

Environmental Education in an Era of Nature Deficit Disorder

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by

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In the patent-or-perish environment of higher education, we see the death of natural history as the more hands-on disciplines, such as zoology, give way to more theoretical and remunerative microbiology and genetic engineering...as the young spend less and less of their lives in natural surroundings, their senses narrow, physiologically and psychologically, and this reduces the richness of human experience. (Louv, 2008, p. 2-3)

How EE is compromised by standards-based reform

Environmental education (EE) has been anything but on the front burner in the current era of educational standards and high stakes testing. States developed their individual curriculum frameworks in the 1990s in order to achieve compliance with the national *Goals 2000* legislation and requirements in the *Elementary and Secondary Education Act* (Council of Chief State School Officers, 1995). Standards-based curriculum and high stakes testing represent the current phase of public school reform that began after World War II. This effort has produced national standards documents for the various K-12 school subjects, and these in turn have been used by the states in creating their own curriculum frameworks and standards (see <http://www.education-world.com/standards/state/index.shtml>).

Environment-related content is included in the national standards documents for science (National Research Council, 1996; American Association for the Advancement of Science, 1993, 2009), geography (Geography Education Standards Project, 1994), and social studies (National Council for the Social Studies, 1994). For example, in science standards can be find concepts such as the water cycle, trophic levels and food chains, ecological succession, and natural resources. In Figure 1 (see appendix) I have illustrated the environment-related content in the Virginia state science standards for grade 3. While this inclusion of EE content might be seen as a good thing, the flip side is that the work of school-based environmental educators is now prescribed and restricted by whatever content their state documents specify. Standards-based reform has rigidified disciplinary boundaries, thus presenting an obstacle to interdisciplinary environmental education.

Further, the implementation of standards-based accountability has been detrimental to EE in how schools have placed so much importance on student test scores and annual yearly progress (AYP). This focus has resulted in a shift in teacher-preferred pedagogies and also to a neglect of the affective domain. Outcomes such as the development of children's attitudes and motivations and their ethical development in relation to the environment, which would be very important from the perspective of a John Dewey, are typically absent in technicist, standards-based lesson plans. This absence is significant because, as Dennis and Knapp (1997) note, "Environmental education includes both cognitive and affective dimensions....(There is a) strong concern for attitudes and motivation." (p. 8) The most effective programs in EE have been found to be those in which "products (test scores) are not emphasized, inquiry is sparked, open-ended questions are generated, and students actively participate and appear involved." (Price & Hein, 1991, p. 510) The North American Association for Environmental

Education (2004) includes personal and civic responsibility as one of four strands in its guidelines for EE in the K-12 curriculum. The graphic in Figure 2 (see appendix), illustrates the NAAEE framework for EE. That students should learn natural history is strongly implied in the framework.

In terms of this shift in pedagogies brought about by the standards reforms, teachers have moved away from the use of inquiry strategies and toward more use of direct instruction and thus there has been a decline in student field studies and experiential learning (Blair & Archer, 2001; Woods, 2001, Amrein & Berliner, 2002; Brown & Bentley, 2004). This shift in pedagogies may impede other educational purposes, such as the development of student autonomy and independent thinking. The focus on recalling information in order to raise standardized test scores is a distraction for students from the intellectual substance of the content and transforms “their efforts to learn into efforts to please.”

Standards-based curriculum subtly communicates to the public the curriculum fallacy of *universalism*. This is the view that some particular content can be identified that is of fundamental and universal significance regardless of context or of the characteristics of the student. Universalism is the fallacy of believing there is a “best” curriculum (Doll, 1996). The National Science Education Standards commit to this very fallacy in proclaiming that the content identified by the National Research Council must be learned by every student regardless of age, gender, race or ethnic background, disabilities, interests, motivation, or aspirations (NRC, 1996, 2).

Standards-based reform has fostered the deskilling of teachers by prescribing for them the content and process they are to enact in their classroom curricula, thus narrowing the decision-making processes within their work (Popkewitz, 1991). It has shifted curriculum decision making from the local level to the state and national levels. The push for conformity and uniformity ignores the importance of both context and diversity in teaching strategies and methods. As state assessments are tied to the standards more “teaching to the test” has resulted, whereas the purpose of education should emphasize “diversity, creativity, social responsibility, empowerment to think and, more particularly, to act” (DeBoer, 1991, p. 240).

Epistemologically, standards-based curriculum is thoroughly modernist, but postmodern thinkers have argued persuasively against the metaphysical idea of a universal human nature and have advocated a deeper appreciation of human individuality. David Elkind (1997) points out that “What has come to the fore in postmodern times is the awareness of the importance of *difference*.” (p. 242) As Linda Lantieri (1995) argues:

The problem is not with standards as such; it is with standards imposed entirely from without - impersonal standards that turn students into objects and disrupt connections between teachers and students and between students and their work. (Effective) teachers... have high expectations of their students, but the expectations are constructed in collaboration with the students, and they are translated into “informational” rather than “controlling” feedback.

Controlling feedback is “outcome oriented,” while informational feedback “is focused on the ongoing activity.” (p. 392)

So, the issue is not with standards *per se*, as standards certainly did exist before the current reform movement and who would not want teachers to have appropriate academic standards, expectations that are recognized alike by student, teacher, and parents? However standards are properly established at the *local* level because every child is unique, having his or her own history, personality, learning preferences, gifts and talents, interests, and aspirations. Individual achievement standards are best negotiated between student, parents, and teachers.

