Special Issue

International Journal of Qualitative Methods
January-December 2016: 1–14

DOI: 10.1177/1609406915624578
ijqm.sagepub.com
SAGE

A Mixed Methods Research Approach to Exploring Teacher Participation in an Online Social Networking Website

Vimala Judy Kamalodeen[1] and Madgerie Jameson-Charles[1]

Abstract

Social networks are becoming very prominent in educational discourse. The discourse centers on the role of social media and its utility in the teaching and learning environment. Several arguments have been made to support its use because they are highly collaborative, easily accessible, and provide opportunities to embed a variety of Web 2.0 tools such as blogs, wikis, and online chats. However, there is a dearth in research on teacher use of educational social networking sites (SNS) in Trinidad and Tobago. The purpose of this study was to explore how 35 secondary school teachers in Trinidad and Tobago participated in an educational online social networking site. This study utilized a mixed methods exploratory approach and allowed for the use of online data capture together with questionnaires and interviews. Combined data analysis revealed five different levels of site participation, with most teachers adopting the role of content consumer rather than of content producer. Barriers to participation were time, motivation, technology, and usability. The designed social networking site allowed teachers to make public their discourse on their practice while connecting with colleagues from other schools. The study was qualitative dominant, with the mixed methods research approach allowing for deeper exploration of teachers' participation on this social networking website, and was justified by the newness and transient nature of data from social networking websites.

Keywords

mixed methods, educational social networking sites, online participation

Online social networks have given people the opportunity to interact with others across time and space. Individuals are able to connect with family, friends, and others in real time using social networks. Social networks refer to a variety of online applications that "afford users connectivity and support, collaborative information discovery and sharing, content creation and knowledge and information aggregation and content modification" (Lee & McLoughlin, 2008, p. 3826). Much of the research on social networks and social media use focus on the general population and not on secondary school teachers. There is increasing interest in K–12 students' engagement in popular social networks like Facebook and Twitter (Greenhow, Gibbins, & Menzer, 2015; Manca & Ranieri, 2013). Additionally, there are studies on faculty experiences in higher education with similar technologies (Roblyer, McDaniel, Webb, Herman, & Witty, 2010; Veletsianos & Kimmons, 2013). What is known about online social networks is their popularity and potential to transform lives (Selwyn, 2008) through instant and multiple connections and sharing of resources. However, there is limited research on teachers' experiences on educational social networks even as technology continues to penetrate our lives in different ways. With the increased availability of affordable Web 2.0 tools that emphasize connectivity and communication, there is an opportunity to investigate the potential of online teacher social networks.

Social networks allow connections, or ties, to be formed and maintained, thereby enabling the sharing of information easily and freely. Networked interactions allow users to share knowledge, rather than being the passive recipients of expert knowledge, and such interactions provide opportunities for useful discourse related to practice, giving rise to a *participatory culture* (Veletsianos & Kimmons, 2013). However, not much is known about the social interactions on an social network or the nature of informal learning that is purported (Merchant, 2012).

[1] School of Education, University of the West Indies, St. Augustine, Trinidad and Tobago

Corresponding Author:
Vimala Judy Kamalodeen, School of Education, University of the West Indies, St. Augustine, Trinidad and Tobago.
Email: vimala.kamalodeen@gmail.com

Face-to-face teacher networks exist and do allow teachers to be connected, but it is the ability of web technologies to make conversations about practice easier, more open, and available to other colleagues that can enable teachers' informal learning in ways that have not been explored before. Lieberman and Mace (2010) have issued a call to make teaching practice *public* that can potentially transform the way that teachers share knowledge on a medium that is "democratic, participatory and cheap" (p. 86). These writers purport that exploration of teacher online participation requires novel approaches to allow for deeper, fuller understandings of networked connections, interactions, and conversations.

In this study, an online social networking site, henceforth called SNS in this study, *Trinbagoteachersusingtechnology*, was designed for practicing secondary school teachers in Trinidad and Tobago (Trinbago) to connect, to learn, and to share with each other. Trinbago is a twin-island republic in the Caribbean and employs more than 7,000 teachers at secondary level[1] in 113 schools throughout the country. We wanted to explore teachers' participation on the SNS and whether the site have been beneficial to them. There is a dearth in the literature on social media use and impact in developing nations, like that of Trinbago. The majority of studies on this issue are conducted in the United States, Canada, Australia, and the United Kingdom. Teachers in Trinbago face similar issues of teacher isolation and noncollaborative teaching practices in a climate of changing curricula and diverse student needs as those noted for U.S. teachers (Darling-Hammond, Wei, Andree, Richardson, & Orphanos, 2009; Lieberman & Mace, 2010).

Online social networking has been gaining in popularity among teachers. These teachers are able to access professional development (PD) opportunities that facilitate the embedding of asynchronous, synchronous, or blended learning tools that are inexpensive and scalable (Whitehouse, 2011). Traditional PD for teachers has been offered by the Ministry of Education (MOE), but teachers are rather frustrated because it is often inadequate or require large investments of time that they do not have (Dede, Ketelhut, Whitehouse, Breit, & McCloskey, 2009). Today's teachers need a new type of PD that is collaborative, connected, contextual, and constructed from the bottom-up (Darling-Hammond & McLaughlin, 2011).

There are a number of global teacher networks from which local teachers may access and benefit. However, the context is criticized by local educators who believe that the foreign curricula might not be culturally relevant for Caribbean education. There has been a regional drive to make curricula more relevant to the needs of Caribbean people, but the production of local materials and spaces for teachers to network and to discuss their pedagogical practices are unavailable. The legacies of colonialism are still evident in Caribbean educational systems, although there are efforts to focus on educational reform to ensure sustainable Caribbean education and a positive response to local needs and international trends. The website under investigation in this study was designed to give voice to *Trinbago* teachers. We expect to acknowledge the role of indigenous cultures and local educational practices and content while avoiding a universal *supranational* attitude to implementing digital technologies in educational contexts (Selwyn, 2012).

In this study, a number of Web 2.0 tools were embedded in the social networking website to allow for a range of activities. These activities included but were not limited to blogs, discussion forums, online chats, media upload and download, and wikis. Considered as providing powerful social resources for learning (Selwyn, 2008), these tools allow content and site modification, which is inherently empowering to participants but can bring about tensions in the way that knowledge is shared and produced. This would include the disentangling of the professional teacher identity from the social identity that more commonly emerges on popular SNS (Velestianos & Kimmons, 2013). Teacher participants had the opportunity to contribute freely to the site. This will facilitate the expression of multiple realities and viewpoints on the space. As such, methodological concerns related to data collection, analysis, and interpretation arose due to epistemological and ontological pluralism on the site. In this article, a mixed methods research approach was advanced to show how complementary and explanatory approaches helped to explore facets of teachers' participation on the site, their preferences for certain activities, and their discourses. This approach provides a qualitative dominant angle to social networks participation from a Caribbean standpoint.

Documented in the literature are the roles or stances that participants take in online environments and how they differ (Strijbos & De Laat, 2010). Lave and Wenger (1991) describe participation in terms of community and refer to the concept of *newcomers* and *old-timers* to describe a person's life span in that community. Communities of practice may exist in physical settings or even virtually. Ideas of online participation emerged with Preece, Nonnecke, and Andrews (2004) describing two levels of participation as *lurkers* and *posters*. Later, Strijbos and De Laat (2010) suggested participant roles of *lurkers*, *hangers-on*, *generator*, *pillar*, *ghost*, *free rider*, *overrider*, and *captain*. Khoo and Forret (2011) adopted a sociocultural analytical framework to analyze lecturer and student online interactions (evidenced through different types of dialogs) and the ways that they participated in an online learning community (adoption of roles). They suggested roles of *socialite*, *wanderer*, *encourager*, *contributor*, *supporter*, and *mentor*, whereas Risser and Bottoms (2014) used *newbies* and *celebrities* to describe teachers' participation in a blog network. Hrastinski (2009) proposed six hierarchical levels of online participation that are *online access*, *writing*, *quality writing*, *writing and reading*, *actual and perceived writing* and, lastly, *engaging in dialogs on the web.* However, his account did not take into account nontext-based writings. Preece and Schneiderman's (2009) reader-to-leader model for social participation appears to be most suitable for examining emergent roles that teachers might play in an online social network, with four

[1] Equivalent to U.S. Grades 6–12.

major roles described as *reader*, contributor, *collaborator*, and *leader*.

