overall audience. In the Equine influenza example, messages could have been customised based on geographic location or work role (such as veterinarian, racehorse owner or pony club member).

SMS messaging SMS text messaging via mobile phones can be used in a similar way to deliver shorter often time critical messages. A system for the bulk distribution of these text messages is available from the same provider as targeted emails.

One-way audio/visual

The next step from written eCommunication is the use of podcasts or other sound files that allow the audience to hear the presenter's voice and other sound effects. This adds a more personal touch, so the audience can hear the tonal intonations which add to the understanding of the material. It may also help the audience to better connect with the person making the announcement and so have greater empathy with them.

Podcast Podcasts are one common technology used for this which allows the listener to download the sound file and listen to it at their convenience. An Australian agricultural example would be the Grains Research and Development Corporation which has produced a number of podcasts on mainly technical topics, which may be heard at www.grdc.com.au. Farmers are then able to download these talks from the Internet onto their portable MP3 players to listen to later while they drive their tractors or such like.

Webcast Webcasts (video podcasts) are like podcasts but include a video component so the viewer can see a moving picture of the person speaking or their subject matter. This allows the audience to even better engage with the presenter, as they can read their body language. An Australian example is the Web on Wednesday presentation delivered by Cotton Seed Distributors, which may be viewed at www.csd.net.au.

Two-way communication

Two-way text

The previous methods only allowed one-way communication, from the sender to the receiver. The addition of a feedback loop is important to allow the reader to clarify aspects of uncertainty and to raise issues relevant to their situation. This helps the communication to be better understood and of greater relevance to the audience.

Blog A blog (short for 'web log') is like an online diary or personal journal where the author expresses their opinion on a topic. Readers are able to respond and add their own comments to what has been written. While the bulk of the material is text based, it is possible to also add audio, graphic and video files, depending on the capabilities of the hosting system (e.g. www.blogger.com).

The downside of using a blog in a change management setting is that it enables opposing views to be published alongside your original viewpoint. Of course the blog owner can choose not to display the messages they don't like, but etiquette is that only rude or offensive messages are removed. The displaying of critical messages can be useful, as it gives a chance to respond to the critics with perhaps extra information that helps them better understand the situation.

eSurvey People's responses to a proposal can be gauged by using an eSurvey early in the change process. So instead of waiting to see how the target audience reacts to a proposal using the old Decide, Announce, Defend approach (Walesh 1999), one can be proactive and use eSurveys early in the process. This allows people to provide feedback on the concepts before a final proposal is distributed. This not only saves the author time if their proposal is off the mark, but again gives the target audience a greater sense of ownership early in the process.

The eSurvey software (e.g. www.surveymonkey.com) allows users to easily create surveys to gather quantitative and qualitative data that can assist better decision making. Paper-based surveys also do this, but with the disadvantages of the time delay of printing the questionnaires, mailing them out, waiting for them to be returned and then entering the data with its associated risk of data entry error.

The potential time difference between a paper-based survey and an eSurvey being sent to 200 people is illustrated in Table 3, with the indicative time required to undertake each of the activities involved.

Table 3. The potential time difference between paper-based and electronic surveys

	Paper-based survey	**eSurvey**
Design	2 hours	2 hours
Create	4 hours	1 hour
Test	10 working days (print survey, address and stamp envelopes, post, complete, return post, data entry, analysis, modifications, possible retest)	1 hour
Distribute	20 working days (print survey, address and stamp envelopes, post, send reminder, complete, return post)	5 days
Analyse	2 days (data entry, analysis)	1 hour
Total time	33 working days	6 working days

This demonstrates how a typical paper-based survey can take approximately six weeks to conduct, whereas an eSurvey might take only six days. It is possible to obtain meaningful results from a survey within six hours, where one knows the recipients, the survey itself is short and the audience appreciates the need to gather the information.

Wiki Instead of writing all the content for a publication by oneself, it is at times useful to invite others to assist by contributing part of the content. A wiki (from the Hawaiian word 'wiki' meaning quick) is a website that enables multiple authors to easily contribute their content to an often much larger collection of knowledge. The best example is Wikipedia itself (www.wikipedia.org), which as of June 2009, had over 2,900,000 articles in English, with articles from over 250 other languages as well.

This online collaboration not only makes the writing task easier for the initiating author, but gives greater ownership of the material by their colleagues. Generally those wanting to collaborate with the originating author are invited by them to do so, or they may request to be given the editing authority through the wiki site. Large organisations such as the United Nations are now using this approach, both internally and externally with great success (Bennett 2007).

Twitter Twitter is a recent social networking service that allows users to send small chunks of text (less than 140 characters) to those who have chosen to follow them on Twitter. This micro-blogging service has received notoriety for its quick uptake around the world.

