The Mentor's Lens: Evaluating the Preparedness and Performance of the Science Influencers

Karissa Palmer
karissapalmer@tamu.edu
727-858-7185

Julysa A. Benitez
abril.benitezbonilla@ag.tamu.edu

Dr. Shannon Norris-Parish
norriss@nmsu.edu
575-646-1130

Dr. Rafael Landaverde
rafael.q@ag.tamu.edu
440-476-8411

Dr. Holli Leggette
hollileggette@tamu.edu
979-458-3039

Dr. Gary Wingenbach
gary.wingenbach@ag.tamu.edu
979-321-5756

Texas A&M University
Department of Agricultural Leadership, Education, and Communications

Introduction

Research indicates a leaky pipeline in science communication, including but not limited to the absence of formal science communication programs (Brownell et al., 2013); limited transparency between scientists and the public (Lyon, 2016); insufficient training in communication skills (Brownell et al., 2013); poor selection of science communication channels and ineffective message framing (Nisbet & Scheufele, 2009). Therefore, a 5-year USDA-funded Science Influencers program was created to increase undergraduates' applied knowledge and competencies to communicate about science. The program aims to equip undergraduates in agricultural and science-related fields with effective science communication skills for public engagement (Science Influencers, n.d.). The program, spanning four years, targets undergraduates across the Texas A&M University System, offering a yearlong immersive experience focused on enhancing science communication competencies (Science Influencers, n.d.). The purpose of the evaluation described herein is to assess the program's success in training undergraduates as science communicators and gauges mentor satisfaction with student performance. Thus, we ask the question: Has Science Influencers effectively trained participants in science communications?

Method

We used a formative evaluation to assess Science Influencers' activities to identify preparedness and performance, provide feedback for improvements, and increase the program's effectiveness (Rossi et al., 2018). We analyzed mentor reports (n = 14) from the 2022 and 2023 Science Influencers' cohort compared to selected performance indicators (Rossi et al., 2018) via mentor reports. At the end of each internship, mentors completed a brief survey to indicate their perceptions of the intern's personal characteristics and capability to perform daily activities. To analyze the mentor reports, we conducted a deductive thematic analysis to determine emerging themes for open- ended questions. We categorized the themes into two groups: 1) adequately prepared, and 2) inadequately prepared. After, we had a peer debrief to discuss similarities and differences in coding. Additionally, we collected descriptive data (*M, SD, f,* %) to assess personal characteristics, student skills, potential for a career in this profession, grade performance, and student preparation. We measured 13 different personal characteristics on a four-point Likert scale (i.e., *below average* = 1, *average* = 2, *above average* = 3, and *exceptional* = 4*)*. Furthermore, we measured things like how well the intern cooperated with the supervisor, worked well with others, or appeared. There were five skills we measured on the same four-point scale including how the intern shows leadership ability, communication-speaking, communication-writing, learns new activities, and adaptability to a variety of jobs. On the same four-point scale, we also measured the interns' potential for a career in this profession. The Science Influencers' directors may disseminate the information to USDA officials, stakeholders, advisory board members, and other audiences. These results will be communicated via a formal report and an informal discussion.

Results

We analyzed mentors' reports of students (i.e. interns) who participated in the 2022 and 2023 Science Influencers cohorts. Interns adequately prepared were frequently praised for their motivation (e.g., "High level of motivation, professional working attitude"; f = 6), knowledge (e.g., "Solid grasp of science"; f = 5), proficiency in social media (e.g., "Skilled in producing social media"; f = 5), research abilities (e.g., "Careful with each experimental step"; f = 4), writing skills (e.g.,

"Addressing comments in writing"; *f* = 3), networking capabilities (e.g., "Found ways to connect with diverse audiences"; *f* = 3), and punctuality (e.g., "Always prompt for meetings"; *f* = 2). In contrast, interns categorized as inadequately prepared often met expectations but showed a lack of initiative (e.g., "Doesn't take initiative with some tasks"; *f* = 4). Specific areas for improvement included writing and editing skills (e.g., "AP style, basic understanding of news and feature stories"; *f* = 2), emotional intelligence (e.g., "As a whole it would be, emotional intelligence"; *f* = 2), note-taking (e.g., "Getting much better over time"; *f* = 2), and noted gaps in formal training (e.g., "Lack of formal training in comparative anatomy"; *f* = 1).

We assessed personal characteristics including cooperation with the field supervisor (*M* = 3.79, *SD* = 0.43), teamwork (*M* = 3.79, *SD* = 0.43), work ethic (*M* = 3.62, *SD* = 0.65), dependability (*M* = 3.43, *SD* = 0.65), honesty (*M* = 3.71, *SD* = 0.47), initiative (*M* = 3.36, *SD* = 0.63), appearance (*M* = 3.57, *SD* = 0.76), personality (*M* = 3.71, *SD* = 0.47), motivation (*M* = 3.71, *SD* = 0.47), acceptance of supervision (*M* = 3.79, *SD* = 0.43), acceptance of constructive criticism (*M* = 3.64, *SD* = 0.50), punctuality and attendance (*M* = 3.57, *SD* = 0.65), and professional attitude (*M* = 3.57, *SD* = 0.51). We assessed skills including leadership ability (*M* = 3.31, *SD* = 0.75), communication skills in speaking (*M* = 3.64, *SD* = 0.63), writing (*M* = 3.46, *SD* = 0.66), ease in learning new activities (*M* = 3.50, *SD* = 0.52), and adaptability to various job roles (*M* = 3.64, *SD* = 0.63). Additionally, mentors evaluated interns' potential for a career in the profession (*M* = 3.43, *SD* = 0.51). Mentors believed that most of the interns deserved A grades (78.6%) compared to B grades (21.4%). Regarding preparedness for daily activities at the beginning of the internship, most mentors reported interns were not fully prepared (85.7%) and some were prepared (14.3%).

Conclusions

Our key evaluation question sought to determine if the Science Influencers has effectively trained participants in science communications. Based on the results from the mentor reports, the Science Influencers has been successful in training science communications. Mentor reports indicated positive feedback about students' personal characteristics, skills, and potential for a career in the profession. In addition, the students were adequately prepared and capable of completing daily work activities, except for lacking writing and editing skills, initiative, emotional intelligence, and note-taking skills. The latter were described as initial issues but as improving by the end of the internship. Overall, the mentor/mentee relationship was positive and helped students apply their learned science communication skills to a real-world experience.

Implications and Recommendations

The program directors should customize mentorship according to students' needs and interests to offer personalized guidance on science communication skills. In addition, program directors should request more frequent feedback from both mentors and participants aside from the end of the program feedback, potentially in the middle of the program to encourage improvement for all parties. Mentors also emphasized the lack of writing skills regarding basic AP style. Therefore, we recommend developing a lesson plan to cover basic AP style in a required course that students complete prior to their internships. Perhaps topics such as emotional intelligence and notetaking should be added to the internship preparation sessions that the students receive. All in all, mentor reports are an efficient way to measure the improvement of science communication skills after the required internship experience. The mentors should continue to gauge the effectiveness of science communication training and internship preparation.

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