In this study, we wanted to explore how secondary teachers in Trinbago chose to participate in an online social networking site that was purposefully designed for them. The following question guided the study. How do teachers participate in an online social networking site?

My guiding research questions were:

1. What is the nature of teachers' participation in an online social networking site?
2. What are differences in teachers' participation in an online social networking site?
3. How do teachers describe their experiences on the online social networking site?

Method

Design and Research Setting

This study utilized an exploratory mixed methods research design. This design was most appropriate because we wanted to explore and to explain the nature of secondary teachers' participation in the website designed for their use. The research was conducted in phases over a 5-month period, April to August. The data were collected sequentially to explore and to explain patterns that emerged in teacher participation. At the beginning of the school term, the website was launched. Teachers were invited to register on the site and to participate in the activities. They were observed for 4 weeks to determine the nature of their participation. Google analytics was employed to provide daily updates of site participation. At the end of this phase, initial data analysis was conducted to note levels of participation. New participants were added as they registered on the site through referrals. An online questionnaire was used to obtain the views of registered participants about their participation on the website. This input was used to redesign activities and pages on the website and a new phase of observation of teachers' participation took place. At the end of the research period, six participants were selected to describe their experiences on the website and explain the reasons for their participation. As teachers participated on the site, the initial site became modified through increased content, interactions, and activity that made both qualitative and quantitative analyses possible.

Participants

Secondary school teachers who had participated in the MOE's *ecal innovate* competition were invited to register on the website because their participation in this national competition indicated an expressed interest in technology in the classroom. Expressed interest in using technology in the classroom was a criterion for inviting secondary teachers to join the SNS. Permission was granted by the MOE to contact the teachers who satisfied the criterion for participation in the study. E-mails were sent to the teachers to participate in the study. The participants' profiles were obtained upon registration on the SNS and were part of the data collection. Specifically, data related to gender, age, race/ethnicity, location, and school district were provided by the participants upon registration. Of the 66 teachers invited via e-mail, 13 (19.7%) accepted the invitation to join the site. Later on, new participants who were not previously invited joined the site through invitation by already registered participants. As such, a snowball sampling chain-referral technique (Bhutta, 2012) was used to access participants whom the researchers did not have initial access. Thirty-five teachers participated in the website over the research period.

Data Collection

In this study, eclectic sets of data were generated through teacher participation. Data were captured automatically on the website itself as digital talk and digitally created texts using native Trinidadian English from a number of activities such as blogs, wikis, and forums. Other data included photographs, videos, and slideshows as well as hyperlinks. A typical webpage would include content, functional and navigational elements, and webpage statistics. In addition to these data, a history of participation was automatically created through postings that indicated the name of the poster, date posted, and the selected Web 2.0 tool. Further, the post itself and subsequent responses and postings formed a sort of discourse among participants who were important to this study. Online questionnaires were sent to all participants at the end of the first 4 weeks to explain levels of participation related to barriers and benefits. Three levels of participation had emerged: low, medium, and frequent. Two participants from each of these levels subsequently were selected for face-to-face interviews (Strijbos & De Laat, 2010) at the end of the study, further to explore factors related to differences in participation at each level. Of those invited, three attended the interview, one each per level.

Data Analysis

In attempting to develop a model for analyzing the data in this study, qualitative and quantitative analytical approaches were combined according to the type of data analysis needed. The structure and form of social ties within a network usually employ social network analysis (SNA), however, understanding *content* and *perception* of the network (Edwards, 2010) can provide much room for research, especially among researchers who are looking for meaning and identity within networks. Edwards (2010, p. 18) recommended that both the *insider* and *outsider* views of a network allow for "a specific opportunity to mix methods," and this mixing can allow for a wider and deeper view of network participation to emerge. Analytics for social and online participation are a new challenge for researchers and if we accept Hrastinski's (2009) theory that online participation is online learning, then new ways of analyzing connections, discourse, and interactions on an SNS are needed.

In this article, the authors adopted whole network approaches as well as egocentric views to gain an understanding of network participation (Haythornthwaite & De Laat, 2010). These approaches permitted patterns of participation to be known and individual approaches facilitated understanding of certain interactions, dialogs, and roles of participation. Qualitative online data related to postings on the website such as popularity of Web tool, frequency of poster, and popularity of topic were quantitized (Onwuegbuzie, Slate, Leech, & Collins, 2009) to reveal a number of patterns related to participation. Quantitative data such as number of site visitors, page views, and bounce rates were automatically generated on the site and were easily extracted and analyzed using a free Web tool called Google Analytics (http://www.google.tt/analytics/) to provide descriptive statistics. Google Analytics was used to analyze all data for the period of the study on the SNS and generated reports as required. The reports included location maps, membership activity and patterns, types of devices used to access the site, and location of the visitor to the site.

The qualitative interviews were analyzed using discourse analytics tailored for online discussions because this analysis can provide insight into knowledge sharing on the SNS (Shum & Ferguson, 2012). Because data were captured on the SNS, data in their raw form were analyzed and this allowed savings in time and labor. The screenshots generated allowed the actual digital text to be displayed and analyzed intact. We selected examples from activities on the website for analysis. Data captured from various activities on the site were used to provide ample evidence of findings because there was no need for transcription of data for analysis. Photographs, videos, hyperlinks, and emoticons were captured and displayed.

In this study, simple statistical analysis, descriptors from Google analytics.com, mixed SNA, discourse analysis, tallying of questionnaires, and coding of interviews, therefore, were combined and considered complementary to each other (Johnson, Onwuegbuzie, & Turner, 2007) because they all helped in analyzing different aspects of participation on the site as directed by the research questions.

Ethics

A significant challenge to this research was that the majority of data were generated through a combination of synchronous and asynchronous Web 2.0 tools. The field of Internet research is still a *shifting ground* (Baym & Markham, 2009), and researchers are not yet in agreement about choice of methods for this genre of research. In this study, there arose methodological and practical challenges surrounding a number of issues regarding privacy and protection of data (Markham, 2012) and content authorship (Snee, 2008). In particular, management of privacy of online identity and data is a contentious issue regarding the social web (Cabello, Franco, & Haché, 2013), and protection of participant identity and privacy of data are at the heart of ethical research (Johnson & Christensen, 2013). We now outline some steps that we took to address these challenges.

Data privacy and protection. The website was designed and hosted on *Spruz.com*, which is similar to *Ning*, because it enabled a *walled garden* approach (Smith & Holcomb, 2009) to design the SNS. A walled garden approach allows control over the online space, and this control permitted the customization of an online social networking site as an educational space. This design, therefore, distinguished it from open SNS like Facebook and Twitter. Registered participants used an online identity instead of their real names, and those profiles were private. Moreover, participants' anonymity was preserved in the data analysis by using the social website's usernames. Online survey tools such as Zoomerang.com (online survey software like SurveyMonkey) were carefully selected to protect prospective and existing participants' privacy. As a consequence, they were able to perform a range of options such as declining the survey and declining receiving further surveys via the researcher's e-mail. The website was designed with a number of public and private pages to encourage visitors to the site while keeping some of the data private. Public access to website content diminishes data privacy and poses a threat to participant confidentiality. However, making certain pages publicly accessible helped to bring visitors to the site and so there was a tension in selecting the number and the name of the webpages on the site to keep private or public. Photographs, e-mail addresses, and other personal information were blurred in the captured images from the site to ensure data privacy; however, participants' profile names were used because these were selected by participants for use on the public website. Participants' real identities were hidden and private to the site administrator.

Blurring of ownership of user-generated content. An issue unique to collecting data from social websites was the blurring of ownership of content because the space was shared, open, and public. Content on the site was generated by the lead researcher and participants via 13 different Web 2.0 tools. Only registered users were able to make postings to the site and consent to share was sought from teachers prior to participation. As far as possible, authorship was indicated using the user profile identity supplied by the teacher.

