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The Use of Social Media and Citizen Science to Identify, Track, and Report Birds

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Abstract

This study involved the use of social media, *Twitter*, Citizen Science, and the knowledge of indigenous birds. Subjects were 43 senior, elementary, pre-service teachers at a large public university in Southwest Alabama, United States. The elementary, pre-service teachers took a researcher designed pre/posttest about Citizen Science, characteristics of birds, and types of birds spotted at their school, home, and university. There was a positive significant difference between the pre and posttests. The elementary, pre-service teachers were required to watch birds, take pictures/videos of birds, identify the birds, and tweet this information to a twitter address *@Watchdabirds*. Informal interviews with the elementary, pre-service teachers indicated an increase in the awareness of birds at their home, neighborhood, and school and enjoyment in tweeting the results of the birding.

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Keywords: Citizen Science; social media; birding

1. The use of social media and Citizen Science to identify, track, and report birds

Two of the six guiding principles, from the *Framework for K-12 Science Education,* are "children are born investigators and connecting to students' interests and experiences". (Pratt, 2013, p.5) This means that children are typically curious about their world around them and to sustain this curiosity, science must pique their interest and be presented to them matching their learning styles. Through these two principles students begin to develop scientific process skills to observe patterns such as animal behavior, life cycle of plants, and how to predict weather

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conditions. The richness of these experiences will impact the students' desire to learn or deflect science.

The use of social media and Citizen Science to identify, track, and report birds allows students, teachers, and interested citizens to act like scientists by observing birds within their neighborhood, backyard, or school and report their findings. Students do not have to be an Ornithologist to watch birds or be a Botanist to monitor bud burst but merely have an interest, time, and willingness to share your data. Trautmann, Fee, Tomasek, and Bergey (2013) stated "In a variety of ways, Citizen Science creates opportunities for students to connect with the natural world, gain scientific skills, and learn key science concepts…" (p.7)

Citizen Science "refers to efforts in which ordinary volunteers partner with professional scientists to collect or analyze data." (Trautmeann, Fee, Tomasex, & Bergey, 2013, p. 1) This means, regardless of the educational background, anyone can participate in some form of Citizen Science. Cooper (2014) stated "we need each other (social capital) to discover and use the knowledge to find solutions." (Frame 12) Using data collected from different local areas, nationally, and internationally on a variety science investigations (birds, plants, weather conditions, climate, etc.) allows scientists to analyze data and look for trends/patterns beyond their limitations of time, space, and money. Topics investigated range from specific research questions, environmental concerns, to mere observations of the local plants and animals. (A few of Citizen Science websites are: The Great Sunflower Project https://www.greatsunflower.org/ ; Birds http://www.allaboutbirds.org/guide/search ; Galaxy Zoo http://www.galaxyzoo.org/ ; Budburst http://www.budburst.org/)

Citizen scientists, directly or indirectly, collect data and have the opportunity to share this with scientists around the world. Examples of data collection are identifying the first spring bud burst, water monitoring, or observing birds in their yards. There are programs that fit the comfort level, time restraints, and data collection techniques of each interested citizen.

Social Media has been defined as virtual communities designed for participants to interact and share information with one another through various forms of internet applications. This media differs from traditional media in immediacy, popularity, reach, and type. Kaplan (2010) identified six social media applications: Collaborative projects, blogs and microblogs, content communities, social networking sites, virtual game worlds, and virtual social worlds. The use of Twitter falls into the blogs and microblogs because it can be used on mobile devices, such as cell phones, to increase the frequency and speed of use. Shi, Rui, and Whinston (2013) defined Twitter as social broadcasting technology, combining traditional broadcasting and the new social networking capabilities. Any sensational news story is spread quickly through the use of Twitter.

2. Research question

The research question for this study was: What is the effect of Social Media or *Twitter* on the knowledge about, watching, and documenting birds and Citizen Science of elementary, pre-service teachers?

3. Methods

Often teachers, curriculum developers, and researchers identify the end results to be obtained in a classroom, curriculum, or study and work backwards to show these endpoints will be accomplished. Wiggins and McTighe (1998) documented this process in *Understanding by Design*. This is the basis for this research study. The researchers wanted to increase the knowledge of local birds of the undergraduate elementary education majors. That was the endpoint and we worked backwards to identify the instruction and the tests needed to accomplish and measure the success of our students.

The researchers met before the beginning of fall semester 2013 to outline the study. The final outcomes about Citizen Science and bird identification were identified and the researchers worked backwards to the beginning of the semester with an outline of when events should occur. It was agreed upon to have the pre-service, elementary majors take the pretest in the beginning of the semester, receive instruction throughout the semester on Citizen Science and bird identification, have several bird watching walks around the classroom building, and have them take the posttest at the end of the semester. A nine item pre/posttest dealing with Citizen Science and birds were developed by the researchers. The posttest items were randomly assigned to avoid memorization by the elementary, pre-service students. (See Appendix A) The pretest was administered the first day of class and the posttest at the last day of