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The Roles of Social Media
in Promoting Sustainability in Higher Education

SERENA CARPENTER[1]
BRUNO TAKAHASHI
Michigan State University, USA

CARIE CUNNINGHAM
Duquesne University, USA

ALISA P. LERTPRATCHYA
Michigan State University, USA

University sustainability leaders can strategically employ social media tools to encourage the adoption of sustainability behaviors among students, faculty members, and staff. Their effectiveness and reach, however, are constrained by campus sustainability leaders' interpretation of social media. We investigated the perceived functions of social media held by the top sustainable universities in the United States to engage stakeholders in sustainability matters using social media. Interviews with sustainability officers and student leaders at 21 universities revealed that leading U.S. sustainable universities do rely on social media channels to reach large audiences; however, sustainability leaders do not fully understand how to effectively use them. Sustainability leaders primarily perceive social media platforms as useful for encouraging action and disseminating information, but they rarely use it to build community around causes and groups.

Keywords: institutions of higher education, social media, campus sustainability, information, community, action

Serena Carpenter: carp@msu.edu
Bruno Takahashi: btakahas@msu.edu
Carie Cunningham: carieleecunningham@gmail.com
Alisa P. Lertpratchya: lertpra1@msu.edu
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Institutions of higher education now rely on social media platforms (e.g., Twitter, Facebook, Instagram, etc.) because they are an efficient and inexpensive approach to address barriers such as a lack of engagement, awareness, and finances (Horhota, Asman, Stratton, & Halfacre, 2014). Communicators use social media platforms to engage organizational stakeholders across various areas (e.g., Guo & Saxton, 2013; Lovejoy & Saxton, 2012; Ramanadhan, Mendez, Rao, & Viswanath, 2013), including sustainability efforts and initiatives (e.g., Reilly & Weirup, 2010). Individuals or institutions engage in sustainability efforts to provide "the resource and services needs of current and future generations without compromising the health of the ecosystems that provide them" (Morelli, 2013, p. 6). Sustainability leaders can use social media platforms to aid their sustainability efforts by disseminating information about their campus sustainability efforts, policies, and progress. These channels also allow communicators to reach audiences in their individual spaces, which is important because many environmental behaviors involve personal behaviors such as recycling and turning off lights (Williams, Page, & Petrosky, 2014). Scholars have investigated how organization leaders use social media to engage their stakeholders (e.g., Guo & Saxton, 2013; Lovejoy & Saxton, 2012; Ramanadhan et al., 2013). Research is needed, however, that investigates the specific ways in which institutions of higher education employ social media tools to communicate sustainability messages to their publics. The study of social media communication is critical because students, often young people, are the target audiences for campus sustainability campaigns. In fact, social media messages have been shown to be more effective in affecting environmental knowledge, attitude, and behaviors than educational campaigns related to electricity use and greenhouse gases (Marcell, Agyeman, & Rappaport, 2004). Perhaps because young people have grown up with the Internet and access it through their mobile devices, they are more likely to stumble on information on their social media channels rather than seeking it out and engaging in online relationships with strangers (Douglas, Raine, Maruyama, Semaan, & Robertson, 2015). Hypothetically, sustainability communicators likely will have to understand social media cultures and communication approaches if they want to reach campus publics and have a positive impact on sustainability awareness and behaviors.

In the present study, we explored how campus sustainability communicators view social media as a communication tool in their campus sustainability efforts by employing Lovejoy and Saxton's (2012) conceptual framework of the organizational communicative functions of social media. Based on a content analysis of tweets sent by 100 of the largest nonprofit organizations in the United States, Lovejoy and Saxton identified the organizational communicative functions of social media that can be grouped into three key dimensions: information, action, and community. We accomplished our theoretical exploration through qualitative interviews with 29 campus sustainability officers and eight student sustainability group leaders at 21 U.S. universities.

