

The Impact of a Co-Teaching Field Experience on Children, Candidates, and Faculty

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A Continuum of Field Experiences

Observations Assisting Tutoring Teaching with others, Mini-units Co- Teaching , PDS, Student Teaching

The continuum above illustrates a way of viewing field experiences. Introductory field experiences often begin with observations and assisting students. These experiences rarely involve planning lessons. A second level of field experiences may involve tutoring children. This progression continues with candidates participating in planning, planning and teaching mini lessons, and eventually assuming complete responsibility for planning and teaching. Two popular approaches to helping candidates move to the highest level of planning are co-teaching and professional development site (PDS) experiences. A difference between PDS and co-teaching is that PDS is often designed more as a laboratory for candidates to practice their own teaching and receive feedback; while in co-teaching, all participants are involved in the planning and delivery of lessons (Deich, 2001). In addition, co-teaching is usually in one teacher's class and PDS involves a group of faculty members. This study examines the impact of co-teaching on participants.

The co-teaching model described here included two university professors, two pre-service teachers, two in-service teachers, and a class of 20 gifted 8th grade geometry students. The goal of this field experience is to allow pre-service teachers to work with professionals in classrooms with children and then to assess their development with dialogue and reflections immediately after the experience. The following

information is based on interviews and reflections throughout the project. This experience not only gave the middle school children a deeper understanding of geometry, it also helped the pre-service teachers develop their skills in classroom management and in working with gifted children. In addition, it provided the classroom teachers with guidance in implementing an integrated unit, and it gave the university professors the opportunity to collaborate and further develop their methods courses.

The Project

Eighth grade gifted geometry students and their teachers at a local middle school participated in the "Noonday Project™" (Charischak, 2004), an international, technology-based, integrated unit to "discover" the circumference of the earth, based on a method devised by Eratosthenes in about 240 b.c. (Lasky, 1999). The gifted students participated in a series of experiences which integrated geometry, astronomy, scientific method, history and geography, and ultimately allowed them to calculate the circumference of the earth by comparing their data with data collected by students around the globe.

The activities included a skit about Eratosthenes' life based on Lasky's (1999) children's book, predictions and measurements of shadow lengths at different times of the day, graphing data on TI calculators, and several hands-on, inquiry-based activities to help them develop a deeper understanding of the geometric, scientific, and geographical concepts involved.

The relationship between central angles and circumference was investigated with the use of pie plates. Globes, flashlights, and toothpicks helped the students construct the relationship between latitude and longitude with regard to shadow lengths. Students also designed and built shadow-casting devices; planned and conducted experiments; and communicated with other schools via the project website.

Throughout the various stages of the project, students engaged in written and oral reflections. Data analysis in the classroom involved discussions of uncertainty, evaluation of data, and drawing scale models. At the end, students created and presented products, such as posters, skits, and PowerPoint presentations, to display their learning.

The project spanned six weeks and included eight lessons in the fall of 2004. The lessons were initially designed by the two faculty members involved but as the weeks progressed, the pre-service teachers and the gifted teachers shared in the development, implementation and assessment of the lessons. The pre-service teachers who participated in the co-teaching experience worked directly with the children during the lessons and debriefed with the two gifted teachers and the two university teachers after each class. Pre-service teachers reflected upon and assessed various aspects of the lessons, including techniques for distributing materials, the effectiveness of grouping patterns, and the value of follow-up and discussion with middle school children. The gifted children developed their geometry skills and experienced math, science and technology as tools for understanding their world. The gifted teacher and the gifted coordinator helped refine the unit and plan on using it in the fall of 2005 with the entire 7th grade at the school. The university professors modeled best practices and collaboration, which strengthened their commitment to working with pre-service teachers and classroom teachers. This project provided a win-win-win situation for all the participants.

