

A Student Organization's Use of Social Media in Promoting the Geosciences

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ABSTRACT

Social media has changed the landscape of human communication and interaction. Scientists, researchers, and scientific organizations are now gradually engaging in these online platforms. Understanding how social media works requires a closer look at the current practices and beliefs of its users. This study sought to determine how an undergraduate student organization used social media in achieving its goal of promoting the geosciences. It also aimed to describe the perceived usefulness of social media in this endeavor. To this end, members of the University of the Philippines Geological Society answered an online survey. Results revealed that the majority of the respondents use social media to acquire and disseminate geoscience-related content. They expressed positive perceptions of its use in promoting the geosciences. Content analysis of the organization's Facebook page showed that it was used for academic and non-academic organizational activities. It is recommended that similar studies involving more groups and social media platforms be conducted.

Keywords: *Social media, science communication, geosciences, perception, student organization*

INTRODUCTION

Social media has opened new opportunities for communication, collaboration, and connection among individuals. Examples of social media include blogs, wikis, sharing tools, and networking sites (Tarantino, McDonough, & Hua, 2013). Through these web-based tools, users are able to share their content and forge social networks (Bowen, Gordon, & Chojnacki, 2017). Social media provides two-way communication among its users. It also allows fast dissemination of information (Collins, Shiffman, & Rock, 2016).

Online engagement has seen a new phase with the rise of social media. This rapid proliferation is considered to be the result of improved and advanced computers, mobile devices, broadband, and software tools (Faizi, El Afia, & Chiheb, 2013). Presence in the virtual world is sometimes equated to the use of these platforms. Almodiel (2017) mentioned that absence in social media is almost tantamount to non-existence. Given that 97% of Internet users are in social media (Orlanda-Ventayen & Ventayen, 2017), one's subsistence in the cyberspace is dependent on these technologies.

Social media has become such an integral part of life for many, especially the youth (Mim, Islam, & Paul, 2018). Globally, there are about 2.8 billion social media users (Almodiel, 2017). Approximately 58% of the Philippine population use the Internet while 56% use social media (Orlanda-Ventayen & Ventayen, 2017). As early as

2009, data have shown that in the United States alone, social media such as social networking sites (SNS) were utilized more widely compared to other online systems like emails (Thackeray & Hunter, 2010). The way people communicate, work, transact, and socialize has changed due to the rise of these web-based applications. Pocket-sized gadgets such as smartphones made it even easier to access social media and the internet in general.

Due to its popularity, especially among the youth, social media can also be tapped by scientific organizations to build rapport among their subscribers and disseminate scientific information (Bohon et al., 2013). The type of social media used by scientists is vast (Van Eperen & Marincola, 2011). Yet, the extent to which researchers and scientists use social media is still an area to be explored.

Cruz and Jamias (2013) described how social media has become increasingly popular among scientists. These social media sites are now used to discuss science through various fora (Cruz & Jamias, 2013). Collin, Shiffman, and Rock (2016) indicated that scientists across disciplines are utilizing social media for scientific exchanges. Priem and Costello (2010) reported that academics in the United States and the United Kingdom are engaging in Twitter for communication and citation. Some scientists, however, consider social media, such as Facebook and Twitter, as "unprofessional platforms that may compromise or threaten years of life-changing research" (Van Eperen & Marincola, 2011, p.2). Despite this skepticism,

opportunities to maximize its use for scientific promotion warrant consideration. People now depend on different media formats to access science news (Su et al., 2015).

In a technology-driven society, online presence can benefit scientists in terms of boosting their research's visibility and allowing constructive conversations (Bik & Goldstein, 2013). Popular scientists such as the late Stephen Hawking have used social media to share scientific content while integrating into a wider audience worldwide (Van Eperen & Marincola, 2011). Professional social networking sites such as Academia, ResearchGate, and LinkedIn also help in initiating collaborations and cultivating new ideas (Darling et al., 2013). The extent to which social media has been used by individual scientists, researchers, and scientific organizations have been reported in previous studies.