Literature Review

Social Media Uses in Environmental Campaigns

Social media tools are used widely by communicators. These social media channels provide organizations with efficient ways to spread their messages and build communities. For example, social network sites such as Facebook can affect and foster collective decision making (Iandoli, Klein, & Zollo, 2009). In addition, some formerly disadvantaged environmental groups are now able to level the playing

field because the Internet allows individuals and organizations to quickly disseminate information to large audiences, overcome geographical barriers, reduce costs and censorship obstacles, facilitate networking opportunities with potential donors and volunteers, and engage in two-way communication (Brunsting & Postmes, 2002; Kent, Taylor, & White, 2003; Lester & Hutchins, 2009; Pickerill, 2001; Shaiko, 1999; Taylor, Kent, & White, 2001). Environmental groups also use online and social media platforms as a news source. Social media channels are "communication systems that allow their social actors to communicate along dyadic ties" (Peters, Chen, Kaplan, Ognibeni, & Pauwels, 2013, p. 286). The Internet enables less established environmental groups to publish their own information, bypassing journalists' gatekeeping role in which they select and frame stories from more narrow perspectives (Lester & Hutchins, 2009). In fact, blog platforms were one of the earliest venues for activism, information dissemination, and environmental discourse (Ekdale, Namkoong, Fung, & Perlmutter, 2010). Today, social media channels have expanded the repertoire of communication channels, increasing opportunities for interaction with audiences for these groups (Askanius & Uldam, 2011; Segerberg & Bennett, 2011).

In summary, research on social media use related to environmental or sustainability issues has focused mostly on environmental activism (Pickerill, 2001) and environmental behaviors that seek to minimize the negative impact of people's actions on the natural and built world (Kollmuss & Agyeman, 2002; Robelia, Greenhow, & Burton, 2011). Research examining the uses of social media in sustainability in higher education is minimal. Some recent work, from a public relations perspective, posits that the Internet can allow organizations such as universities to build lasting and meaningful relations with their various internal and external stakeholders using social media channels (McAllister-Spooner, 2009).

Social Media Functions

The emergence of social media has created an opportunity for organization communicators to interact with the public in such a way that traditional media and static websites cannot. People who use social media perceive that they have more power in creating change than those who do not use social media to reach publics (Porter, Sweetser Trammell, Chung, & Kim, 2007). The bundling of social media platforms has become an important way for organizations to manage their reputations and maintain relationships with the public (Lovejoy & Saxton, 2012; Wright & Hinson, 2011). Many organizations, including institutions of higher education, actively use social media as part of their communication efforts (Barnes & Lescault, 2011; Cho, Schweickart, & Haase, 2014). Organizational leaders perceive social media platforms as an effective way for organization promotion and community building (Carim & Warwick, 2013). As a result, some researchers try to understand how organization leaders and communicators use social media (e.g., Kelleher & Sweetser, 2012). Much organization-level research still aims to explore how communicators and leaders use social media through content analyses of organizations' social media accounts (e.g., Cho et al., 2014; Ramanadhan et al., 2013). As social media channels are relatively new compared with traditional media such as television and radio, theoretical frameworks to identify how communicators employ social media as an organizational communication tool are still needed because social media features such as tagging, sharing, and instant personal messaging allow organization communicators to use social media in unique and diverse ways.

One of the few conceptual frameworks on social media use by organization communicators is a theoretical lens developed by Lovejoy and Saxton (2012). They conducted a content analysis of 100 nonprofit organizations' use of Twitter and identified three main functions: information, action, and community. The information function involves one-way communication in which information is published on social media with the sole purpose of sharing. The action function refers to the use of social media to encourage such actions as donating, volunteering, and participating in events. Lastly, the community function involves the use of social media to stimulate and engage in conversations with other social media users. Many researchers have adopted the framework to explore whether organization communicators have fully used social media as a communication tool (e.g., Campbell, Lambright, & Wells, 2014; Thackeray, Neiger, Burton, & Thackeray, 2013). The majority of these studies have supported the validity of these three main functions of social media use by organizations (e.g., Campbell et al., 2014; Guo & Saxton, 2013; Ramanadhan et al., 2013; Rui, Chen, & Damiano, 2013). In the present study, Lovejoy and Saxton's framework provided a useful lens to explore how campus sustainability communicators use social media in their campus sustainability efforts (e.g., reducing the campuses' environmental footprint, incorporating sustainability into the colleges' curriculum, influencing students' and staffs' environmental practices). Next, we describe the three functions identified by Lovejoy and Saxton in more detail.

