Implementation of Video-Based STEM Curriculum Marketed Through Social Media

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Introduction/Need for Innovation

Science and technology lay at the foundation of the 4-H program since its creation. 4-H was established in response to a need for advanced agricultural practices (Borden, Perkins & Hawkey, 2014). Today STEM (Science, Technology, Engineering, and Math) in 4-H has considerably evolved from its beginnings of agriculture and canning. It has expanded to cover topics such as coding and robotics (Kress, 2014). Fayer, Lacey and Watson (2017) noted STEM occupations are predicted to be in high demand and will be top-paying positions compared to non-STEM positions. 4-H has attempted to bridge the gap in young people's interests and participation within STEM project areas (Heck, Carlos, Barnett, & Smith, 2012).

As defined by the National Research Agenda of AAAE, research priority four warrants further research of digital technologies impacting education and online learning settings (Roberts, Harder, & Brashears, 2016). The conceptualization of this project is to educate audiences in a non-traditional setting with STEM curriculum designed into video media. According to Wickstorm and Specht (2016), social media networks can gain and influence followers on various platforms. Practical tools like social media are needed to gain the interest of 4-H youth (Galloway, Arnold, Bourdeau, & Nott, 2013). This project uses social media platforms to promote STEM curriculum further to facilitate youth and educators.

How it works/methodology/program phases/steps

This project was developed with the intent to evolve STEM curriculum into a video form marketed through social media. In the Spring of 2018, Oklahoma 4-H began to develop activities and lessons into videos for social media use, particularly through Facebook. Educators, volunteers, parents and youth who “like” Oklahoma 4-H on Facebook and those who subscribe to YouTube, can view 4-H STEM curriculum developed into 2-3 minute videos.

Facebook was selected as the primary medium of choice, based on demographics and target audience. The information posted on Facebook and the Oklahoma 4-H website includes demonstrations, and steps, and links to lessons and handouts to ensure maximum educational benefits were provided. Literature indicates an absence of social media links hinder users from finding and spreading information (Rumble, Settle & Irani, 2016). When posting content to Oklahoma 4-H’s page, analytics were utilized to maximize the total number of impressions.

The video series was constructed based on Kolb’s Model of experiential learning (ELT). ELT was developed from the conceptualization that learning and understanding is achieved through experiences or active learning (Kolb, 1984). ELT may be paraphrased and interpreted in layman’s terms as (1) active participation, (2) reflection of the experience, (3) evaluation of experience, (4) and the formulation of solutions to attempt again (Kolb, 1984). Similarly, the National 4-H Recognition Model encourages the “learning by doing” philosophy, which allows youth to complete hands-on projects (Kress, 2014).

A three-person team worked in conjunction to create this project and individual positions were created: video editor, scriptwriter, and layout designer. The STEM coordinator determined content and scripts for each video. The layout designer designed instructional handouts and strategized

appropriate times to post videos to social media. Video editor filmed and edited videos into the final product. All team members participated in the videoing recording process.

Results to Date/Implications/ Limitations

Currently, data analysis from the three videos posted on Facebook has resulted in 1,610 views, 39 shares, three comments, and 65 likes. Adding to the total is a combination of 96 unique IP addresses and viewers on YouTube. Reaching 29%, of Oklahoma 4-H's Facebook audience or "likes." With post receiving comments like "You getting this ready for next meeting?😋" and "how cool is this !?!?." from Oklahoma 4-H "followers".

Due to a shortage of science and engineering careers in the United States, Extension has advocated a push for STEM activities and curriculum (Sallee & Peek, 2014). The development of these programs is trending with parents of youth (Drugger, 2010). Research studying the effectiveness of non-traditional versus traditional curriculum can ultimately create new markets for curriculum. The effectiveness of information released on new platforms versus the previous methods cannot be measured.

Future plans/advice to others

Upon reflection, Oklahoma 4-H staff plan to continue converting STEM curriculum into video mediums to be shared on social media platforms. Revisions to the study are as follows: videos will be released once a month, videos of 5-10 minutes will be added with more in-depth information on separate data bases, the shorter version will be promoted through social media. Additionally, videos will include materials, commonly found at home and do not require being bought explicitly for the video's activities. The Oklahoma 4-H Marketing Coordinator recommends keeping videos relevant and under three minutes to capture audiences for the entire length of the video. It is recommended to allow adequate time to prep, shoot, and release videos.

Costs/Resources Needed

Successfully implementing a video series will include these materials: a DSLR camera ($527.15), Creative Cloud subscription ($21.99), a mic ($79.90), an actor (volunteer), Filming location (free), social media (free), curriculum (free), and materials for the experiments selected. For this project, we used Oklahoma 4-H resources which were easily accessible resulting in a low cost production. Oklahoma 4-H, bought a mic. The prices listed are as if this project was created with no resources available. There are many alternative methods to complete a similar video series.

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