Bombaci et al. (2015) described how Twitter effectively relayed the message of a conservation science conference to a wider audience beyond the said conference. This suggests the potential of Twitter and other SNS to promote science beyond the confines of conference venues, lecture rooms, and laboratories. Darling et al. (2013) mentioned the opportunities for scientific exchanges on Twitter. They discussed how Twitter can be used to receive feedback from colleagues, present pre-print versions of scientific publications, and communicate published findings to a broader audience. Such versatility of social media extends even to the realm of science education. For example, Schroeder and Greenbowe (2009) encouraged educators to explore Facebook as a supplement to classroom instruction in chemistry. In a local study among Filipino undergraduate college students, Beltran-Cruz & Cruz (2013) noted that those who took up a biological sciences course became more engaged and had better experiences when face-to-face instruction was integrated with activities employing online social network.

One has to note, however, that social media is not devoid of certain limitations. Twitter and other SNS may increase scientific conversation but they can also pose issues on intellectual property, ownership, and misrepresentation of science (Darling et al., 2013). Science communication through media, in general, faces other pressing concerns such as the unintentional early releases of confidential information, over-sensationalizing of events, and misinterpretation and miscommunication of research results (Lutz et al., 2018).

Promoting the Geosciences through Social Media

Communication is essential in promoting science. Scientists are urged to engage in conversation among themselves and with the general public. However, administrative responsibilities, lack of support, and financial constraints have hindered scientists to engage in public outreach (Spencer et al., 2017). These challenges warrant the need for alternative platforms where scientists and the public can dialogue with each other. Disseminating technical information is particularly challenging for geoscientists because of the public's unfamiliarity to the geological realm (Stewart & Lewis, 2017).

In a study on geoscience education in Ireland, Neenan and Roche (2016) considered social media as a modern tool that can be used as a dialogic tool to engage the public. However, no prior research has been done to describe how Irish geoscience institutions use social media and how effective they are. Aside from social media, other media outlets can also be tapped in communicating popular geoscience. Stewart and Nield (2013) reported that 'earth science' stories included in UK newspapers have increased in the last decade and have exceeded biology, chemistry, and physics.

An investigation into how groups and individuals promote geoscience through social media could possibly encourage more geoscientists and researchers to explore these modern platforms. Geoscience blogs and social media pages may significantly influence the public's perceptions of geoscience (Neenan & Roche, 2016). Given the complexity of the information ecosystem, it is imperative for those involved in promoting science to engage in multiple outlets to leave a perceptible impact (Spencer et al., 2017).

Research Purpose

In order to understand how social media can be used to promote the geosciences, one must look into the existing practices and beliefs of certain individuals or organizations that are committed to the same goal. Thus, this study focused on describing how a university-wide academic organization has used social media to promote the geosciences and how they perceive its usefulness. Specifically, this research aims to:

1. Describe how the organization and its members used social media in promoting the geosciences.
2. Find out how the members of the organization perceive the usefulness of using social media in advancing the geosciences.

Significance of the Study

Social media is used to create, communicate, and disseminate information. Scientists and other members of the academe have started to use social media platforms. This study aims to contribute new knowledge on the use of social media in promoting the geosciences. This is particularly crucial in the Philippine context given that the majority of its population is in social media. Understanding how an academic student organization maximizes the benefits of social media may provide insights on how other groups and individuals can use the same platforms in achieving their goals.

MATERIALS AND METHODS

Research Design

This study employed the survey research design and the content analysis research design. An online survey was used to gather information regarding the type of social media that the organization and its members use to promote the geological sciences. It also asked the respondents to rate the usefulness of using these social media sites. Responses to the open-ended questions in the survey provided more qualitative information.

Aside from the survey, a content analysis was done on the organization's Facebook page. This analysis focused on the frequency of posting, the contents of the posts, and the number of interactions (e.g. likes, shares) with the posts. The posts covered in this analysis were those published during the school year 2018-2019.

Participants

The respondents in the survey were purposively sampled. All active members of the University of the Philippines Geological Society or UP GeoSoc during the school year 2018-2019 were invited to participate in the online survey. Seventeen members of the organization answered the survey questionnaire. Established in 1957, UP GeoSoc is considered as a premier college-based academic organization in the Philippines which aims to promote the geological sciences by partnering with those in the industry and the academe ("UP Geological Society," n.d.).

Permission from the organization's president and faculty adviser was obtained prior to the conduct of this study. The respondents were informed of the purpose of the survey and were told that their participation in it is purely voluntary.