Information function. The information function of social media involves a one-way messaging strategy in which organizations simply share information with the sole intention to inform publics (Lovejoy & Saxton, 2012). Similar to more traditional content vehicles such as newspapers, television, and press releases, social media platforms allow organization leaders to disseminate information such as the organization's activities, news, reports, and facts (e.g., Saxton, Guo, & Brown, 2007; Waters, 2007). For example, communicators could inform students, faculty members, and staff about their campus sustainability policies and progress (Lehrer & Vasudev, 2011). Campus sustainability leaders' desire to increase awareness about environmental issues or campus activities across various groups is one of the most frequently mentioned challenging goals of sustainability communicators (Velazquez, Munguia, & Sanchez, 2005). Communicating information effectively is a first step in raising awareness and changing behaviors (Djordjevic & Cotton, 2011). Social media tools better enable campus sustainability leaders to share information to increase awareness about local efforts and issues among their audiences, including students, faculty members, and staff (Williams et al., 2014).

This information function is similar to Grunig and Hunt's (1984) press agentry and public information models, which emphasize the historical and necessary function of disseminating information to publics in public relations. The information role of communicators has been found to be a dominant form of organizational communication across social media channels (e.g., Bortree & Seltzer, 2009; Lovejoy, Waters, & Saxton, 2012; Xifra & Grau, 2010). For example, Saxton and Waters (2014) found that slightly less than 50% of Twitter messages from top-100 nonprofit organizations were informational in nature. Thus, we expected that sustainability leaders would support the information function, and we also explored how they enact it.

Action function. The second primary function of organizational social media strategies is action. Sustainability leaders can use social media to inspire behavioral changes such as increasing online money donations or offline demonstrations (Bekkers, 2010; Gandía, 2009; Valenzuela, Arriagada, & Scherman,

2014). This function involves using social media to get stakeholders to do something for the organization, which makes it the most outcome-oriented function of the organizational social media strategies (Lovejoy & Saxton, 2012). Advocacy and involvement from students, faculty members, and staff are crucial to the success of campus sustainability efforts (e.g., Brinkhurst, Rose, Maurice, & Ackerman, 2011). For example, sustainability leaders can directly or indirectly ask followers to attend an event, make a donation, recruit other attendees, buy a product, or adopt a specific political view. The action function of social media involves crafting messages intended to encourage followers to engage in a specific action to help the organization fulfill its overall mission. This perspective reflects the organizational perception that followers on social media should be seen as a resource that can be mobilized to help the organization achieve societal change (Lovejoy & Saxton, 2012).

We expected that campus sustainability communicators would depend on social media channels to encourage environmental actions, even though Lovejoy and Saxton (2012) found that nonprofit organization communicators rarely use the action function in their social media efforts. The action function would hypothetically be a logical strategy given that the success of campus sustainability relies heavily on the cooperation from the campus population (e.g., Barlett & Chase, 2004; Leal Filho, 2009). For example, institutions of higher education leaders can directly ask campus community members to reduce their energy consumption or food waste. Alternatively, they can employ subtler strategies such as posting information highlighting how sustainability behaviors are the norm for a notable proportion of campus residents, which research has shown increases the adoption of environmental sustainable behaviors (Hopper & Nielsen, 1991).

Community function. The community function is unique to social media platforms. The community function involves applying social media to build and nurture the participation of members around passion points related to the organization, which include dialogue to facilitate community building around causes. Organization leaders traditionally have broadcast news about their latest event on television, shared their annual progress report in a newspaper, or e-mailed messages to subscribers to encourage them to donate. The interactivity characteristic of social media, however, sets them apart from more traditional media by offering the increased potential to build relationships between organizations and their stakeholders (Waters, Burnett, Lamm, & Lucas, 2009), which are crucial to the success of campus sustainability efforts (Barlett & Chase, 2004). Social media's dynamic and interactive features make them an ideal channel to engage in dialogic communication (i.e., a negotiated exchange of ideas and opinions with the goal of interacting honestly and ethically with publics; Kent & Taylor, 1998; Kent et al., 2003) with stakeholders (e.g., Lovejoy & Saxton, 2012; Waters & Jamal, 2011). Communicators can post messages designed to initiate conversational responses and replies to messages from individual stakeholders to foster bonds with individuals. For example, Facebook allows users to directly post on the wall of a specific user, and Twitter's use of the @ symbol allows users to directly reach specific people.