Results

Teachers' Participation on the SNS

There were 35 registered participants on the site over the 5-month period of study. These participants developed profiles that provided clues as to their identities. Generally, all teachers completed the profiles and chose their first names as their usernames. Very few participants uploaded a profile photo, but if they did, they presented a professional look or one of landscape. Examination of user profiles revealed that participants represented all nine national core curricula areas (Science, Mathematics, Modern Language, Visual and Performing Arts, Language Arts, Social Studies, Technical Education, Physical Education and Information Technology). The participants had teaching experience ranging from 2 to 26 years. There was a

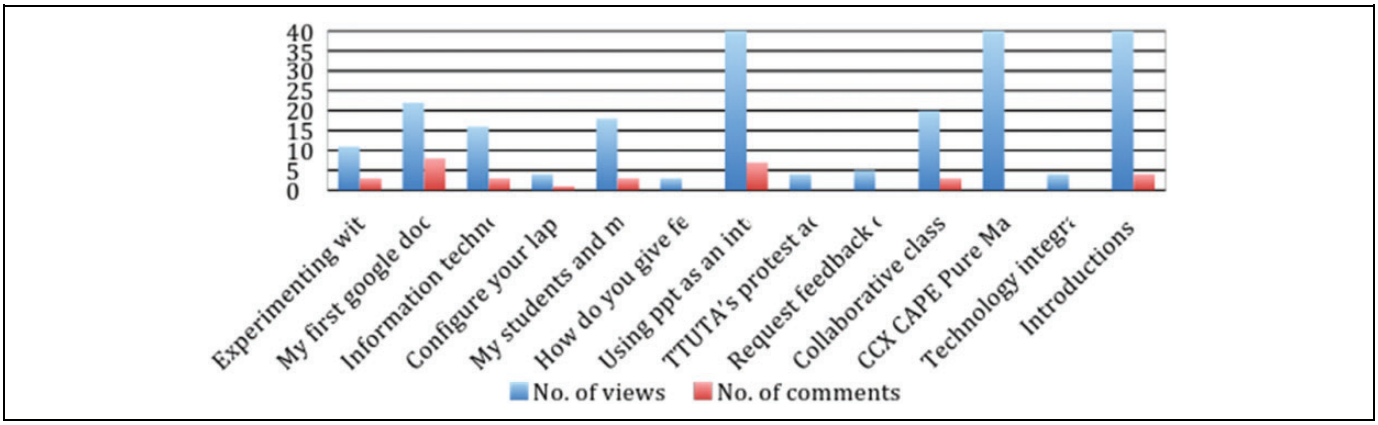

Figure 1. Comparison of blog views to comments across 13 blogs.

slight predominance of teachers in the Information Technology ($n = 10$) and Mathematics ($n = 8$) areas, followed, respectively, by Technology Education ($n = 5$), Social Studies ($n = 5$), Language Arts ($n = 3$), Science ($n = 2$), Spanish ($n = 2$), and Physical Education ($n = 0$). More participants came from urban schools ($n = 26$) than from rural schools ($n = 9$). Participants were twice as likely to be female than male. The ages ranged from 24 to 60 years old. Registered site participants spent an average of 38 days visiting the site over the period of May 18–August 31. Some participants just visited once, whereas others visited repeatedly, with more than 75% being repeat visitors. There were 688 visits to the site during the research study period, with visitors staying at least 12 min on the site and viewing an average of eight pages in that time frame. Teachers preferred to visit the site during nonschool hours, such as early morning or late at night. There was no particular day of the week that was preferred, except that the number of visits to the site increased significantly during the three public holidays during the term. Teachers had greater participation during the school term (April–June) compared to the vacation period (July/August).

There appeared to be active participation in most site activities, with those activities facilitated by asynchronous tools having higher levels of participation than did synchronous ones. There were 14 different blog posts in six categories, 3 video uploads, 11 photos uploads, 4 uploaded lesson plans, 15 downloads of selected lessons, and 6 threaded discussions in forums in three curriculum areas and Information and Communications Technology (ICT). Three online courses, developed on a free platform *Udemy.com*, were accessible from the site with 31, 60, and 3 subscribers. The majority of these subscribers enrolled in the course via the Udemy.com platform directly instead of through the SNS. The events calendar was useful in alerting participants about upcoming activities. Synchronous activities were Google docs, wiki, and an online chat tool facilitated by embedding Google chat on the SNS. Participation in these activities was significantly lower than that for asynchronous activities, with only one participant able to participate successfully in all activities. There were five wikis and one Google doc created as well as a small number of online chats. Chats were more successful than were other synchronous activities like Google docs and wikis. Generally, participants had preferences as to how and when they wanted to participate on the SNS.

Differences in Teachers' Participation

By activity. In order to explore differences in participation, the levels of participation were compared by teachers' contributions to the site. For each activity, the number of posts, views (participants logged onto the site but made no contribution), dates, names of posters, and related data were tallied. The activities selected were blogs, forums, and videos because these activities allowed a history of views and comments on the site. Blogs seemed to be the most popular activity among all the tools. Perhaps this is because they are quite established and easy to use. Knobel and Lankshear (2010) suggest that blogging is successful probably because it is based on authentic (real-world) literacy practice. Wikis and discussion forums allowed a history of edits and contributions to be seen but not views. Other activities, such as file downloads, only showed the number of downloads but not views or comments.

A review of the number of comments to views in blog postings revealed an average of 18 views per post to 2 comments for the same post. This indicates that only one in nine, or 11%, of the participants chose to comment as opposed to viewing only. Figure 1 illustrates the significantly higher ratio of number of views to number of comments in blog posts.

When data from blogs, forums, and video sharing were compiled, the number of views exceeded the number of comments in all cases. Blogs had a higher number of postings than did forums or videos. The total number of postings in all three activities was 590, compared to 44 comments in total, which averaged 7.5%. This finding suggested that for every 100 views, there were 7 postings, on average. There were four threads in the forum activity, of which the ICT thread was the most popular, with 168 views and 8 replies. Figure 2 shows that participants preferred viewing to posting comments in blogs, forums, and in video sharing even though blogs seemed to facilitate a much more comparative balance. These data

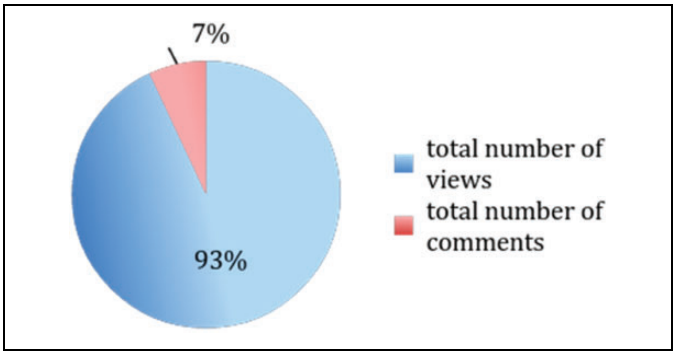

Figure 2. Comparison of total views to comments.

indicated that although participants had the option to contribute content to the site, they generally preferred to view existing content.

By interaction. As site administrator and researcher, the first author was the lead poster on the site at the beginning of the study, initiating chats and wikis, postings on blogs, and forums, among other activities. As such, the social network centered on her. After 4 weeks of study, the participants began to initiate postings and to receive replies from others, including the first author. However, the first author was still at the center driving posts and conversations. After 8 weeks of the study, social ties started to be centered on one participant who had a high level of participation on the site. This participant, Yemi-J,[2] was an active contributor to the site because she participated in a number of online chats, initiated postings to the site, responded to comments, and engaged in a number of conversations with other colleagues. Her colleagues became interested in her posts and, as a consequence, there was greater dialog exchange among the participants. This system of networking encouraged further interactions among participants and showed that the site was able to facilitate interactions among participants via a number of activities and to create social ties with colleagues, many of whom previously did not know each other (Lieberman & Mace, 2010).

Roles of participation. Variance in participation appeared to reveal behaviors associated with roles of participation, which we further explored based upon Preece and Schneiderman's (2009) reader-to-leader framework. Most participants contributed to the site by writing text but also uploaded videos, photographs, hyperlinks, emoticons (in chats), or made responses to online polls. There were those who visited the site and read various webpages but did not opt to log in. Some web tools, such as blogs and discussion forums, indicated the number of views to the blog/forum but most others did not; hence, it was difficult to track views and comments for all site activities. Additionally, it was difficult to chart each individual's logs. Levels of activity were determined by combining metrics such as the duration of site activity, number of posts, and replies and quality of posts (Kane, 2011). Five roles are suggested: content consumers, window-shoppers, content producers, collaborators, and leaders.

