Not Just a Lab Story:
Insights to Improve Science Reporting in the Philippines[1]

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Introduction

Advancements in science are crucial for societal development (De Semir 2010, quoted in Escano 2013), which is why investments in science, engineering, research, and development are constantly pushed (Clarete et al. 2014). As societies continue to produce—and consequently, be influenced by—scientific innovations, it is equally important that the public is updated with scientific information for decision-making. They are, after all, at the receiving end of the effects of scientific developments, as well as the policies informed by science (Corbett and Durfee 2004).

The public is made aware of scientific advancements largely through mass media, as opposed to highly technical scientific journals, whose main audiences are other scientists. But the media and science should not exist separately. As science engages the public through the media, the media, in turn, disseminates information about the benefits of scientific and technological products (Santos Ocampo 2007) to the public and increase their appreciation for scientific research.

Communicating scientific innovations or discoveries through the media is not straightforward. The media has a crucial task to make sure that scientific information is communicated without losing the integrity of technical information. There is always the risk of oversimplification of ideas, which may lead to communication of wrong information. In an attempt to make science more appealing to readers, journalists have resorted to sensational coverage, mysticism, and pseudoscientific coverage (Congjuico 2017). In the Philippines, the communication of science through the news is underdeveloped: newsrooms are undermanned in science reporters and there is no beat dedicated to covering science issues—indicators of lack of appreciation for the discipline. Clearly, there is a need to develop the science beat in the Philippines, and as the beat gains a stronger voice in newspapers, improvements can be suggested to key players regarding the current coverage by reporters from the local news media.

This policy brief describes the current state of science reporting in the local media by analyzing content produced by online news outlets. Online news articles from January 2015 to January 2017

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were collected through Google News, and science-related keywords were used to select news articles.[4] The articles were selected from search results, until relevant articles were collected, typically at around 10 search page results.[5]

### How is science presented in online news websites?

Findings revealed that four in ten science news articles were found in pages dedicated to science. These pages typically contain stories about scientific breakthroughs and discoveries and technological innovations. As shown in Table 1, only 16% of the collected articles were featured in the national or local section of the news websites, and less than one in ten science articles made it to the headlines.

TABLE 1 Distribution of online science stories, 2015–2017 (N = 306)

Section	n	%
Science, Environment, and Technology	133	43.5%
National/Local	50	16.3%
Business/Finance/Economics	33	10.8%
Others	28	9.2%
Headlines	26	8.5%
Editorial/Commentary	24	7.8%
International/Global	6	2.0%
Health	6	2.0%

Figure 1 shows that most online science news articles were written as straightforward news stories, which means that science articles were treated as traditional and informational type of news. The straight reporting style may also be the reason why the treatment of science stories is mostly neutral (55.6%), and why seven in ten science articles are typically not elaborated or discussed in-depth.

FIGURE 1 Composition of online science news stories in terms of article tone, 2015–2017
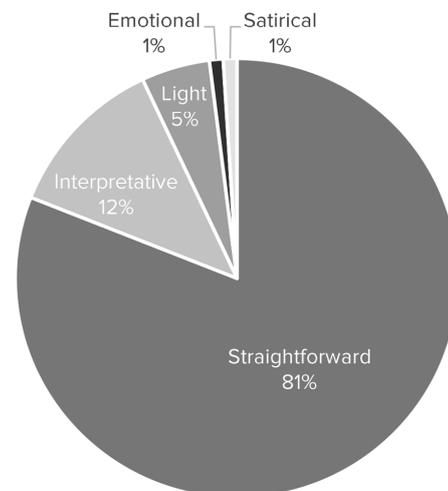
Results also showed that more than half of the science news articles focused primarily on the environmental (26%) and technological aspects (28.3%) of science issues. Although these findings are expected, given the high connection of these themes with science, science coverage neglects to explore its aspects, such as its political implications, economic and social impacts, and its role in governance. The articles were also coded based on the scientific discipline being discussed, with its related concepts explicitly stated and covered in the story. More than one scientific discipline can be covered in a story. Biology and biotechnology were widely covered scientific fields (*see* Table 2), and the greatest number of articles collected featured scientific discovery/innovation (39.4%), and science policy (22.3%).

TABLE 2 Distribution of online science news per scientific discipline (N = 306)

Science Field*	n
Biology	107
Chemistry	21

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[4] The keywords used were science, technology, biology, biotechnology, medicine, astronomy, agriculture, wildlife, physics, chemistry, engineering, environment, and mathematics.