A strong online community can increase campus residents' involvement and behaviors both online and offline (Yoo, Suh, & Lee, 2002). The community-building aspect of the community function involves strengthening the ties within the online community without an expectation of interactive communication. The campus population consists of people with weak ties (i.e., relationships between individuals or groups of individuals who most likely would not have connected unless it involves a common interest;

Granovetter, 1973). Sustainability communicators can use social media by sharing information that demonstrates their ties with one another (Brown & Reingen, 1987). Social media tools allow communicators to maintain several online communities, with each community tailored to a specific group of stakeholders or causes such as online communities devoted to climate change or energy conversation. Organization leaders can also strengthen weak ties or associations among participants by giving recognition to users or acknowledging noteworthy contributions such as posting messages thanking volunteers who supported their latest event or tweet messages cheering a local team. We anticipated that campus sustainability communicators would use social media to create a presence of community by showing appreciation to the campus community.

Research Questions

Social media serve many useful purposes such as assessing sentiment, engaging publics in causes, creating communities, and recruiting volunteers. Social media communication can have even more impact when it involves an educated and young campus population. We assessed how sustainability communicators in institutions of higher education perceive social media and their functions related to sustainability issues and in what specific ways they enact these functions because these communication platforms transform how they reach audiences. Therefore, we asked the following research question:

RQ1:   *To what extent and how do sustainability leaders at institutions of higher education use social media for action, information, and community?*

We also addressed the social media literacy of sustainability communicators. The vast literature on media literacy mostly focuses on the importance of critically selecting and interpreting media programming and information (Potter, 2016; Silverblatt, Miller, Smith, & Brown, 2014), but less deals with examining the effect of media literacy (or lack of it) on the use of social media and production of media messages. Previous research has shown that senior staff often rely on digitally literate employees for direction on social media channels. One reason that people in leadership positions do not financially invest to a great degree is that most social media channels simply require participation and time for a return on investment (Obar, Zube, & Lampe, 2012).

Yet, a lack of direction from management often creates content that does not reflect the mission or communication intent of the organization and causes individual stress because social media communicators are unsure how to navigate their organizational role (Carpenter & Lertpratchya, in press). The social media literacy of management may explain its interpretation of the functions of social media. Therefore, we proposed the following research question:

RQ2:   *How social media literate are the sustainability leaders at institutions of higher education?*

Method

This study is based on qualitative analysis of face-to-face semistructured interviews with campus sustainability communicators (Schostak, 2005). The three main functions of organizational social media

functions proposed by Lovejoy and Saxton (2012) may not cover all social media uses by campus sustainability communicators in their campus sustainability efforts. Thus, we used a qualitative methodological approach to allow for the discovery of other potential functions used by sustainability communicators.

Sampling Procedure

Interviewees consisted of sustainability communication leaders from the top- ranked universities in the area of sustainability. We found the top-25 schools through a comparative analysis of six different national ranking systems. According to an article "Higher Ed Sustainability Ratings, Rankings and Reviews" (Greener U, 2010), there are 10 ranking systems pared down to 6 ranking systems: Best Business Programs in Sustainability, Beyond Grey Pinstripes, Greenopia College and University, Guide to 286 Green Schools, Princeton Review, and STARS Ranking. These rankings include varying measures from energy to public engagement to curriculum and other measures. Schools that appeared in at least two of the ranking systems were chosen and contacted by e-mail or phone asking them to identify people qualified to speak about their communication strategies. We asked the identified individual to confirm this expertise or to identify a person more qualified in the area of social media to answer questions. Representatives from 21 (11 West, 5 East, 2 Midwest, 3 South) of the 25-top schools responded, and we conducted 37 interviews with sustainability leaders across the United States.