Two-way audio/visual

Web conference Web conferencing is a means of collaborating with others using no more than a computer, a web-cam, microphone and Internet access. The service provider (e.g. www.webex.com) enables the presenter to control what is being viewed onscreen. This system allows those involved in the meeting to interact verbally and visually, and easily share electronic documents.

Social networking There has been a dramatic rise in the use of social networking in popular culture, with websites such as www.youtube.com, www.myspace.com, www.flickr.com and www.secondlife.com. For example, Second Life is an Internet-based virtual world with more than 10 million accounts. Players (known as residents) can assume the form of animated characters (known as avatars). There are a number of educational institutions that are using Second Life as an online environment for teaching and learning. These use a range of tools to support and connect learners in their online world.

A Web 2.0 enabled scenario

The following scenario outlines two approaches to improving the knowledge, skills and attitudes of beef producers in the area of animal nutrition. In the past a two-day workshop on cattle nutrition may have been conducted, expecting that those attending will happily absorb the information and apply it in their farming practices. Good results can be reported – the number of people attending the event and their satisfaction with the way the event was delivered. However, an evaluation 12 months later will often indicate that the level of change or adoption has been minimal. The knowledge and skills of the participants may have increased, but often this has not affected their attitude or desire to change.

An alternative approach is to better engage with the participants before, during and after the event. In the design phase, well before the workshop is even advertised, the organiser can engage with potential participants to better understand their learning needs. This adult learning approach enables us to build on existing knowledge and deliver training that is relevant to the participants. An eSurvey could be utilised to determine the background of the potential participants and their actual learning needs. As a result the organiser may discover that it is really calf nutrition that the participants are most interested in and can tailor the training to suit. The organiser could also send out a targeted email to share their thoughts regarding running a workshop and invite people to respond with their thoughts and ideas. The organiser could also do this by utilising a blog, where again they would share their thoughts and invite feedback. In the past, the organiser may have only had time to ask only a few industry contacts to validate the training focus, but by using modern information and communication technology tools they can afford to include all potential participants.

Moving to the planning stage of the workshop, the organiser needs to plan the event details and prepare the learning support materials. They could engage the researchers, industry representatives, agribusiness suppliers and other extension officers through web-conferences, so no one needs to travel to collaborate on the project. A wiki could be used to quickly collate information and allow each person to build upon what has already been shared. In the past, this would have involved the time and expense of travel, which may well have excluded some people from participating.

While the interaction during the workshop would primarily be face-to-face, participants may interact with international specialists via a web-conference. Before the workshop finishes, the organiser would demonstrate how they intend to keep in touch with participants by the use of

various information and communication technology tools. They would show them how simple each technology is to use, and invite them to try using them before departing.

The organiser could offer to stay in contact with the group for the next 12 months, or for as long as is appropriate. Web-conferences, blogs, and podcasts could all be used as means of keeping in contact. Second Life could be utilised as a way of creating an online community for continued interaction.

After the workshop the organiser could use an eSurvey to evaluate the effectiveness of the learning event, and possibly send a subsequent eSurvey in 12 months time, to better measure the real impact upon practice change.

Table 4 summarises how the various eTools could be used to increase engagement at a farmer workshop.

Table 4. How eTools can be utilised during a workshop

Stage of event	eTools that could be used
Design	eSurvey, targeted email, blog
Plan	Web-conference, wiki
Deliver	Web-conference
Evaluate	eSurvey
Post workshop	Web-conference, blog, podcast, Second Life

Conclusion

As familiarity with Web 2.0 tools increases and as more tools are developed and released, the ability for engagement and collaboration will undoubtedly increase. By extension officers better understanding and utilising these tools, they should be better able to engage with their clients, leading to greater adoption of innovations in Australian agriculture.

Of course these online tools should never fully replace the traditional methods of service delivery, but instead compliment them. It is often better to initially meet face-to-face so as to build trust and understanding. Subsequent meetings can then be undertaken online in a more cost effective manner.

The Web 2.0 tools should be used as part of an existing extension strategy, and not for the sake of being seen to be using the latest, sexiest tool. The focus should be on increasing engagement and collaboration with relevant stakeholders, to achieve the desired outcomes of the project.

References

Bennett J 2007. *Power in numbers*, Newsweek 150 (6) August 7, 2007 pp 68-69.

O'Reilly T 2007, What is Web 2.0: Design patterns and business models for the next generation of software. *Communications & strategies*, No. 1, p. 17-37.

Scribd, 2009 2008 Social Media Statistics Viewed 14 May 2008, http://www.scribd.com/doc/11481779/Social-Media-2008-Statistics

Tapscott D and Williams AD 2006, *Wikinomics: How mass collaboration changes everything.* Portfolio Hardcover.

Walesh SG 1999. *DAD is out, POP is in*, Journal of the American Water Resources Association 35 (3), 535–544.