Meanwhile, the following websites were represented in the sample: ABS-CBN News Online, Asian Scientist, Bulatlat, Business Mirror, Business World Online, Cebu Daily News, CNN Philippines, Far Eastern Agriculture, GMA News Online, Inquirer.Net, Kagay-An.Com, Malaya, Manila Bulletin, Manila Times, Manila Standard, Mindanews, Motioncars, Pang-Masa, Philippine News Agency, Philippine Information Agency, Philippine Star, Rappler, Sunstar (Bacolod, Cagayan De Oro, Cebu, Davao, Manila, Pampanga, Zamboanga), and Update.ph.

[5] Five coders were assigned to examine the articles collected. Coders were trained prior to actual article coding. Initially coded articles were subjected to inter-coder reliability tests using Krippendorff's alpha, which yielded scores of at least 0.8 per variable included in the study.

Science Field*	n
Physics	12
Medicine and Health	36
Biotechnology	51
Geology	12
Astronomy	45
Others	22

* Multiple-response

Who gets the biggest share of voice in science news articles?

Most of the science news articles collected showed that the articles mostly used government officials as sources of information. Figure 2 below illustrates the share of each stakeholder as primary source and provider of insights in the science news articles. Government officials were quoted more, as compared to scientists, academics, and material sources of scientific information.

FIGURE 2   Distribution of online science news stories information and quote sources, 2015–2017
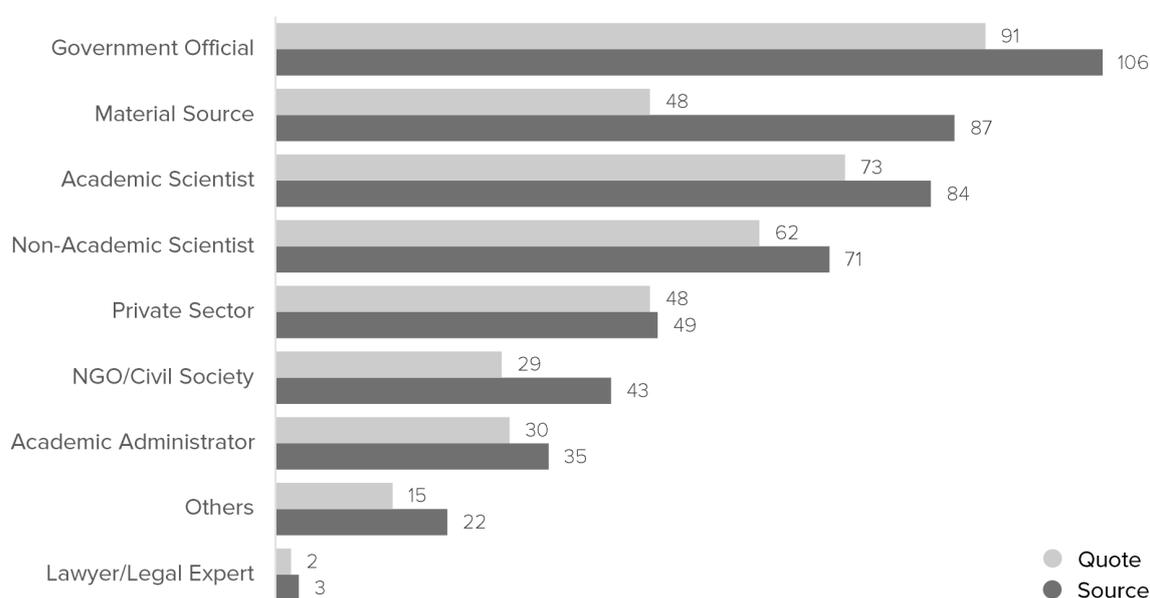
This finding indicates that the government typically takes the spotlight when it comes to science stories, serving as the main actors in online news about science issues. However, since most science articles were straightforward news stories, their insights were typically not elaborated in the article. Almost nine in ten science news articles did not provide in-depth discussions or elaborations regarding the information shared by their sources.

What is the quality of science reporting of online news websites?

More often than not, science stories contain information perceived as too technical or complex. Hence, a good science story must convey technical information effectively to its readers. However, the findings indicate that eight in ten online science articles collected from 2015 to 2017 were not easily understandable,[6] as most articles collected must be read at least twice before one can fully understand their content. Moreover, articles that contained scientific jargon did not explain such terminologies. This finding is aligned with the results on focus elaboration, in that most science articles did not discuss scientific information comprehensively.

The findings also revealed that half of the articles collected were able to relate scientific issues to other issues of society, such as politics and governance, health, and education. However, most of them did not discuss the implications of scientific issues

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[6] Operationally, if an article must be read again before understanding its content, then such article is considered not understandable.

and breakthroughs on everyday living. Coverage is mostly unidimensional, and science reporters fail to communicate how science is connected to other aspects of human society. This may be because most science stories were treated as straightforward news articles, and there is dearth in in-depth science coverage among online news outlets. Furthermore, this unidimensional coverage of science manifests in the placement of science news stories in special science sections, reinforcing the idea that science is distinct and separate from other events in society.