The sample included professional sustainability leaders (n = 29) and student sustainability group leaders (n = 8) from 21 universities (15 public schools and 6 private schools). Students are most often the category of people to lead communication initiatives using digital technologies and are less affected by organizational constraints (Efimova & Grudin, 2008). Student environmental groups are likely to be active in their social media use in promoting behavioral changes among the campus population.

Sample

We interviewed 13 men and 24 women. These two groups varied in age: professionals (n = 13, M age = 41.64 years, SD = 10.65) and students (n = 6, M age = 21.83 years, SD = 2.14). These leaders were primarily directors or communication coordinators. Professional sustainability leaders were fairly well established, with an average 6.23 years (SD = 10.14) of experience in their current position. Specific to social media experience, the average experience among the professionals was 3.46 years (SD = 4.11). Student groups were less experienced, with 0.25 years (SD = 0.61) of experience in their current position; their average experience working professionally with social media was 0.58 years (SD = 1.43). Both groups varied in majors: sustainability, government and natural resources, biology, mechanical engineering, and urban and regional planning. Among the professional leaders, the highest degrees were bachelor's (n = 2), master's (n = 5), MBA (n = 3), JD (n = 1), and PhD (n = 2). In the student group, there was one leader with a bachelor's degree and five student leaders were in progress with their degree. This demographic information was collected at a later time after the interviews were conducted. Not all interviewees provided this information; therefore, the demographic data is based on a sub-sample of interviewees.

Interviews

We began all interviews by obtaining informed consent and requesting the interviewees' permission to be audio recorded. We asked the participants about their activities on social media, the perceived functions or purposes of social media, their management over their channels, their goals, challenges, measurement of their success, and suggestions for advice. We probed further about any concepts stemming from the interviews related to their perceived functions of social media and whether those functions varied across platforms. The interview ended by asking whether the interviewees wanted to share any additional information, and we requested closed-ended demographic and experiential information. The interviews averaged 35.22 minutes in length. The interview protocol was designed for individuals with a communication background. We ended the three-month interview process once we achieved data saturation. Audio recordings were later transcribed using the transcription service AudioTranscription.org.

Coding Process

We employed multiple thematic coding steps. First, two authors reviewed audio transcripts multiple times to identify themes and subthemes, taking written notes and comparing the consistency of the theme interpretations. Second, we grouped content on the basis of concept themes stemming from Lovejoy and Saxton's (2012) framework. Third, we relied on the qualitative analysis software QDA Miner to identify additional patterns undetected by authors. Fourth, we adjusted, reduced, and refined the initial categories to provide as accurate a description as possible based on our understanding of the employed framework. And last, we drafted a narrative using quotes based on the analyses stemming from the transcripts (Burnard, 1996; Spiggle, 1994).

Results

We investigated how professional sustainability leader communicators (SLCs) and student sustainability leader communicators (S-SLCs) rely on social media in their sustainability efforts. Almost all sustainability leaders use Facebook the most consistently, followed by Twitter. Overall, the results reveal that institutions of higher education communicators use social media for primarily action purposes and rarely use it to engage the community. Lovejoy and Saxton (2012) found that action was the least employed organizational communication strategy on Twitter (15.6%). It appears, however, that mobilizing and recruiting volunteers and attendees are the primary uses of Facebook by sustainability leaders. The major social media function of people identified as the sustainability communication leader was to encourage people to attend events and to increase the number of volunteers for these events (action). S-SLCs appear to use Facebook to advertise their events in the hopes of increasing attendance at events to a greater degree than professionals, whereas SLCs are more likely to use social media to push content highlighting their achievements in sustainability. In addition, S-SLCs posted news stories and content about their accomplishments to a lesser extent (information). No other functions emerged with the exception of one respondent who mentioned using social media as a customer service tool, which has been found in previous research (Knight & Carpenter, 2012).

To answer RQ1, we discuss the results for each function: action, information, and community.