Participant role as content consumer. Blogs, forum posts, and videos provided 233, 234, and 123 views, respectively, and were posted by a number of different participants across time. The activity with the largest number of views was a forum post called "Internet Access for Form 1 students" in the Technology ICT area started by Angel. As noted previously, the total number of postings in all three activities was 590, compared to 44 comments in total from 35 participants. As such, participants who are considered as readers chose to view or to consume content on the site but preferred not to add or to write to it. They are considered as content consumers. Not all pages displayed metrics related to the traffic on the individual site activities; as such, it was difficult to measure the number of views on all pages. For this role, data were drawn from metrics for only three named tools but these were believed to be sufficient to draw conclusions about these participants.

Participant role as window-shopper. Readers on the site are further divided into those who registered and those who did not. Because pages were public for reading, the site counter revealed a significantly higher number of site visitors than the number who was actually logged in. A visitor to the site could surf the site, view a page on site, search site for an item, click a "like" button, download a lesson, and sign up for an online course, without logging in. However, they could not write posts or comments or take part in a collaborative event. Readers who did not log in could only view content but not produce content; however, their identities were not revealed because they never registered. These participants of readers are called window-shoppers and they were considered similar to lurkers (Strijbos & De Laat, 2010).

Participant role as content producer. The participants who contributed to the site by adding content to the site are referred to as content producers. This contribution manifested itself in a number of ways, such as the following: creating a new post, adding comments to a discussion/blog/forum, responding to e-mail, responding to opinion polls, adding a colleague, uploading lessons/videos/photos, and signing in to a chatroom. The types of content uploaded were pictures of practice, text, video, click on poll, e-mail, user profile photo, and user profile. Tools used to contribute content were blogs, forum, e-mail, online poll, and online chat. Contributors or posters may be considered to be writers. Lead contributors to the site were Yemi-J, Stace, Pat, Techsavy, Steve, AgriTech, Angel, Ms. Wight [*sic*], Lusha, Derek Haqq, and Rosanna.[3] Different participants added content to the site across time and, as such, became content producers and publishers. Some participants only

[2] Profile names are used in this article and not teachers' real names.

[3] Site profile names are used but not real teachers' names.

initiated postings, whereas others built upon the contributions of others.

Pedagogical and content knowledge were shared when participants were discussing a strategy that they used or planned to use in the classroom. In the following example, Lusha published information on how she planned to conduct her new music project at her school and included hyperlinks:

> Last night I started working on a Music Project I have had in mind for my Form Ones ... The Proposed Project: to interview a grandparent, parent or guardian about the type of music they listened to when they were your age. (Lusha)

Participants contributed content to the site by soliciting views and opinions about their practices. The following example indicates part of Derek Haqq's comment on his video where he sought teachers' opinions on his uploaded self-created video clip.

> ... but hopefully the more creative of you out there will appreciate the idea and come up with some better examples. Feedback is welcome; ...

Sometimes participants wanted a specific answer to a posed question on technology use or responses by colleagues on similarity of experiences with other teachers and schools.

Participants socialized on the site using text conversation, and emoticons were sometimes used for emphasis. This example shows how Yemi-J used emoticons and text lingo to show positive emotions including joy and excitement about being part of the chat.

5:54 pm	me: hi
5:58 pm	Yemi-J: Hey ☺
	How are u?
5:59 pm	Me: Good how was your day?
	Yemi_J: lol busy:P, how was urs?
6:06 pm	Yemi-J: can't wait for chat tonite.

Participant role as collaborator. A number of Web 2.0 tools facilitated coauthorship between two or more individuals including wikis, Google Docs, and real-time chats to create content. On this site, a wiki and chat tool were embedded on the site. Wikis allow users to read, to add content, and to edit in a synchronous manner. This facility allows for collaboration in an online environment (Li, 2015). The wikipage was searched and identified the *What're [sic] are your favorite tools to integrate technology* wiki as one showing contributions from Yemi-J and the lead researcher over a 2-day period. But does coauthorship imply collaboration? And do issues of time and space affect collaborative endeavors? An issue to be resolved in this study was what distinguished contribution from collaboration. Haythornthwaite and De Laat (2010) argue that a post followed by a response is not sufficient to classify an interaction as being collaborative, and they suggest that a response from the original poster is necessary. In addition, these authors argue for a time-line analysis to "understand how people's engagement with learning and peer-support develops and evolves" (Haythornthwaite & De Laat, 2010, p. 188). This argument supports criteria for searching for evidence of collaborative endeavors on or through the site.

The example in Figure 3 was selected to show how collaboration was enacted between two participants through a video artifact. In this example, Yemi-J posted a PowerPoint video, *Aripo savannahs*, and explained why she used that tool. This topic is native to Trinbago. Another participant, Lusha, responded (affirmatively), and this was followed by a reply by the original poster, Yemi-J. This post is particularly fascinating due to the nature of the conversation, which seems to indicate a high level of reflection on the part of the author. The discourse also shows how subtly Lusha offered a recommendation for future work; therefore, she did not simply share her opinion on Yemi-J's post but also actively engaged Yemi-J in a conversation about her work. This represents collaboration on ideas surrounding an artifact on the site. These posts indicate that participants expressed both content knowledge and opinions, either when they shared a new idea or information that they had and wanted feedback from colleagues. The idea of reciprocity appeared to facilitate exchanges of knowledge, especially in conversations where there is a post, a response, and then another response. This is particularly highlighted by the topic in the technology forum. Thus, knowledge sharing often took place together with knowledge seeking (Selwyn, 2011). As such, teachers were coproducers and coconsumers of content on the site.

Participant role of leader. Identifying leadership in a social network has not yet been clearly articulated and questions remain about whether criteria for leadership in social organizations apply to that in a virtual world. Analyzing conversations, participation patterns, and other metrics can yield some clues as to how a leader can emerge in a social setting but might be inadequate. How roles are distinguished in a social network can be blurred depending on what data are being analyzed. Teacher leadership has emerged as being important in both off-line and online successful learning environments, and York-Barr and Duke (2004) suggested some criteria for leadership that were used in this analysis. In the present study, leaders were those who took risks by attempting to use new tools or activities, expanding their network of colleagues, acting in a mentoring role to other colleagues, or encouraging professional growth of colleagues. As such, leadership on the site was described as being displayed by participants taking on a combination of roles of risk taker, networker, and mentor. Leaders would have already satisfied the roles of reader, contributor, and collaborator, as indicated in previous sections. Following are some examples of each of these criteria and the participants who acted as leaders on the site.

Risk taker. The risk taker was described as someone who was willing to attempt something new, such as to participate in an activity with which they were unfamiliar. Two examples were

