Science Role Models and Mentors

The Impact of a Virtual Science Mentoring Program for Rural Elementary Schools

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Science Role Models and Mentors (SRM^2; Lara-Alecio et al., 2020), a university mentor corps, connects elementary students with university science majors, who serve as online/virtual science mentors. Originally developed through a previous research grant, SRM^2 is an innovative component of Project **V**irtually-**I**nfused **C**ollaborations for **T**eaching and Learning **O**pportunities for **R**ural **Y**outh (VICTORY, Grant Award No. S411B200055), a federally funded science education project for Texas high-needs rural schools. The purpose of the SRM^2 program is to bolster student achievement, interest, and motivation in science, as well as introduce students to science, technology, engineering, and mathematics (STEM) professions. The virtual science mentors engage with classrooms online over a web conferencing app to provide science instruction, expertise, and mentoring.

Conceptual Framework

Irby et al.'s (in press) Virtual Science Role Models and Mentors Framework serves as our conceptual framework. This framework was informed by the perceptions and work of our science mentors and consists of five components: (a) the university students being role models for the elementary students, (b) providing innovative and enriched learning opportunities, (c) generating real-world interest and motivation for science, (d) mentors' personal contributions and satisfaction in serving as mentors, and (e) offering opportunities for students to meet scientists.

Science Mentor Recruitment and Training

The Project VICTORY science curriculum has been centered on earth science with SRM^2 undergraduate and graduate students who study geology and related fields. Recruitment methods have included emails and flyers distributed to department chairs and professors, as well as science-related student organizations, and physical flyers posted in campus science buildings. Project staff also have held recruitment events.

Recruited mentors complete Collaborative Institutional Training Initiative (CITI) training, a confidentiality agreement, a consent form, and project mentor training. Project staff share the curriculum with the science mentors to review prior to their first mentoring session. Teachers and science mentors are asked to provide their schedules so that a graduate assistant can match up the science mentors and classrooms. Each science mentor is assigned to two or three classrooms. The science mentors receive a small stipend, which is based on the number of mentoring sessions that they attend.

Virtual Classroom Visits

The SRM^2 virtual classroom visits last approximately 45 minutes each, and science mentors meet with each class at least twice. Initially, the science mentors introduce themselves and their work, usually with photos or videos. The science mentors share science information, experiments, and demonstrations, and ask students about what they are learning in the project lessons. The students are also encouraged to ask the science mentors questions.

References

Lara-Alecio, R., Irby, B. J., Tong, F., Capraro, R., Capraro, M. M., Guerrero, C., Fleming, K., Tang, S., & Esparza, A. (2020). *Project Literacy Infused Science using Technology Innovation Opportunities* [Research brief]. Education Leadership Research Center, Texas A&M University. https://elrc.tamu.edu/wp-content/uploads/2015/10/LISTO-research_brief-June-2020.pdf

Irby, B. J., Guerrero, C. L., Sutton-Jones, K. L., Zhang, H., Lara-Alecio, R., Tong, F., Pang, H., & Bachmann, A. (in press). Toward a Virtual Science Role Models and Mentors Framework: Investigating perspectives of university scientists in rural schools. *Science Education.*

VICTORY Impact

During its three years of classroom implementation, Project VICTORY's SRM² program included 30 mentors, 80 teachers, and 1,482 students. VICTORY also resulted in a virtual science mentoring program model that can be replicated with schools and universities also the country. Impact statements from students, teachers, and mentors follow:

Students

- “My favorite part of interacting with the scientist is when she told us what she did and worked for and fun facts about it, like the sea.”
- “I have always been interested in science but being part of Project VICTORY has made me more interested in becoming a scientist. The vast fields of study that were shown throughout our interactions with Project VICTORY have been a major factor.”
- “A cool thing that I learned is that freshwater is >1% of the Earth’s total water, and I have seen HUGE freshwater lakes, so this is crazy.”

Teachers

- “The kids enjoyed talking to a scientist and asking about his research. I also feel like he did a good job explaining the concepts. I think they learned a lot from him and were inspired by his life as a scientist.”
- “It was amazing. They loved hearing about her adventures. She was great with the kids. They learned a lot. They asked her tons of questions about professions in science. She was a great encouragement to our kids.”
- “The students loved the interaction with our scientist. They were able to ask questions and learned deeper content through the lessons she provided. The review of the content is really valuable so the concepts stick.”

Mentors

- “I really enjoyed hearing the kids’ questions and their answers to the questions I asked them. It showed how much of the lessons they learned and gave insight into how they think as an individual. They asked me very imaginative and creative questions which are great quirks for future scientists. Their excitement was very contagious.”
- “I hoped to show them how much you’re able to do with a scientific background in research but also the different career paths that are generated from a scientific background.”
- “I thought it was an awesome experience that helped me a lot too because with my degree, education is something that I could go into and that helped me see what it would be like a little bit. It’s something I’ve never done before, so it was cool to see myself do something different. It kinda put [me] in a situation I’d never done before. It got me out of my comfort zone.”