Action

Overall, action is considered an important function of social media, but it is not a heavily applied external function of communicators (Hestres, 2013; Leichty & Springston, 1996; Lovejoy & Saxton, 2012). In the present study, we assumed, however, that sustainability leaders would seek to mobilize people to collectively act through communication appeals centered on raising funds, encouraging action on policy issues legislation, enlisting volunteers, or adopting sustainable behaviors such as recycling or reducing energy consumption (Auger, 2013; Kim & Reber, 2008). The results revealed that they primarily see social media as a venue to advertise events and volunteer opportunities and to reduce individual environmental impact in their communities.

Event promotion. Campus sustainability communicators publish and coordinate opportunities for students, faculty members, alumni, and staff to increase participation in campus sustainability events. S-SLCs use the Facebook platform to facilitate the one-way communication of information related to events and group meetings (Williams et al., 2014; Wright & Hinson, 2009). Lovejoy and Saxton (2012) operationally defined social media functions from a content analysis perspective suggesting that action is the promotion of events. S-SLC29 stated, "We try to put all of our big events on it. And then also we'll make a separate Facebook [page] for the actual event." The respondents said that invitations posted on social media do result in a notable impact on the number of people who attend campus activities because they emphasize that the meetings are open to the public. S-SLC33 said, "A lot of the [Facebook] posts are different groups starting a campaign, and anybody who wants to join meetings, can come."

Volunteer recruitment. The recruitment of people to participate as volunteers for events or causes appears to be the greatest action dimension used by sustainability leaders at institutions of higher education. They perceive social media as an effective tool in coordinating attendance at events for a mostly mobile population. S-SLC25 stated, "For Facebook, we just mention every meeting. Every meeting that they can be involved with including the links where they can register for these events as volunteers." Sustainability leaders also see social media as a way to encourage their followers, rather than themselves, to recruit people for their causes: "One of the biggest things we found it's not a matter of getting one person to sign up [for an event]. It's a matter of getting them to send out invitations to their friends," said S-SLC32.

Sustainable behavior demonstration. The sustainability leaders often encouraged the adoption of sustainable behaviors by increasing awareness of positive sustainability practices on their campus. For example, SLC5 said he likes to share images on social media platforms: "We usually publish interesting samples, photos, most on sustainability happenings on campus." They also provide their audiences educational insight on how one can easily help the environment. SLC20 highlighted this point by stating, "In the summer time, we put a little measure out there that shows, 'Hey, you can actually do something, without turning off air conditioning, that is low energy.' You're using less energy and it's better for the environment."

Information

Institutions of higher education sustainability leaders also use social media to disseminate information. The popularity and low cost of social media enable campus sustainability communicators to reach a large number of stakeholders simultaneously. This approach to social media use enables them to efficiently share information on events, policy issues, news stories, research, and resources to the campus population. Several SLCs mentioned that information was essential for increasing awareness on sustainability issues facing the world and the campus.

The SLCs strive to create positive attitudes related to sustainability issues and their office's involvement with them. Sustainability leaders primarily enact this approach to expose users to their sustainability accomplishments. For example, SLC34 said, "We post about really good news features about campus sustainability. Also sustainability-related news in the community. Anything that is related to sustainability that is extremely innovative or something happening at our peer universities." In addition, SLC10 stated,

> We use it more for celebrations and successes or notices. Sometimes just general tips and general sustainability living tips. This month we are talking a lot about water. I don't know how successful things like, "You should to try to turn off your lights." People get more inspired by a really cool research project or something great that we're doing with the power plant. Some of the actual changes on behalf of the university versus just what we're trying to get you to do because I think people wonder what is in it for them sometimes.

The results also show that they want to increase awareness of the resources available for the campus population within their office. SLC22 stated, "We're trying to make sure that people understand that we do exist because there are still a lot of students who don't."

