Outdoor Mathematical Experiences:
Constructivism, Connections, and Health (Workshop)

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Abstract
This workshop will first be a discussion of what outdoor mathematics is, and then the reasons of why it is important in both teacher education and elementary schools. Outdoor mathematics includes activities that help students connect to their world, and connect mathematics to other subjects. The majority of this workshop will entail actually doing some outdoor mathematics activities and talking about others and end with a discussion of some other outdoor activities that may be possible on individual campuses.

Introduction
"If a child is to keep alive his inborn sense of wonder, he needs the companionship of at least one adult who can share it, rediscovering with him the joy, excitement, and mystery of the world we live in." Rachel Carson

Outdoor mathematics activities in both preservice teacher education and in elementary schools can help teachers and children rediscover the "joy, excitement, and mystery of the world we live in." Children are naturally curious about the world around them, and enjoy using mathematics to help them understand their world. From measuring their height, dividing cookies, and games they play, mathematics is a natural part of their world. Through this natural curiosity, they are able to construct mathematical knowledge through both a psychological and sociocultural perspective of constructivism (Ball & Bass, 2000). Outdoor mathematics experiences not only help learners to see connections between mathematics and other disciplines, but also can help learners feel more connected to their natural world. In a society where physical outside activity is becoming scarce, reconnecting to the outdoors and becoming more active is critical. Outdoor mathematics in elementary schools is now required or at least encouraged in several countries (Bones, G. & Gravanes, A., 2004). Responsibility for implementing an outdoor mathematics approach in the elementary mathematics curriculum lies with the teacher who needs to experience and understand this approach in teacher education.

Connections to other subjects and real life. Outdoor mathematics is a natural way to connect mathematics to other subjects and help students see that mathematics is not just something that happens only in the classroom and textbooks. Science, literature, art and physical fitness are connected easily to mathematics through outdoor experiences. Students and teachers often think mathematics only happens in schools. They need to see it outside, in the woods, on the sports fields, even in the malls.

Outdoor mathematics in teacher education. Teachers need to experience mathematics in ways that they will be expected to teach it; they need to experience mathematics in the natural world. Teachers are more likely to implement outdoor activities in their own classes if they have experienced it in their own learning experiences.

Tasks. This presentation or workshop, after laying the theoretical framework of why outdoor mathematics is important, will share outdoor mathematical tasks that I have successfully used in both preservice teacher education and in algebra and geometry general education courses. Participants will discuss how these activities can be adapted for their practice, as well as be encouraged to share ideas that they have for outdoor mathematics that connect mathematics to the real world and connect people to the outside world.

References

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