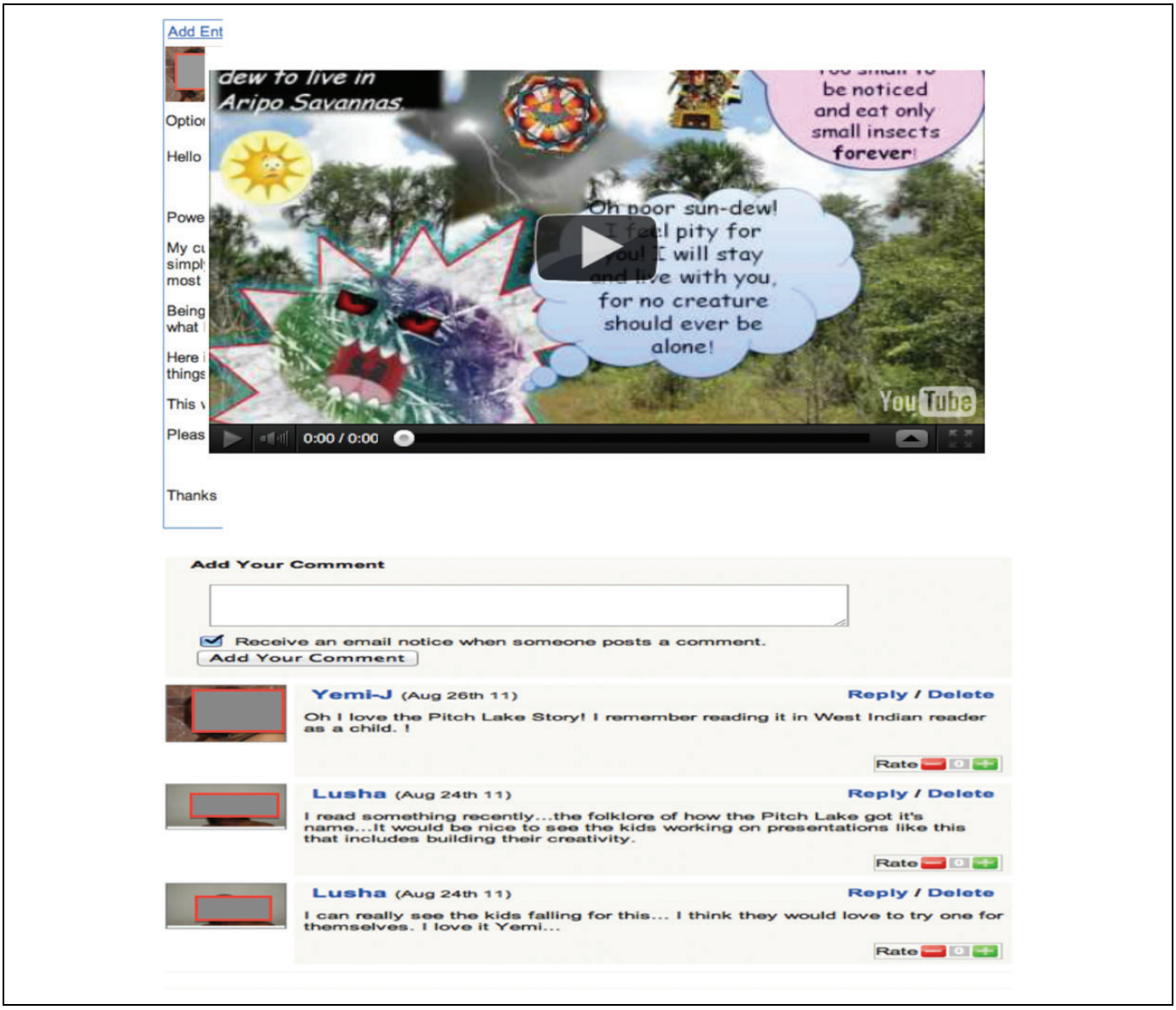

Figure 3. Screenshot of video uploaded by Yemi-J and comments. Screenshots are used to illustrate artifacts on the site and preserve data integrity.

presented where Yemi-J contributed to the site with new activities by creating her own wiki called *Dale's Cone of experience* and taking part in a Google docs online collaboration on *Tpack games.* Both these activities were new to her but she agreed to participate.

Networker. Initially, site participants were hesitant to add colleagues to their personal networks; however, over time, some participants appeared to be more popular. Two of the most popular participants are highlighted below, Derek Haqq and Yemi-J. Over time, participants added them to their personal networks, most likely due to their contributions and interactions.

Mentor. The mentor is described as one where one colleague works to improve the learning of others, especially in an encouraging way, and making recommendations to improve the work in question. For an example, Derek Haqq added a video called *PowerPoint for training and education—a semi-dramatic approach*. He wrote:

> Hi everyone. This is just a simple example of how you can use Powerpoint [*sic*] animations . . . (Derek Haqq)

Yemi-J mentored Lusha after Lusha uploaded a blog post called *My first Google docs document.* This is illustrated in Figure 4. In her opening statement, she responds to the ideas that Lusha has presented in a very positive tone "I think this is a great idea!" and also uses emoticons ":) I see lots of potential for this project:)" and affirmation to Lusha. Yemi-J also shared her professional opinions by making suggestions to improve Lusha's work, for example, "Would you also consider letting

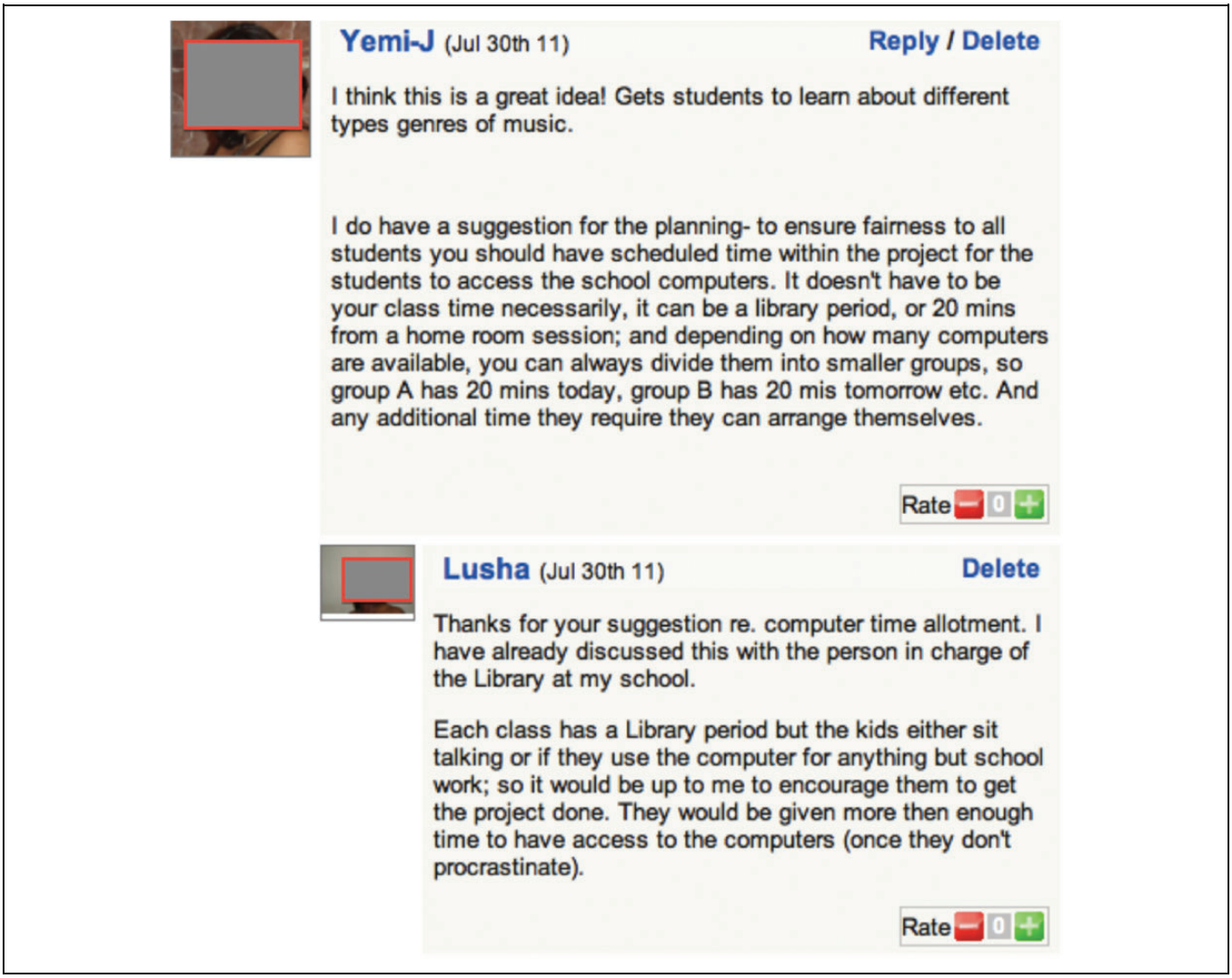

Figure 4. Example of Yemi-J's mentoring.

them use maybe their cell phones to record some of the music?" Lusha, in turn, responded to the suggestions and negotiated her own position.

The examples given in this section show how two participants, Derek Haqq and Yemi-J, adopted a number of different roles on the site. However, Yemi-J was much more consistent on the site and was involved in all activities. Based on criteria for leadership on the site, we have, therefore, concluded that Yemi-J emerged as a leader on the site. The diagram in Figure 5 shows a history of participation of Yemi-J from the time of registration on May 24 to the end of September, a date beyond the research period. Over this time, she added her comments to blog, forum, and discussion posts and added new content in terms of lessons, videos, comments, and opinions. She expanded her network of colleagues by not just adding colleagues on the site but also by inviting new teachers to join the site. She collaborated with a number of colleagues in different ways such as forums, blogs, wikis, and chats. She initiated conversations with colleagues by starting her own wiki and made significant comments on improving the site. She modeled good practice by her artifacts of lessons and engaged in discussions related to practice.