Instruments

A researcher-made online survey was developed to gather data from the respondents. The first section of the survey asked for the respondents' demographic information. The second section focused on the type of social media that the respondents use to learn and promote the geosciences. The third section sought the respondents' views on the advantages and disadvantages of using social media. The last section of the survey used a five-point Likert scale to describe the respondents' perceptions about the use of social media in promoting the geosciences. The Cronbach's alpha value for the last section was determined to be 0.82, suggestive of good internal consistency.

Statistical Analysis

Survey and content analysis data are presented in this study using descriptive statistics such as frequencies, percentages, means, and standard deviations.

RESULTS AND DISCUSSION

Respondents' Demographic Profile

The 17 respondents who participated in the survey consist of undergraduate geology students. Eleven of the respondents are male while six are female. The majority of them (10 out of 17) were on their first year as members of the organization; one was on his second year; two were on their third year; while four have been members for at least four years.

How the Organization and Its Members Use Social Media in Promoting the Geosciences

The respondents identified Facebook, Twitter, and Gmail as their most commonly used social media platforms. As of June 1, 2019, the organization's Facebook page has a total of 4,943 likes. Meanwhile, its Twitter account has a total of 260 followers.

The results show that all the respondents maintain Facebook and Gmail accounts. Facebook and Gmail are the most commonly used social media platforms. They were followed by YouTube (88.2%), Google (82.4%), Twitter (64.7%), Instagram (47.1%), Wikipedia (41.2%), Yahoo! Mail (29.4%) and WordPress (5.9%). These results corroborate with those presented by Serrano and Yambao (2015) who listed Facebook, Google, Yahoo, YouTube, Wikipedia, Twitter and WordPress among the top ten most visited social media sites in the Philippines. All the respondents have used Facebook to promote the advocacies and projects of the

organization. More than half (58.8%) of them reported that they have used Twitter for the said purpose. Others mentioned Gmail (35.3%), Instagram (29.4%), Yahoo! Mail (5.9%), Google (5.9%), and Blogspot (5.9%).

The respondents were also asked to identify the type of social media they use in posting or promoting contents related to the geosciences, to which all mentioned Facebook. More than half (58.8%) said that they have used Twitter. This was followed by Instagram (41.2%) and Gmail (5.9%). These observations of using social media in science communication and promotion have also been documented in earlier studies. Collins, Shiffman, and Rock (2016) noticed that more than 50% of the scientists they have surveyed used Facebook and Twitter. They used these sites to follow science-oriented pages and to tweet scientific content (Collins, Shiffman, & Rock, 2016). Cruz and Jamias (2013) concluded that researchers at the University of the Philippines Los Baños (UPLB) recognize the impact that social media can have on their researches. Engaging in the present media landscape allows scientists and scientific organizations to lessen the skepticism towards science, improve public understanding of science, and promote critical reflection of scientific work (Lutz et al., 2018).

With regard to the reasons why they opted to use social media, all of the respondents indicated that they use them mainly for communication and academic purposes. Ninety-four percent (94%) of the respondents said that social media promotes socialization. They also use social media in fulfilling their tasks in the organization (94%). Meanwhile, 94% used social media for reading news and current events and 88.2% used them for leisure.

The respondents identified some of the advantages of using social media. These include easier communication and access to information. They also considered social media as a viable means to increase the organization's online visibility. Social media helped them in promoting geology by allowing them to post informative content. The respondents were also aware of the disadvantages associated with social media. There is a prevalence of fake news, malicious information and unwanted online behaviors such as bullying. Users also need to invest time and resources in it.

Content analysis of the organization's Facebook page revealed that of the 77 posts during school year 2018-2019, 35.1% presented informative contents on topics like mineralogy, plate tectonics, and paleontology. These posts were in the form of images and videos. This can be helpful given that videos and images enhance

sensory experiences and may be more effective than simple text (Moltaji, 2018).

Table 1 summarizes the type of posts published in the organization's Facebook page as well as the cumulative number of reactions, shares, and comments that they garnered as of June 1, 2019.

Table 1. Descriptive statistics of the organization's Facebook page posts for school year 2018-2019

Theme	Total Number of Posts	Percentage of Posts	Total Number of Reactions	Total Number of Shares	Total Number of Comments
Academic/ Scientific	27	35.1%	1871	1702	106
Organizational Events/ Projects	27	35.1%	1418	866	53
Social advocacies	2	2.6%	7	2	0
Others	21	27.2%	720	104	82
TOTAL	77	100.0%	4106	2674	241

Almost two-thirds (70.2%) of the total number of posts indicated either scientific information or organizational projects and events. These posts also garnered the highest number of reactions and shares. Scientific posts presented topics such as minerals and plate tectonics. Different events like laboratory tours and a national geology congress were advertised in the page. Congratulatory notes for Filipino geologists and scientists were also observed. Other social advocacies such as gender equality were shared in the page. Birthday greetings and other posts were grouped into the category 'Others'.

