Communicating science beyond the *MMJ*

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It is thanks to the *MMJ* that I developed my passion for science communication. I wish I could say there was a pivotal moment when I knew my career would take a different turn—some sort of grand unveiling of the path that lay ahead. What I do know is the time I spent with the *MMJ* aroused a sense of duty in me that science and research should not remain in the confines of journals but should be unleashed in a format that is accessible to all. The *MMJ* plays an important role for the science community—it provides an outlet for disseminating research, with the processes of peer review and publication providing researchers useful feedback. In the public arena, science and scientific research must answer the pinnacle questions "so what?" and "why should I care?" and, in doing so, science becomes meaningful, trusted, and credible.

Twenty years ago "science communication" was a term only familiar to a small clique of journalists and public relations officers. Now research centres, governments, and universities around the world have departments, employees, training programmes, and budget lines dedicated to science communication.

Science communication builds support for science; increases the relevance and understanding of science to society; inspires careers in scientific endeavour; stimulates innovation; and encourages informed decision making by individuals, institutions, and governments. Science communication also helps to counter misconceptions and misinformation. Particularly in the Malawian community, making science accessible to audiences that have traditionally been excluded from science makes science more diverse and inclusive.

Scientific communication differs from science communication—scientific communication, or scholarly communication of science, is scientists communicating to other scientists for example, through peer-reviewed journal articles or conference presentations, while science communication is sharing of science information to non-experts. I specifically use the term sharing as opposed to dissemination, as sharing entails a mutual respect, dialogue, and a two-way flow of information.

Science communication is plagued by the deficit model. The deficit model assumes that people lack understanding because of a lack of information; scientists, as the experts, transmit information to fill these empty vessels of people's minds with "correct information". The expectation is that people's attitudes and behaviours then change in line with the information that they receive. Most scientists often assume this very simplistic view that just by telling people, they will fix them to know better. However, there are multiple examples of where this has failed—climate change, genetically modified organisms (GMOs), and one closer to home: HIV/AIDS education and prevention.

The deficit model fails because people take on information and make decisions based on a number of factors that include religious beliefs, political views, culture, traditional practices, or personal experiences. Other models have been proposed, such as dialogue and participatory science communication; these models provide opportunities for people to have their say and be part of the decision making process.

There are several justifications as to why science communication is important; these include sharing the findings of research, improving trust in the science-society relationship, inspiring excitement in science, providing evidence for policy decisions, and gaining support for science. However, some of these are not strong arguments in the Malawian context. In developed countries, most research is funded through government grants that are generated by taxes; this, to a limited extent, gives the public a role in deciding how the money is spent. Furthermore, the citizens of developed nations are more proactive and vocal, taking their governments to task on policy decisions. Hence why debates remain on vaccinations, climate change, nanotechnology, fracking, and GMOs, just to name a few hot topics of recent years.

In Malawi, levels of poverty, literacy, and access to information are challenges to science communication. However, given that the majority of research conducted in Malawi is medical or social science-related and involves human subjects, and given the important role that science can play in achieving the Sustainable Development Goals, more needs to be done to communicate beyond peer-reviewed journal articles. Malawi is rich with opportunity and, rather than approaching poverty and literacy as a challenge, let them be the backdrop to inspire creativity. The diverse tapestry of culture and media in Malawi presents multiple potential outlets to engage children, youth, women, men, people with disabilities, and the elderly in science, such as through music, art, plays, radio, television, festivals, science cafes, and competitions—the list of possibilities is endless.

There are three main principles of science communication: know your audience, know your message, and know your medium. The trick to knowing your audience is focusing on what the audience needs or wants to learn, not what you want to tell them. Messages should answer questions like "so what?" and "why should I care?". Messages should be framed in terms that are accessible, relatable, and meaningful for the specific audience. Avoid the term "dumbing down the science"; this pits the scientists as the experts and the audience as the uneducated, with too much of how the message is received depending on how it is said. Whether writing an article for a newspaper, giving a public lecture, or tweeting—understanding how to use media effectively enables successful communication of the message.