Exploring Teachers' Experiences on the Social Networking Site

In this section, narratives of three participants, Sam, Angel, and Yemi-J, are presented after examining their online site activities, online questionnaires, and face-to-face interviews. Sam was selected for low, Angel for frequent, and Yemi-J for high levels of participation.

Sam. Sam claimed that he entered the site very few times and was registered on June 7. His last visit was on July 11 and, during this time, he set up his user profile and participated in some online polls. He stated that he spent some time on the site just reading. He accepted the invitation because he wanted to find colleagues with similar interests. Sam claimed that

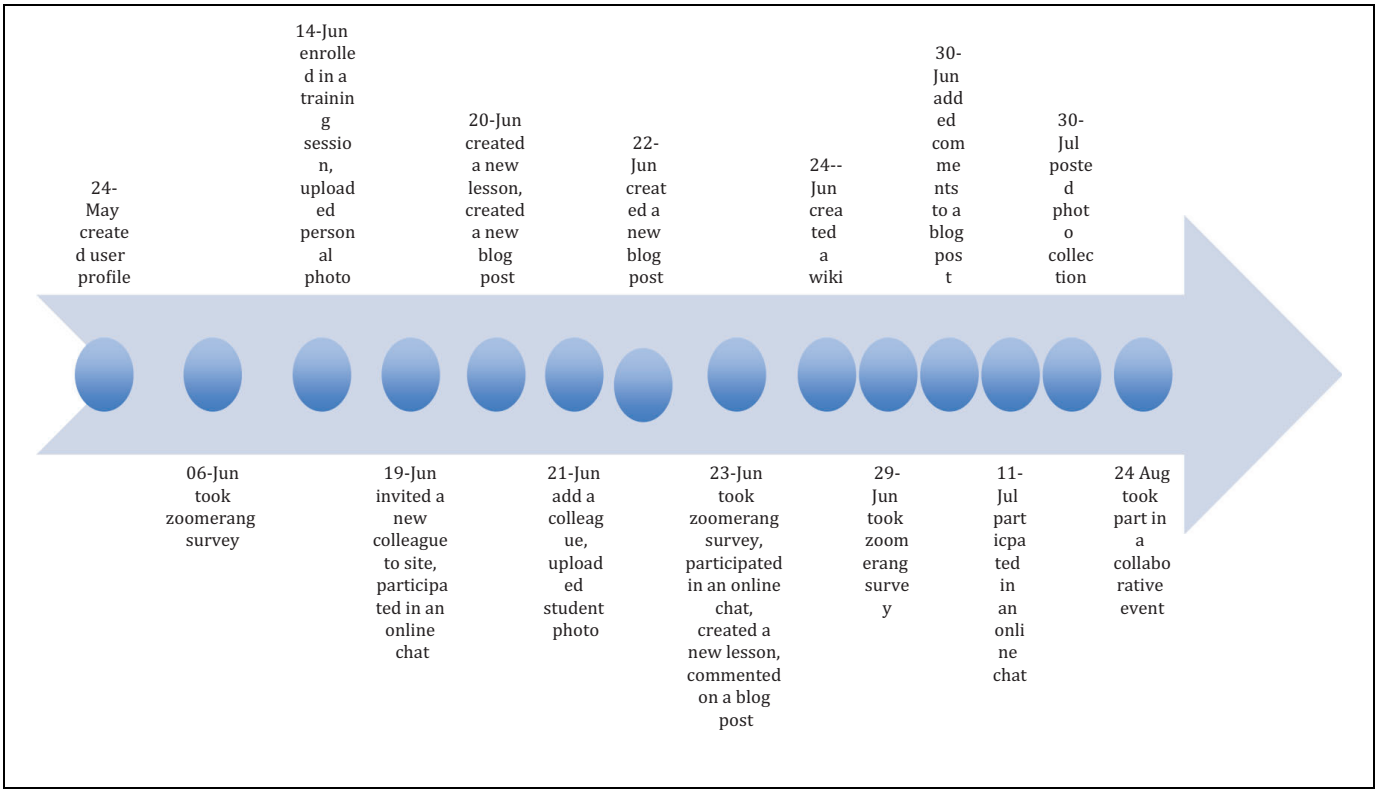

Figure 5. Timeline of Yemi-J's participation.

unreliable Internet access, work priorities, and difficulty in using Web 2.0 tools on the site were the main barriers to his participation. He felt most comfortable using e-mail and used online polls/surveys for the first time on this site, which were noncollaborative activities. Sam claimed that he was aware of online courses being offered for PD but found the site fairly difficult to navigate. He believed that the site "did not allow him to express his views freely" but did allow him to network with colleagues in other schools. Sam believed that the site exceeded his expectations in showcasing technology-led lessons but did not succeed as well in his being able to meet other colleagues. Sam can be considered to be a *content consumer*.

Angel. Angel was registered on the site from May 18 to June 11. Her last visit was on July 11 and, during this time, she set up her user profile and spent time reading, participating in opinion polls/surveys, and posting comments on the discussion forum. Angel launched the forum topic "Internet access for Form 1 students," which, as stated previously, was the most popular activity on the site, with 168 views. She accepted the invitation because she wanted to learn something new and believed that the site met these expectations well. Angel claimed that she was too busy with schoolwork to participate more and she actively used Facebook. She stated:

> It is difficult for me to participate in a strange setting because of my personality. I think that I am an introvert. I also believe that because we were mainly exposed to a teacher-centered approach of learning as students, it may be difficult for us to actively participate even now as adults because we are not accustomed to this "new" approach.

She felt most comfortable using e-mail and blogs, found the site "interesting," and claimed that she was aware of online courses being offered for PD. Angel indicated that the site allowed her to express her views freely but did not allow her to network with colleagues in other schools. Angel believed that we listened to her comments on ways to improve the site as indicated by her response to a question on how to improve the site. She stated:

> You already did, when you put up what's [*sic*] events are coming up via the most popular social network—Facebook [*sic*].

She felt "wonderful" to be part of the network and believed that it could evolve into a professional community of teachers. In summary, Angel can be considered to be a *content producer*.

Lusha. Lusha is included as an example of a collaborator, even though she did not attend the interview, because her online data were sufficient for analysis. She contributed content to the site via blogs, forums, online polls, and in creating her user profile. In some cases, she initiated the collaboration by seeking opinions and knowledge from others, and in other cases, she shared her opinions or knowledge. In the Spanish Curriculum forum, Lusha initiated the posting as she sought teachers'

Table 1. Reasons for Levels of Participation of Selected Teachers.

Participant Name	Benefits of Participation on the SNS	Participation Activities	Barriers to Participation on the Site	Role of Participation
Sam	Connecting with colleagues Knowledge consumption	Just reading User profile Online polls	Technological: difficulty in navigating site and unfamiliarity with certain tools Work priorities	Content consumer
Angel	Learning something new Knowledge consumption and production	Reading User profile Opinion poll Discussion forums	Time: too busy with school work and using Facebook Personality barriers Low motivation to post	Content producer
Lusha	Seeking advice Giving feedback Knowledge production and consumption	User profile Online poll Forum Blog Media sharing	Not indicated	Collaborator
Yemi-J	Sharing expertise with colleagues Knowledge production and consumption	User profile Online poll Forum Wiki Blog E-mail Online chat Google docs Media sharing	No barriers stated Site is interesting	Leader

opinions on her suggested resource sites for Spanish, ''Let me know what you guys think so I can recommend the site to my kids.'' In a blogpost, ''Experimenting with PPT,'' Lusha responds to a request by Yemi-J for feedback on using PowerPoint presentations more creatively. She explored a new idea related to Pitchlake folklore, which is peculiar to Yemi-J's content area and not Lusha's content area; yet, she was able to make a suggestion, which could help the original poster to explore her ideas on creativity further. Lusha wrote, ''I read something recently ... a folklore story of the Pitchlake ...'' and Yemi-J responded, ''Oh I love the Pitchlake story. I remember it from my childhood ....'' Lusha also collaborated on ''Go animate'' and ''My first Google docs.''