Community

The community-building component of the community function provides a useful way for organizations to foster a sense of community (Carim & Warwick, 2013; Lovejoy & Saxton, 2012). SLCs establish communities by acknowledging individuals and sharing information to build trust (Bridgen, 2011; Yang & Lim, 2009). The dialogue aspect of the community function involves two-way communication between the organization and its followers and aims to foster relationships through interactive communication. The two-way perspective requires a shift in how message makers view campus publics. This type of reciprocal communication strategy acknowledges individuals and indirectly communicates that social media users play an active role in addressing sustainability issues. SLCs could use it to identify sustainability issues considered important to the campus population by requesting feedback or to stimulate discussions on how to address issues rather than using platforms to promote campus events. SLCs enacting this function should ideally solicit feedback and cultivate involvement with an organization, brand, or issue (Blom, Carpenter, Bowe, & Lange, 2014; Himelboim, 2010; Jansen & Koop, 2005). The sustainability leaders, however, do not interpret that social media are tools to encourage people to create a

community atmosphere to a notable degree. They primarily rely on Facebook to encourage interaction with their posted content.

Public relations researchers believe that two-way communication is the preferred ethical public communication strategy (Kent & Taylor, 1998, 2002). SLC7 noted, "Social media allows you the space to reach people who are interested in learning about it, but are unlikely to come and talk to you in person." A few respondents indicated that they try to encourage surface-level interactivity on Facebook: "Sometimes we will ask what they're doing," said SLC17. The responses did not focus extensively on interacting with the public, but rather SLCs interpret interactivity as identifying content that would encourage interaction among their followers. SLC12 felt that Facebook is critical in cultivating community, which could be accomplished through "fun posts that are certainly ridiculous or … . . . some serious research posts."

Social Media Literacy

To answer RQ2, we asked SLCs about their perceived ability engaging cultures on social media platforms. People literate in social media often use it regularly, monitor other social media professionals, and measure the effectiveness of their efforts (Carpenter & Lertpratchya, in press). The results showed that the majority of respondents do not feel that they possess knowledge on how to use social media tools. SLC1 stated, "I don't really get into all of that… . . . Facebook, Twitter, YouTube. And some that I am clueless of." They feel overwhelmed by the number of available platform choices, including how to interact with people across the various social media platforms. SLC6 mentioned, "We do use Facebook and Twitter, and you have probably exhausted my total knowledge on that. I don't use those; I don't know anything about them, but I know they're there." Their social media literacy levels were negatively related to the resources available to support their communication efforts: "We're just too short on time or just don't have enough manpower. I don't know if we'll pick that back up," said SLC2. The majority believe that the quality of interactions could be improved by increasing employee numbers. SLC17 stated the importance of facilitating conditions: "We don't have a lot of followers, with just some attention, but it could really be expanded a lot. It actually comes down to one woman in the department." As a result, this research found that senior staff often rely on younger employees or students who are perceived as digitally literate for guidance on social channels. The majority of schools rely on interns to handle their social media communication. Several respondents said that social media activities are left to part-time student interns. Only a few offices employ a person dedicated to maintaining the various social media accounts representing their office. A social media practitioner could employ features such as tagging and Twitter lists to allow universities to selectively inform specific groups of stakeholders with relevant information. The position requires the handling of multiple accounts because sustainability often encompasses multiple stakeholders with varying interpretations of how they define sustainability.

Institutions of higher education use social media, but do not strategically use it to a great degree. The use of analytical tools can assist leaders in determining the best approaches to engage various stakeholders across the campus and community. Most sustainability leaders said that they do not have well-established evaluation measures to assess the impact of their social media communication messages: "I qualitatively [*sic*] pay attention to how many friends, how many people still stay friends on it, and how many people are reading the post, but we don't have a formal way to do that yet," said SLC2. The

application of analytical tools can assist leaders in determining the best approaches to engage various stakeholders across the campus and community. Most sustainability leaders said that they do not know how to assess whether their social media communication efforts result in issue awareness or adoption of sustainable behaviors. "We have been really conservative and not going full on it because we don't yet have a rubric for assessing what's worth it," said SLC16. They simply do not assess their activities because they do not know whether such efforts translate into success: "We'll estimate the amount of impressions or we'll look at our Facebook. There's not very much measuring," said SLC18.

