

FOLLOWINGUP – SUPPORTING TEACHERS AFTER PROFESSIONAL DEVELOPMENT

INTRODUCTION

- Today’s students need to be well versed in science, technology, engineering, and math (STEM) (Carnevale et al., 2014; Honey et al., 2014; National Academies Press, 2000; National Academies Press, 2011).
- Teachers need content-specific knowledge in order to adequately prepare the up and coming workforce for college and careers
- The less comfortable, knowledgeable, and confident a teacher feels about a topic, especially science, the less time they will spend teaching the content (Ramey-Gassert & Shroyer, 1992)
- Professional development (PD), which is intentional, ongoing, and systematic can help to overcome the self-efficacy barrier and improve teacher knowledge and skill (Guskey & Huberman, 1995; Guskey & Sparks, 2000)
- The STEM-it Up: Everything You Need to Know to Get Your Floriculture Curriculum In Bloom (STEM-it Up) was launched.



THEORETICAL FRAMEWORK

- Teacher self-efficacy is an important factor in the content shared with students (Ramey-Gassert & Shroyer, 1992)
- Specific PD where teachers can examine their self-efficacy and are provided with opportunities to learn and apply new material can increase self-efficacy
- People are more likely to engage in activities in which they are familiar, such as teaching a specific topic or curriculum (Ramey-Gassert & Shroyer, 1992; Maddux, 2016)
- STEM-it Up was thus designed utilizing the factors of high-quality PD, (a) content focus, (b) active learning, (c) coherence, (d) duration, and (e) collective participation, as recommended by Desimone (2009).

PURPOSE

To further explore SBAE teachers’ self-efficacy after participating in STEM-it Up, a PD program focused on STEM concepts and content in plant systems curricula.

Table 1
Codes grouped by categories

Categories	Codes
Agriscience Fair	Agriscience Fair
Difficulties with Content	Difficulties with Content
Labs & Classroom Activities	Asking why questions, floral designs, labs, microgreens, other science content, SAE
Self-Efficacy	Self-Efficacy
Skills to Teach the Science of Ag	Skills to Teach the Science of Ag
Space-Classrooms	Space-Classrooms
Support	Administration, funds/monetary, materials, “not a science teacher,” other teachers, teaching techniques
Turning Student on to the Science of Ag	Turning Student on to the Science of Ag

METHODOLOGY

- Population was agriscience teachers who participated in STEM-it Up (three days of intensive PD) four months prior, summer 2019
- Five teachers agreed to participate resulting in two separate, 1-hr focus groups
- A deductive, qualitative approach was utilized
- Interview guide created in part by results and questions from a previous pre- and post-survey on self-efficacy beliefs of teaching the science of agriculture, which was part of a larger study.

FINDINGS & CONCLUSIONS

- Data generated nine individual categories and 21 codes (Table 1)
- All participants indicated they had utilized at least some content from STEM-it Up in their classroom such as utilizing provided labs, micro-green propagation, and asking “why?” questions
- Two participants noted they felt they were more prepared with more skills necessary to teach science concepts
- Increased student engagement through labs and application of abstract concepts were reported as benefits to helping students understand the science of agriculture
- Barriers included:
 - Overwhelming lack of support noted from administration as well as in the form of materials and supplies
 - Lack of supplies and funding for lab materials



IMPLICATIONS

- The factors of high-quality PD (a) content focus, (b) active learning, (c) coherence, (d) duration, and (e) collective participation were essential (Desimone, 2009).
- Follow-up communication not only positively impacted self-efficacy to teach the science of agriculture in their curricula, but also impacted the teacher’s overall appreciation of the STEM-it Up program and possible engagement in future PD opportunities.
- Follow-up communication, engagement, and sharing of resources after PD are recommended to help build teacher self-efficacy to teach and apply what they learn from their experience as a student.