Yemi-J. Yemi-J spent more than 6 months on the site and was registered from May 24 to November 1 (while the study had ended the SNS remained live). During the research period, she visited frequently and contributed to the site in a number of different ways. Her initial reason for joining the site was to share her expertise with her colleagues. Yemi-J set up her user profile and spent time on site reading and participated in opinion polls, discussion forums, media sharing, and blogs. She created a wiki, collaborated on a Google doc presentation, and engaged in a number of online chats. Yemi-J believed that the site was interesting and stated that work priorities prevented her from participating more. She felt comfortable using blogs and e-mails and participated for the first time in a forum. Yemi-J believed that the site was not that easy to navigate. She claimed that she was aware of online courses being offered for PD and that the site allowed her to express her views freely and allowed her to network with colleagues in other schools. Yemi-J indicated that the site met her expectations well in showcasing technology-led lessons. She felt ''great'' to be part of the network and believed that it could evolve into a professional community of teachers. Her open comments were ''Spread the word so that more teachers will use it!'' Yemi-J can be considered to be a leader.

Benefits and Barriers to Participation

A summary of aspects of these teachers' participation is given in Table 1. Benefits of participation are to connect with colleagues, to learn something new, and to be able to share expertise with others. Participants were able to contribute content to the site and to read contributions of others that allowed sharing of knowledge and opinions to occur. Knowledge related to practice and issues related to classrooms dominated the site, and teachers had opportunities to share opinions through online polls and to engage in professional learning through online courses.

Barriers to participation included Internet access, work priorities, time to participate, and difficulty in using Web 2.0 tools on the site. These barriers can be categorized as time (Ray, Kalvaitis, Wheeler, & Hirtle, 2011), technological (Ardichvili, 2008), usability (Preece & Schneiderman, 2009), and motivational (Ottenbreit-Leftwich, Glazewski, Newby, & Ertmer, 2010). Although Angel did not spend a long time on the site (2 weeks), she did make a meaningful contribution by her popular post ''Internet access for Form 1 students'' and did contribute to the site by adding content. Also, she claimed that she spent time on Facebook, which might have affected her greater participation on the site. Both Sam and Angel hesitated

to share aspects of their practice publicly, which could be reflective of an attitude that is resistant to change. Lusha, on the other hand, seemed quite willing to share her ideas and to seek opinions of others. Yemi-J made her presence felt on the site and participated in almost every activity with success. She also claimed that work priorities were an issue for her but that did not appear to impede her site participation. She believed that more teachers should participate on the site and worked actively to add others to her network.

Discussion

These results show that this SNS allowed the embedding of both asynchronous and synchronous Web 2.0 tools that afforded participants a number of benefits. The combination of these tools afforded site participants opportunities to connect, to share, and to learn from each other (Davies & Merchant, 2009). Participation took place across time and space, and the SNS allowed teachers from different schools and curricula areas to network with each other. Participants exercised control of their experiences on the SNS and selected activities of their choice in which to participate. These findings support arguments that social interaction is enabled through embedded Web 2.0 tools on an SNS (Veletsianos & Kimmons, 2013) and that meaningful dialogs are possible through these interactions (Davies & Merchant, 2009).

Findings from this study indicated that time for teachers to participate is a barrier and that teachers might regard connecting with professional colleagues as being a low priority. Teachers also expressed unfamiliarity with certain Web 2.0 tools and might not have used these tools prior to this study. Reliable Internet access, necessary for participation, was assumed to be ubiquitous enough with large-scale initiatives in schools. Additionally, teachers might not have been interested enough in participating on the SNS or perhaps initial interest waned over the course of the school term. A lack of time to engage in social networking activities (Ray et al., 2011) could have significantly affected teachers' levels of participation. Ironically, it was found that when teachers did have time, during the July–August vacation, participation decreased even further. This reduction in activity during this period could be due to cultural norms for teachers in Trinbago who are not expected to participate in PD during the vacation. Ardichvili (2008) suggests that some of these barriers can be overcome through the development of trust in the environment, a supportive learning culture, and the affordances of Web 2.0 tools. These findings allow us to problematize the power of SNS as *participatory* (Veletsianos & Kimmons, 2013) if participants do not believe that their contributions matter or that it is important to contribute to the shared space.

We argue that participants on the site greatly preferred to view activities facilitated through certain Web 2.0 tools and only a small percentage of them chose to post comments. These types of activities point to differences in the roles that participants play on the SNS. We suggest five roles of participation on the social networking site, which represent an adaptation of Preece and Schneiderman's (2009) model. These are window-shopper, content consumer, content producer, collaborator, and leader. These findings seem to be consistent with that of Preece and Schneiderman's (2009) findings that although many people participate in online activities by reading, only a fraction will actually contribute by writing in text-based narratives or uploading other digital media forms or including links to other sites or pages. These data have indicated that whereas participants had the option to contribute content to the site, they generally preferred simply to view existing content. In online spaces that facilitate knowledge sharing, participation can be categorized as reading or content consumption and writing or content production (Selwyn, 2011), or even both, which can be encapsulated as content *prodsumership*. Content consumption and production are viewed as cognitive and social aspects of participation. The cognitive and social aspects of participation referred to as "twin actions" (Selwyn, 2008, p. 9) combined can lead to learning on a social networking site (Selwyn, 2008). These low levels of participation on this SNS also are consistent with that of National and Caribbean technology business observers who lament about Trinbago's and Jamaica's declining status in innovation. SiliconCaribe commented "We [e.g., Trinbagonians, Jamaicans] seem to be content to be consumers of technology and not creators of technology and the wealth that comes with that" (Riley, 2011, Para. 4).

Although teachers did not choose to participate fully on the site, those who did seemed to benefit. These include being able to make connections with other teachers of shared interest, to share knowledge, and to make aspects of their practices public. This site was free and provided a ready-made avenue for teachers to select professional learning activities, to publish new work, or to seek advice from colleagues and mentors, thereby reducing teacher isolation, a problem cited by several researchers (Darling-Hammond et al., 2009; Lieberman & Mace, 2010) and, therefore, challenges the traditional top-down approach to PD. Frequent posters stood to gain greater benefits through sharing content and ideas with each other and engaging in discourse about practice. The tension between privacy and publicity can be explored further, and one can consider expanding the SNS to other countries, regionally and globally, especially because Trinbago has such a small audience. The potential of the web to make Trinbago teachers discourse public (Lieberman & Mace, 2010) cannot be ignored.

Declaration of Conflicting Interests

The author(s) declared no potential conflicts of interest with respect to the research, authorship, and/or publication of this article.

Funding

The author(s) received no financial support for the research, authorship, and/or publication of this article.

References

Ardichvili, A. (2008). Learning and knowledge sharing in virtual communities of practice: Motivators, barriers, and enablers.

Advances in Developing Human Resources, *10*, 541–554. doi:10.1177/15234223083195536

Baym, N. K., & Markham, A. N. (2009). Introduction: Making smart choices on shifting ground. In A. N. Markham & N. K. Baym (Eds.), *Internet inquiry: Conversations about method* (pp. vii–xix). Thousand Oaks, CA: Sage.

Bhutta, C. B. (2012). Not by the book: Facebook as a sampling frame. *Sociological Methods & Research*, *41*, 57–88. doi:10.1177/0049124112440795

Cabello, F., Franco, M. G., & Haché, A. (2013). The social web beyond 'Walled Gardens': Interoperability, federation and the case of Lorea/n-1. *PsychNology Journal*, *11*, 43–65. Retrieved from www.psychnology.org

Darling-Hammond, L., & McLaughlin, M. W. (2011). Policies that support professional development in an era of reform; Policies must keep pace with new ideas about what, when, and how teachers learn and must focus on developing schools' and teachers' capacities to be responsible for student learning. *Phi Delta Kappan*, *92*, 81–92. doi:10.1177/003172171109200622

Darling-Hammond, L., Wei, R. C., Andree, A., Richardson, N., & Orphanos, S. (2009). *Professional learning in the learning profession: A status report on teacher development in the United States and abroad*. Retrieved from http://www.srnleads.org/resources/publications/pdf/nsdc_profdev_short_report.pdf

Davies, J. A., & Merchant, G. (2009). *Web 2.0 for schools: Learning and social participation* (*Vol. 33*). New York, NY: Peter Lang.