Discussion

This study examined the social media uses of campus sustainability officers and student sustainability group leaders in their communication efforts of sustainability in institutions of higher education. The study was motivated by both the few scholarly efforts in this area of study that could allow researchers to refine theoretical frameworks of organizational communication, and by the need for institutions of higher education to apply theoretically informed best practices in communication. The application of the organizational communication framework to institutions of higher education is novel and proves useful, despite the uniqueness of these organizations. Ideally, sustainability communicators will make use of studies such as this one to guide their communication efforts. For example, the community-building component of the community function provides a useful way for organizations to show that they are a meaningful part of the community (Lovejoy & Saxton, 2012). The dialogue aspect of community function involves two-way communication between the organization and its followers and aims to foster relationships through interactive communication. The institutions' mission as learning communities and laboratories suggests that sustainability efforts should go beyond the implementation of traditional sustainability measures (e.g., recycling campaigns, organic farming) and incorporate best practices in strategic communication.

Results from the qualitative interviews show that top U.S. sustainable universities do rely on social media to reach large audiences. The main advice from sustainability leaders concerning social media was to include strategies around "audiences and what's unique about them" (SLC5). In general, their target audiences are students, staff, faculty members, outside local community residents, campus administration leaders, news media professionals, and alumni, according to our respondents. Yet, sustainability leaders do not fully understand social media's value as dialogic tools and do not know how to measure their effectiveness. In addition, some interviewees expressed that they have little incentive (e.g., financial, professional, or developmental) to engage in additional responsibilities beyond their expected duties. Social media channels enable communicators to listen and engage the audience; share relevant, valuable, and actionable content; attempt to be accessible and responsive; and measure the effectiveness of their communication efforts. The present research reveals that their uses of social media are quite narrow. McAllister-Spooner (2009) reported similar findings revealing that most universities prevent key stakeholders from posting information or photos to online media university accounts, hindering the two-way communication process. McAllister-Spooner and Kent (2009) examined the use of websites by various colleges in the United States and reported, "Organizations that should be the best at utilizing mediated communication channels like the Internet are often not very good at it" (p. 237). The results of the present study suggest that a larger investment in quantitative measurement and evaluation of social media efforts

could prove effective in improving the outcomes and reaching strategic goals, such as raising awareness about sustainability issues, reducing energy consumption, or increasing recycling rates. A major challenge for these communicators then is to connect those strategic communication efforts to those behavioral outcomes that could then help their institutions reach their overall sustainability goals, such as the reduction of greenhouse gas emissions or the reduction of waste generation.

In addition, this study highlights a lack of social media literacy among many sustainability communicators, which represents a significant barrier to the adoption of best practices in public relations and strategic communication. The results of this study suggest that investment in social media training among communicators could greatly enhance the quality of communication between institutions of higher education and their multiple stakeholders. The ability to proactively engage in dialogic communication can enhance intangible outcomes such as increased trust in the institution, as well as tangible outcomes such as more efficacious recruitment for sustainability events. The protocol questioned the participants who were deemed as most knowledgeable. Participants were well versed in sustainability efforts, but were often unable to articulate how they measured the success of a sustainability communication campaign, how they determined a target audience, and so forth. Thus, social media literacy should be a future variable considered when assessing organizational social media efforts to determine how practices and interpretations evolve. Social media technologies are powerful tools, but their effectiveness in sustainability is constrained by resources, individual perceptions, desires to engage with individuals, and comfort level with the blurring boundaries between communicator and user.

From a conceptual and theoretical perspective, this study applied and expanded Lovejoy and Saxton's (2012) conceptual framework of the organizational communicative functions of social media The results of the study show that the three main functions of social media—information, community, and action—are present, but at the same time do not fully describe the different ways in which the sustainability communicators make use of the communication platforms. This study developed further refinements to these functions, which should be examined in future research.

This is study does have limitations. One limitation reflects the reported behaviors and opinions of a small number of sustainability leaders, which limits this study's generalizability. In addition, there seems to be an overrepresentation of participants from the West, although that could be a reflection of the rankings we used or that universities on the West Coast are actually more aggressive in their sustainability practices. The results from the interviews with a purposive sample of top sustainable universities could suggest that the use of social media by sustainability communicator leaders in other less sustainable campuses is similar or possibly more limited. Further research with a representative sample of universities is therefore needed to explore the ways in which social media are used by institutions of higher education.

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