

Science Understanding, Math Mentoring Integrated with Technology (SUMMIT) Evaluation

The University of Central Florida (UCF) led, and University of South Florida (USF) Coalition for Science Literacy (CSL) evaluated, the SUMMIT project to assist schools in making a smooth transition to Florida's Next Generation Sunshine State Standards (NGSSS) for Mathematics and Science. The project was designed to provide a cohesive, consistent, and rapid-roll training that helped teachers across the state of Florida to: 1) understand the concept of "Big Ideas"; 2) obtain a deep conceptual understanding of the benchmarks; and 3) develop strategies that enable students to achieve benchmark outcomes.

SUMMIT was carried out in partnership with 16 Florida school districts distributed throughout the state. Each district formed a Lesson Study Leadership (LSL) team consisting of an administrator, three science teachers and an Exceptional Student Education (ESE)/ English for Speakers of Other Languages (ESOL) teacher. The program's intent was to enable the district leadership teams to develop school-based leadership teams to enable teachers to:

1. Teach implementing the NGSSS science standards
2. Apply research based pedagogy in classroom instruction (Inquiry, Argumentation, Questioning, Misconceptions)
3. Apply research based instruction in their professional development (Intensive Training, Modeling, Follow Up, and Accountability)
4. Integrate technology into the science class
5. Develop and mentor Lesson Study Teams (LST) in their respective schools that will enhance student learning outcomes

CSL's evaluation focused on five primary evaluation questions:

1. To what extent does the SUMMIT professional development exhibit a primary focus on the targeted disciplinary content?
2. To what extent does the SUMMIT professional development exhibit a primary focus on the targeted pedagogical content?
3. To what extent do the design and implementation of SUMMIT summer institutes and follow-up sessions reflect attention to conditions for adult learning and characteristics of effective teacher professional development?
4. To what extent were participants satisfied with this professional development experience?

CSL observed portions of the SUMMIT professional development (PD) sessions, gathered feedback from summer institutes, and followed up with session participants via personal interviews and focus groups. CSL also developed and administered a survey to gather data regarding teacher efficacy, teacher content knowledge relative to the topics covered, ratings of the facilitator and environment; open-ended questions were also included to which participants could provide unstructured feedback. The self-efficacy portion was taken from the Science Teaching Efficacy Beliefs Instrument Form B (STEBI-B) developed by Enochs & Riggs, 1990; a validated and reliable instrument. The content questions were provided by the summer workshop facilitators to ensure alignment between the intended content to be delivered and tested. The facilitator and environment questions were developed to capture information regarding how the PD was conducted and overall perceptions during the summer and follow-up workshops. The open-ended questions allowed participants an opportunity to share their thoughts and ideas in an unstructured and personal manner.

The project succeeded in its efforts to assist teachers in gaining a greater understanding of how to use inquiry to teach NGSSS benchmarks. Teachers were especially positive when activities were varied and changed throughout the day; hands-on activities were well received and reported to be the most engaging. Overall, the facilitators were effective in creating an appropriate climate for learning and the treatment of the science content, and pedagogy was generally rated as appropriate. CSL recommended that participants complete online science courses that review basic science skills and content *before* attending these workshops to offer yet another avenue of increasing teacher basic science content knowledge and to increase the relevance of the educational tools offered by the PD.