Dede, C., Ketelhut, D., Whitehouse, P., Breit, L., & McCloskey, E. (2009). A research agenda for online teacher professional development. *Journal of Teacher Education*, *60*, 8–19. doi:10.1177/0022487108327554

Edwards, G. (2010). Mixed-method approaches to social network analysis. In *ESRC National centre for research methods review paper*. University of Manchester, National Centre for Research Methods. Retrieved from http://eprints.ncrm.ac.uk/842/1/Social_Network_analysis_Edwards.pdf

Greenhow, C., Gibbins, T., & Menzer, M. (2015). Re-thinking scientific literacy out-of-school: Arguing science issues in a niche Facebook application. *Computers in Human Behavior*, *53*, 593–604. doi:10.1016/j.chb.2015.06.031

Haythornthwaite, C., & De Laat, M. (2010). Social networks and learning networks: Using social network perspectives to understand social learning. In L. Dirckinck-Holmfeld, V. Hodgson, C. Jones, M. De Laat, D. McConnell, & T. Ryberg (Eds.), *Proceedings of the 7th international conference on networked learning 2010*, 183–190. Retrieved from http://www.researchgate.net/publication/228960053

Hrastinski, S. (2009). A theory of online learning as online participation. *Computers & Education*, *52*, 78–82. doi:10.1016/j.compedu.2008.06.009

Johnson, R. B., & Christensen, L. B. (2013). *Educational research: Quantitative, qualitative, and mixed approaches* (5th ed.). Thousand Oaks, CA: Sage.

Johnson, R. B., Onwuegbuzie, A. J., & Turner, L. A. (2007). Toward a definition of mixed methods research. *Journal of Mixed Methods Research*, *1*, 112–133. doi:10.1177/1558689806298224

Kane, G. C. (2011). A multimethod study of information quality in wiki collaboration. *ACM Transactions on Management Information Systems (TMIS)*, *2*, 4. doi:10.1145/1929916.1929920

Khoo, E., & Forret, M. (2011). Investigating online student roles as a basis for understanding learning and development in a learning community. In S. Barton, J. Hedberg, & K. Suzuki (Eds.), *Proceedings of global learn Asia Pacific, Australia*, 1257–1265. Chesapeake, VA: Association for the Advancement of Computing in Education (AACE). Retrieved from http://www.editlib.org/p/37328

Knobel, M., & Lankshear, C. (2010). *DIY media: Creating, sharing and learning with new technologies* (*Vol. 44*). New York, NY: Peter Lang.

Lave, J., & Wenger, E. (1991). *Situated learning: Legitimate peripheral participation*. Cambridge, MA: Harvard University Press.

Lee, M. J. W., & McLoughlin, C. (2008). Harnessing the affordances of Web 2.0 and social software tools: Can we finally make "student-centered" learning a reality? *Paper presented at the World Conference on Educational Multimedia, Hypermedia and Telecommunications*.

Li, K. M. (2015). Learning styles and perceptions of student teachers of computer-supported collaborative learning strategy using wikis. *Australasian Journal of Educational Technology*, *31*. Retrieved from http://ajet.org.au/index.php/AJET/article/view/521/1241

Lieberman, A., & Mace, D. (2010). Making practice public: Teacher learning in the 21st century. *Journal of Teacher Education*, *61*, 77–88. doi:10.1177/0022487109347319

Manca, S., & Ranieri, M. (2013). Is it a tool suitable for learning? A critical review of the literature on Facebook as a technology-enhanced learning environment. *Journal of Computer Assisted Learning*, *29*, 487–504. doi:10.1111/jcal.12007

Markham, A. (2012). Fabrication as ethical practice: Qualitative inquiry in ambiguous internet contexts. *Information, Communication & Society*, *15*, 334–353. doi:10.1080/1369118X.2011.641993

Merchant, G. (2012). Unraveling the social network: Theory and research. *Learning, Media and Technology*, *37*, 4–19. doi:10.1080/17439884.2011.567992

Onwuegbuzie, A. J., Slate, J. R., Leech, N. L., & Collins, K. M. T. (2009). Mixed data analysis: Advanced integration techniques. *International Journal of Multiple Research Approaches*, *3*, 13–33. doi:10.5172/mra.455.3.1.13

Ottenbreit-Leftwich, A., Glazewski, K., Newby, T., & Ertmer, P. A. (2010). Teacher value beliefs associated with using technology: Addressing professional and student needs. *Computers and Education*, *55*, 1321–1335. doi:10.1016/j.compedu.2010.06.002

Preece, J., Nonnecke, B., & Andrews, D. (2004). The top five reasons for lurking: Improving community experiences for everyone. *Computers in Human Behavior*, *20*, 201–223. doi:10.1016/j.chb.2003.10.015

Preece, J., & Schneiderman, B. (2009). The reader-to-leader framework: Motivating technology-mediated social participation. *AIS Transactions on Human-computer Interaction*, *1*, 13–32. Retrieved from http://aisel.aisnet.org/thci/vol1/iss1/5

Ray, J., Kalvaitis, D., Wheeler, C., & Hirtle, J. (2011). Teachers' attitudes, behaviors, and opinions related to social media use. In *Proceedings of world conference on e-learning in corporate, government, healthcare, and higher education* (pp. 861–867).

Chesapeake, VA: Association for the Advancement of Computing in Education (AACE). Retrieved from http://www.editlib.org/p/38818

Riley, I. (2011). *Consumers vs. creators: Are Jamaicans, Trinidadians and Barbadians happily wasting their time online?* Retrieved from http://www.siliconcaribe.com/2011/04/13/consumers-vs-creators-are-jamaicans-trinidadians-and-barbadians-wasting-their-time-online/

Risser, H. S., & Bottoms, S. (2014). ''Newbies'' and ''celebrities'': Detecting social roles in an online network of teachers via participation patterns. *International Journal of Computer-Supported Collaborative Learning*, *9*, 433–450. doi:10.1007/s11412-014-9197-4

Roblyer, M., McDaniel, M., Webb, M., Herman, J., & Witty, J. V. (2010). Findings on Facebook in higher education: A comparison of college faculty and student uses and perceptions of social networking sites. *The Internet and Higher Education*, *13*, 134–140. doi:10.1016/j.iheduc.2010.03.002

Selwyn, N. (2008). *Education 2.0? Designing the web for teaching and learning: A commentary by the technology enhanced learning phase of the teaching and learning research programme [online]*. Retrieved from http://www.tlrp.org/pub/documents/TELcomm.pdf

Selwyn, N. (2011). Social media in higher education. In A. Gladman, *The Europa world of learning* (pp. 1–9). London, England: Routledge. Retrieved from http://sites.jmu.edu/flippEDout/files/2013/04/sample-essay-selwyn.pdf

Selwyn, N. (2012). Ten suggestions for improving academic research in education and technology. *Learning, Media and Technology*, *37*, 213–219. doi:10.1080/17439884.2012.680213

Shum, S. B., & Ferguson, R. (2012). Social learning analytics. *Journal of Educational Technology & Society*, *15*, 3–26. Retrieved from http://www.jstor.org/stable/jeductechsoci.15.3.3

Smith, B., & Holcomb, L. (2009). The ''walled garden'' approach to social networking: Utilizing Ning in distance education. In I. Gibson, R. Weber, K. McFerrin, R. Carlsen, & D. Willis (Eds.), *Proceedings of society for information technology & teacher education international conference* (*vol. 2009*, pp. 2970–2973). Chesapeake, VA: Association for the Advancement of Computing in Education (AACE). Retrieved from http://www.editlib.org/p/31093/

Snee, H. (2008). Web 2.0 as a social science research tool. *ESRC Government Placement Scheme, The British Library*. Retrieved from http://www.bl.uk/reshelp/bldept/socsci/socint/web2/web2.pdf

Strijbos, J., & De Laat, M. (2010). Developing the role concept for computer-supported collaborative learning: An explorative synthesis. *Computers in Human Behavior*, *26*, 495–505. doi:10.1016/j.chb.2009.08.014

Veletsianos, G., & Kimmons, R. (2013). Scholars and faculty members lived experiences in online social networks. *The Internet and Higher Education*, *16*, 43–50. doi:10.1016/j.iheduc.2012.01.004

Whitehouse, P. (2011). Networked teacher professional development: The case of globaloria. *Journal of Interactive Learning Research*, *22*, 139–165. Chesapeake, VA: Association for the Advancement of Computing in Education (AACE).

York-Barr, J., & Duke, K. (2004). What do we know about teacher leadership? Findings from two decades of scholarship. *Review of Educational Research*, *74*, 255–316. doi:10.3102/00346543074003255