The research determined the quality of news using five indicators, namely: clarity of news story, understandability, diversity in approach, relatability, and engagement. Coders were asked to answer either YES if the article satisfies a specific indicator and NO if it does not. Table 3 summarizes the quality of science news articles across the indicators of quality science reporting included in the study. Overall, the research found that science online reporting in the Philippines has low quality, and most of the articles were found to be disengaging. The low level of understandability and the unidimensional coverage of science reinforce notions that science is not for everyone and may pose long-term effects on the development of a science-literate public in the Philippines.

TABLE 3 Science news quality indicators (N = 318)

Indicator	Yes	No
The story, or some of its passages, must be read multiple times to be understood.	79.6%	20.4%
The story provided necessary explanation on jargons used.*	49.0%	53.0%
The story was able to relate the issue to one or more sectors.	56.2%	43.8%
The story explicitly discussed the implications of the story to non-scientists.	42.2%	57.8%
Overall, the story was engaging.	49.8%	50.2%

* n = 102

How do treatment and source choice influence quality of coverage?

The study found that the quality of science news is associated with the way reporters treat science stories and their choice of sources in their articles.

In terms of article length, longer science articles were more likely to have better quality of science coverage ($r = .19$, $p < .01$). These articles were likely in-depth science news stories, which allow for more extensive explanations on technical information, inclusion of a diverse set of sources, and discussion on the implication of science issues for non-scientists. Evidently, articles that elaborate on science issues have significantly better news quality than stories that did not provide in-depth discussions on science issues.

Science stories significantly differed in quality in terms of section placement ($F(6, 311) = 3.74$, $p < .01$), as revealed through an analysis of variance (ANOVA) test. Articles placed in the editorial or commentary sections were significantly lower in quality, as compared to articles placed in national/local news ($p < .05$) and articles placed in other sections, such as travel, lifestyle, culture, etc. ($p < .01$). Articles from editorial or commentary sections are different from news articles; editorials or commentary articles are opinion pieces written by opinion leaders, experts, and individuals who represent a certain population. Most of the time, these articles are one-sided and lack a multi-sectoral perspective about scientific issues. Hence, some of the content may be disengaging to the general public.

Additional ANOVA tests also showed that quality of science news stories differed when it comes to story tone ($F(4, 324) = 6.54$, $p < .001$). Specifically, science stories written as straightforward news had lower quality, as compared to those written in an interpretative way or more elaborated manner ($p < .001$). Stories with elaborated elements, typically observed in interpretative articles, have significantly higher quality as compared to those with simple elaboration, both in terms of the story focus ($t(324) = -.12$, $p < 0.001$) and story actors ($t(296) = -2.38$, $p < 0.05$).

ANOVA results showed that quality differed in terms of the main actors in science news stories ($F(7, 289) = 2.79$, $p < .01$). Stories that feature non-academically affiliated scientists as main actors in news stories had low quality, as compared to members of civil society ($p < .01$) and members of the private sector ($p < .001$).

Recommendations

The findings of this research provide insights for media outfits and scientists in improving the way science is being communicated in the media.

Media outlets must rethink the way they cover science in the Philippines. At present, the coverage of science is confined to the presentation of scientific information and discovery. Moreover, science stories are typically contained in separate science pages, and less than one in ten science stories make it to the headlines. Scientific information should be used to support and inform pertinent issues being presented by news outlets. Moreover, there should be more comprehensive coverage of science, which takes the viewpoints of various sectors of society. Media outlets can review the training of their reporters when it comes to science and reexamine existing guidelines for reporting to ensure better science reporting.

The media must continuously engage with scientists and ensure that they have a voice in every story that needs their scientific inputs. The findings show that government officials have the largest share of voice in science news stories. While it is recognized that they are important sources regarding various issues, scientists and researchers must be given equal voice in any coverage that requires their technical expertise. Inputs from scientists must be valued, as scientists are in the best position to speak about issues related to science. Journalists can strike the balance and ensure that other stakeholders are given a voice to humanize and contextualize science stories. Editorial policies may be reviewed to ensure that such treatment of news stories is applied in their coverage.

Finally, ***scientists should be encouraged to foster active engagement with the media and improve the way they communicate about their discipline.*** Scientists can communicate better by underscoring the practical implications of their research, and through the media, increase public awareness of science and technology. Moreover, institutions such as the academe and the government can strengthen their efforts to bring together different sectors and develop that critical mass to advance science in the Philippines.

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