Lessons Learned

This experience suggests three things. First, the gifted children involved developed their

understanding of geometry and its connection to science. Second, pre-service teachers gained in confidence and understanding of gifted children. Third, faculty members involved benefited from the collaboration of the project. Children developed a deeper understanding of geometry by using this project-based activity. Project-based learning has been shown to engage, motivate, and enhance student learning (Simkins, 2000). Students created PowerPoint slides of their learning, wrote poems, and presented skits to display their knowledge. The children's knowledge of geometric terminology and the use of tools to display their learning were enhanced. They were able to articulate the relationship between sectors, central angles, the circumference of the earth, geography, the impact of latitude and longitude on the study, the scientific method, and developed their use of the TI-73 calculators while posting data collected of shadows that were cast at different times of day.

Since the project, the classroom teacher and students have referred to the Noonday activities to make connections. For instance, when teaching central angles, the pie plates were used again. Also, when Pythagorean's Theorem was studied, students brought out the Noonday shadow models they had created. In addition, the hands-on, real-life, social situations challenged students to think and allowed them to work together which is supported in the literature (Erb, 2003; NMSA, 2003). One student remarked, "I wish we could do more of this; we like building things and questioning." This project reached children socially and intellectually while involving them in discussions with adults about what and how they were thinking.

Second, pre-service teachers benefited from the experience. Indrisano and Birmingham (1999) assessed a six-year co-teaching experience that suggested the learning of children and teachers was enhanced. One charge for colleges of education is that pre-service teachers have a variety of field experiences that build on one another, and provide candidates with authentic experiences (NCATE, 2004). The pre-service teachers in this project experienced a valuable opportunity to develop as professionals

focusing on the skills and dispositions necessary for working with young people. One comment was “I liked having the lessons already prepared; it gave me confidence to work on reaching the children,” and “I learned a lot about working with gifted children and how it takes a while for them to come around and trust people.” “It has given me a lot of confidence,” and “I was surprised at how fast they [the children] could synthesize what I was saying” illustrate the pre-service teachers’ growth of skills and understanding of gifted adolescents. University and school faculty members debriefed with candidates after each session. In addition, they spoke with one another to analyze the development of the candidates. Examples of faculty comments include: “We watched [Kim] develop her confidence in working with children,” and “At first, we were concerned about how well [Tom] would work as a team member.” By working with candidates over time, improvement in knowledge, skills, and dispositions was evident.

Third, classroom and university faculty members also benefited from the experience. The gifted teacher was hand-selected because of her innovative spirit and leadership. After discussing the project with her, she was very open to the ideas (teamwork, hands-on, integration of math, science, and technology) and has since provided a lot of insight and suggestions for ways to enhance the project. Her comment of, “We approached this project with a no-fault attitude in that we were willing to work together to make it happen,” suggests that trust is necessary when co-teaching. She has been able to use the activities as supplements to her courses. She is currently working with the gifted coordinator to implement the Noonday Project with the entire seventh grade next year.

University faculty members used this project to strengthen the alignment of the methods courses with the State Program Standards. This project added to their commitment to modeling best practices with candidates. During the experience they were able to share with each other techniques for communicating with children and evaluating lessons. Furthermore,

they have used this project as a springboard for continuing research on collaboration and co-teaching. The collaboration provided a stronger experience for the faculty members and integrated the subjects together.

According to the literature, having university professors work directly with classroom teachers has the potential to impact curriculum development and teacher efficacy (Edmonson, Fisher, Brown, Irby, Lunenburg, Creiton, Czaja, Merchant, and Christianson (2001). Johnson, Johnson, and Zimmerman (2002) also suggest that productivity in schools is related to continuous improvement, human resource development, strategic planning and accountability and collaboration. The collaboration among participants laid the groundwork for continuing the project next year, and strengthened the methods courses in the curriculum. This co-teaching model, based on collaboration, allowed classroom teachers and pre-service teachers to develop their skills in working with children in a hands-on, project-based environment. Collaboration and co-teaching have the potential to inspire and motivate educators on many levels to take risks, build skills, and strengthen programs.

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