Facebook is currently the most visited social networking site (Bik & Goldstein, 2013). The considerable audience size and ease of sharing information in Facebook makes it possible avenue for science outreach (McClain, 2017). Serrano and Yambao (2015) showed that Facebook is no longer just a venue for socialization but can also be used for academic collaboration. Su et al. (2015) found out that certain cohorts such as those who are more trusting of online news media prefer online-only sources of scientific information. Collins, Shiffman, and Rock (2016) described how scientists use Facebook to share their lab experiences, find inspiration for science outreach, and correct science misconceptions. A similar study on Twitter described how it can be utilized to increase the social impact of scientific publications (Darling et al, 2013).

Despite the positive qualities usually attributed to social media, some concerns have been raised concerning its use. In a study conducted among undergraduate students, the respondents commented that social media is addictive, time-consuming, distracting, and risky (Almodiel, 2017). Platforms such as Facebook and Twitter have also been considered unideal for dialogic communication due to impediments such as anonymity, advertisements, and other distractions (Kent, 2013; Lee and VanDyke, 2015). Wilkinson and Weitkamp (2013) mentioned that even researchers are still adapting to the use of social media and very few of them communicate to their fellow researchers and even non-academics using non-conventional means. Still, social media has arguably changed how scientists relate to each other and to the general public (Darling et al., 2013). If used effectively, social media can boost awareness, curiosity, and interest among its users (Spencer et al., 2017).

Perceived Usefulness of Social Media in Promoting the Geosciences

The results shown in Table 2 suggest that UP GeoSoc members have high regard for social media in terms of its usefulness in advancing the goal of the organization to promote geology and other earth science-related disciplines. The respondents agreed to continue using social media in promoting the geosciences. They also encourage other scientific organizations to consider using social media for science communication.

Table 2. Perceived Usefulness of Social Media

Survey Question	<i>M</i>	<i>SD</i>
Social media helps us in promoting the advocacy and projects of the organization.	4.94	0.24
Our organization should continue using social media to achieve our goal of promoting the geosciences.	4.94	0.24
Scientific organizations should consider using social media as their platform for science communication.	4.94	0.24
Social media helps us promote geology and other earth science-related disciplines.	4.82	0.53
I feel positive about the use of social media in promoting the geosciences.	4.82	0.39
I will personally use my social media accounts/profiles to promote the geosciences.	4.71	0.59
Our social media account/s post/s relevant information about the earth sciences.	4.53	0.51
Social media is effective in helping communicate the geosciences to the general public.	4.53	0.72
The use of media helps me in acquiring and sharing knowledge about the geosciences.	4.47	0.62

Lutz et al. (2018) emphasized the importance of social media in enhancing science-media and scientists-public relationships. Scientists have also recognized the advantages of using social media in the workplace (Collins, Shiffman, & Rock, 2016). However, given that doubts still exist in the credibility of using social media in communication science (Weingart & Guenther, 2016), serious discussions about its use are warranted. Metrics must also be developed in order to understand and refine online tools (Bik & Goldstein, 2013).

CONCLUSION AND RECOMMENDATIONS

This study focused on describing the experiences of an academic student organization in advancing the geosciences through social media. The results of the study revealed that majority of the respondents personally use social media sites such as Facebook, Twitter, Gmail, and Instagram. They have used these sites in promoting geology and other earth-science related disciplines. The respondents mentioned that social media helped in increasing their organization's online visibility. This helped them in promoting the organization's projects and advocacies.

Based on survey results, the respondents considered social media as an effective means to acquire and communicate scientific information. They found social media to be helpful in communicating the geosciences to the public. Hence, the respondents expressed their willingness to continue using social media individually and collectively as an organization.

The scope of this study is limited to just one student organization. Thus, a more comprehensive study involving multiple cohorts is highly recommended. Researchers may also investigate social media platforms other than Facebook. Student organizations and other scientific groups should look into their social media usage and discuss its effectiveness.

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