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Teacher Professional Development: Using Local Resources to Engage Teachers and Students in Learning

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ABSTRACT

Background: Multiple studies on teacher learning indicate highly positive results when professional development is content-focused and coupled with active learning. In addition, an overall coherence to state and national standards can have a positive influence on enhancing the knowledge and skills of teachers, thus bringing about changes in teaching practice. K-12 student learning. For the past three years, site-based summer science courses, with spring preview and fall follow-up, were conducted to enhance the content knowledge and pedagogy of Georgia public school science teachers in the area of ecology as they became acquainted with the ecology of coastal Georgia. Teachers spent significant time investigating Jekyll Island, Sapelo Island, and Cumberland Island, as well as the St. Mary’s River and the Okefenokee National Wildlife Refuge. In this time of economic constraints, the welling-on-site course provided teachers with video lesson segments for use in their classrooms, providing virtual standards-based foldouts for their students. Additional goals were to provide opportunities for investigation and inquiry, and to encourage the application of new knowledge and skills in the classroom setting.

Method: Mixed-method quantitative and qualitative tools were used to evaluate course impact on teacher participants and their K-12 students. Tools included science efficacy and outcome surveys, teacher-made artifacts and pre/post tests.

Results: Science efficacy and outcome surveys indicated that the teacher participants increased their confidence for teaching ecological concepts. In addition, learning assessment (pre/post) demonstrated knowledge gains for both teacher participants and their K-12 students. Through the review of teacher-created field notebooks, lesson plans, laboratory activities, student assessment instruments and surveys, it is apparent that place-based activities are appropriate and useful in the K-12 setting. There is also evidence that teachers apply the place-based use of local resources once they return to their own classrooms.

Conclusion: The place-based science course provided effective professional development for teacher participants; the project resulted in additional benefits for K-12 students.

Teacher Quality Partnership Criteria

- Partnerships between:
  - Georgia Southern University College of Education:
    - teacher preparation unit
  - Georgia Southern University College of Science and Math, Department of Geology:
    - content unit
  - Additional local agencies:
    - U.S. Fish and Wildlife Service, Okefenokee National Wildlife Refuge
    - National Park Service, Cumberland Island National Seashore
    - Sapelo Island National Estuarine Sanctuary
    - Georgia Department of Natural Resources
    - High-need Local Educational Agency (LEA)

Methodology and Data Collection

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Analysis and Conclusions

# 1. Did the course effect change in teachers’ attitudes toward and interest in teaching ecology?

The results from the Science Teacher Efficacy Belief Instrument (STEBI), suggest a statistically significant increase in teacher efficacy for teaching ecology indicating that place-based professional development for teachers can improve teacher efficacy for the teaching of ecology. A paired samples t test revealed a statistically significant increase in student achievement score on the pretest and the mean student achievement score on the posttest.

# 2. What effect did the course have on teacher content knowledge?

Place-based professional development from three different venues shows a positive learning outcome for all teacher participants suggesting that teacher participants gain valuable knowledge about ecology by learning it in a place-based venue. Data from 2010 - 2012 (N=50) shows a positive learning outcome for all teachers.

The mean achievement scores averaged 44.5 points higher between the pretest and posttest scores. These differences were statistically significant at the .05 level.

# 3. How did the course affect teachers’ pedagogy?

These results indicate an improvement in the classroom assessment scores of students whose teachers attended place-based professional development.

Student results from content exams suggest a statistically significant increase in content knowledge.

# 4. What effect did the course have on student content knowledge?

These results indicate an improvement in the classroom assessment scores of students whose teachers attended place-based professional development.

# 5a. What are the advantages of on-site, place-based instruction?

"The field work is by far the strongest point of the project by allowing classroom teachers to experience the standards first hand and bring back valuable lessons to the classroom." – Teacher Participant

# 5b. What are the limitations of on-site, place-based instruction?

"Being able to witness ecology of our area first hand, as well as get ideas of how to use that information in the classroom is the strength of this class. For science teachers who haven't done any field research in the past, it should be a requirement." – Teacher participant

Acknowledgements

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