Journal of Extension
www.joe.org

October 2014
Volume 52
Number 5
Article # 5TOT7
Tools of the Trade

An International Short Course for Training Professionals as Effective Science Communicators

Abstract

Scholars have recognized a need for educational programs that prepare scientists, Extension practitioners, and other stakeholders to communicate science effectively. Such programs have the potential to increase public awareness and aid policy development. Having recognized this need, faculty at Michigan State University (MSU) developed an "international short course in science and technology communication" that was offered at MSU from 2010 to 2012. This article provides an overview of the design, implementation, and impact assessment of the course. We also share lessons learnt from this program and provide suggestions for other similar programs.

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Introduction

While scientific innovations have contributed to improve critical aspects of life such as healthcare and food security, a considerable amount of skepticism and uncertainty about science and technology remains among the general public (Poortinga, Spence, Whitmarsh, Capstick, & Pidgeon, 2011; Pew Research Center, 2014). Some innovations that have been associated with societal controversies have led to public rejection of their use (Gupta, Fischer, & Frewer, 2012). On the other hand, media coverage of "newsworthy" scientific issues has led to greater public interest in science (Nelkin, 2001), which in turn has enhanced scientists' visibility in public forums. In spite of this visibility, some researchers argue that media coverage has not brought clarity to scientific issues or improved public understanding (Harvard School of Public Health, 1998). How science is communicated, not only by the media, but also by scientists and Extension practitioners, has a powerful impact on public understanding. Hence, it is crucial that they "effectively communicate science-based knowledge" (Robinson, 2013). Science communication programs are particularly valuable in this regard.

World Technology Access Program at Michigan State University (MSU) has been providing training programs for international stakeholders for over 15 years on topics such as biotechnology, biosafety, food safety, biofuels, and intellectual property. Past participants of these training programs have

expressed varying concerns about how to make scientific messages more accessible to their respective audiences. The *International Short Course in Science and Technology Communication* at MSU stemmed from these participant concerns. The course was implemented in August 2010 as a pilot program in science and technology communication and continued annually until 2012.

Course Design, Implementation, and Impact Assessment

Course Design and Implementation

The primary goal of the course was to equip participants with hands-on experience in science and technology communication. The course provided a platform for participants to exchange their experience in communicating science and to discuss strategies for better communication. To develop course curriculum organizers obtained input from MSU faculty and others who have active research and outreach programs or provide services in science communication, media, public perception, as well as agricultural extension (i.e., International Food Information Council, International Service for the Acquisition of Agribiotech Applications, AgBioWorld, Lansing State Journal, MessageMakers studio). Financial support and sponsorship for the course came through Africa Biosafety Network of Expertise (ABNE), United States Department of Agriculture- Foreign Agricultural Services (USDA-FAS), and other individual donors. The course curriculum covered topics listed in Figure 1.

Figure 1.

Components of the Short Course

1. Overview of general communication theory
2. Media framing
3. Understanding the audience
4. Tools and Techniques of Communication
5. Case studies of science communication: biotechnology, biofuels, climate change, food/nutrition
5. Presentation skills
6. Interview skills
7. Risk communication
8. Ethics of Communication
9. Writing science for the public: media story development
10. Designing communication campaigns
11. Field visits and laboratory visits
12. Science and Technology Communication information resources

We restricted the duration of the course to 1 week, consistent with other short courses offered by MSU (Maredia, Guenthner, & Weebadde, 2011). The course combined in-class discussions with a range of interactive sessions (e.g., case studies on current/controversial scientific topics, interviews, laboratory and field visits, and presentations). At conclusion, participants received copies of all presentations and additional resources on a CD, along with a completion certificate. During the 3-year time period, we trained 24 participants from 11 different countries representing Africa, Eastern Europe, and Asia (i.e., three government officials, 12 scientists, four media personnel, and 5 Extension practitioners).

Impact Assessment

We conducted two types of course evaluations; (1) initial evaluations, and (2) follow-up online survey (Maredia et al., 2011). Initial course evaluations were conducted using an anonymous survey given to all the participants on the last day of each course. This survey consisted of both qualitative and quantitative questions. We asked participants to rate whether the course met their expectations, on scales of 1 to 10 (1 poor, 10 excellent). Participants assigned average ratings of 8.0, 9.3, and 7.2 for 2010 to 2012 respectively. In an open-ended question we asked the participants to identify the key strengths of the course. They identified "case studies" and "interview skill development" as highlights of the course. Participants also rated networking opportunities as a valuable gain.

After completion of the 2012 course, we conduced at online survey of all participants in order to assess subsequent impacts. The survey was initially distributed in November 2012 via SurveyMonkey, followed by two weekly reminders. All participants except one responded to the survey. Most participants indicated that the course met their information and training expectations, with a higher percentage (93.3%) indicating that the course improved their professional networks (Table 1). Two publications have emerged directly as a result of this short course so far (i.e., in *RecoabNews* of Burkina Faso and *The Petri Dish* of Malaysia). Participants continue to share science communication resources through a FaceBook group administered by course organizers.

Table 1.

Course Evaluations from Online Survey (2010 to 2012)

Statement	Strongly Agree	Somewhat Agree	Neutral	Disagree	Strongly Disagree
The course fulfilled my information and training expectations.	66.7%	33.3%	0.0%	0.0%	0.0%
The course raised my understanding of the subject area.	66.7%	26.7%	6.7%	0.0%	0.0%
The course provided me with sufficient training to influence policy.	26.7%	33.3%	40.0%	0.0%	0.0%

The course improved my professional network.	93.3%	6.7%	0.0%	0.0%	0.0%
The course provided me with training to implement follow-up activities.	53.3%	26.7%	20.0%	0.0%	0.0%

Concluding Remarks

The MSU Short Course served as a unique platform for scientists, Extension practitioners, media, and other stakeholders from around the world to develop a network of science communicators. Some course impacts have already been demonstrated through development of science-based news articles and Web-based resources by participants.

The experience gained through offering this course at MSU has helped us develop some suggestions for similar programs. Science communication programs should incorporate holistic approaches through integrating perspectives not just of scientists, but also of the media, Extension practitioners, and end users where possible. Panel discussions are useful to identify where gaps exist (for instance, between scientists and journalists). Activities outside of the classroom such as laboratory visits and field visits lead to enhanced interaction and generate new discussion topics. Particularly for programs that have an international focus, linkages developed through social media are useful for information exchange. While stakeholder interest remains high, obtaining funding to support participants continues to be the most challenging aspect that needs to be addressed.

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