Nature Deficit Disorder appears as an upshot of the digital revolution

The phenomenon of “Nature Deficit Disorder” (NDD) was introduced by writer and child advocate Richard Louv in his book, *Last Child in the Woods*, first published in 2005 and expanded in a 2008 edition. Louv writes about the lifestyles of today’s American youth and about how little of the experience of nature is part of their lives. He documents what most of us already have observed, that kids nowadays are far more focused on their screens than on the out-of-doors. The consequence of this situation, he argues, is the declining health of our population as well as other growing societal ills. He calls the problem “Nature-Deficit Disorder” which he is careful to point out is not a medical diagnosis. In 2008 the National Audubon Society presented its Audubon Medal to Louv for encouraging more contact between children and the natural environment (see <http://www.audubon.org/nas/medal/>).

Louv cites a variety of studies to support his argument. For example, according to the Center for Research on the Influences of Television on Children (CRTIC) at the University of Texas at Austin, children in America spend more time watching television than in any other waking activity, with additional time devoted to video and computer games and to using the Internet (Vandewater, Bickham, Lee, Cummings, Wartella, & Rideout, 2005). It is a sign of our overconsumption that the average home in the US has more TVs than children. Worse, our kids watch more TV than children any place else in the world.

Clare Lowell (2008) writes of “videophilia” as the tendency “to focus on sedentary activities involving electronic media” and says this new love object of our society has “virtually supplanted the need for ‘biophilia,’ or the urge to affiliate with other forms of life” (p. 219). She sites researchers Hofferth and Sandberg (2001) who found that “the proportion of 9-12 year olds who engage in outside activities such as hiking, walking, fishing, beach play, and gardening has declined by 50 percent ...(and) children’s free play time in a typical week has declined by a total of nine hours over a 25-year period” (p. 220).

This situation is to be deplored for more than one reason. For parents, the health consequences alone should raise an alarm. But for a democratic society (or at least an aspiring one), the situation could make a huge difference in the orientation of future voters who will decide what to do about global climate change and other threats to the health of our ecosystems. Today many Americans still either deny that there are serious environmental problems or discount the necessity of acting to ameliorate them (because, for example, it will hurt the economy).

A needed corrective

Natural history, the systematic study of natural objects, phenomena, and organisms, is virtually ignored by the two major reform documents that guided the development of most of the state science standards, *Science for All Americans* (AAAS, 1989) and the *National Science Education Standards* (NRC, 1996). While much earth and life science content is recommended, these documents do not recommend methodical studies of nature by student (Melear & Hagevik, 2007).

During the school day, the pressure on teachers to “cover” their state standards increasingly usurps time outdoors. Many schools have abolished recess above the primary grades (Rivkin, 2000). Many schools now require teachers to justify field studies exclusively in terms of addressing particular standards.

So, what can school-based environmental educators do? For one thing, they are advised to study their state standards to identify the environmental education content therein, as is illustrated for the grade 3 Virginia science standards (Figure 1). They can also look for compatible and complementary standards in their states social studies, health and physical education, and other standards documents. Cross-linking standards can be used to justify curriculum integration, one of the strengths of environmental education. Environmental educators will have to fight hard for field based studies and affective education, but, of course, that is something we have always had to do.

Recognizing the priority of EE and natural history studies as part of the curriculum is only one part of the solution. One of the biggest obstacles educators may face in the classroom is a mindset, or misconception, identified by Daniel Quinn (1996) as “the Great Forgetting,” an overarching world view or paradigm that, “blinds us to the fact that we are a biological species in a community of biological species and are not exempt or exemptible from the forces that shape all life on this planet.” (p. 307) The educational implication of Quinn’s hypothesis, as I interpret it, is that EE should be infused with a paleontological and archaeological perspective. The historical perspective can be integrated when teaching ecological concepts and principles. This perspective also is compatible with field studies and

place-based education. Such EE can help children construct more sophisticated, broader understandings of our species' genetic and pre-historical context.¹

Finally, we school people need to recognize the value of non-formal environmental education and do what we can in our communities to support the many agencies, governmental and non-governmental that provide it. From my own observations, I have found that schools could do much more to engage with EE resources in their communities, such as museums, botanic gardens, nature centers, aquariums, parks and recreation departments, state and national parks and forests and so on. Many agencies employ educators who specialize in interpreting different phenomena and issues to the public and who often develop hands-on and engaging ways to do so. Groups like the Sierra Club often do natural history interpretations as part of their regular outings.

Exemplary Practice: Signs of hope

In education the greatest public good is not always served by the public schools. In the US, unlike in Britain, private schools are exempt from state curriculum standards and testing. One not-for-profit, non-sectarian private school whose curriculum is rich with opportunities for experiential outdoor learning is Community School (<http://www.communityschool.net>), located in Roanoke, Virginia. Since 1971 Community School (CS) has served a diverse population of 150 students from pre-K through middle school. The affiliated Community High School (<http://www.communityhigh.net>) was started in 2001 and serves 60 students in grades 9-12. Forty percent of students in both these schools receive financial aid.

Community School's nontraditional educational program features a learner-centered curriculum enacted in non-graded, multi-aged classes with a low pupil to teacher ratio. The curriculum is interdisciplinary and includes a strong visual arts program as well as drama, movement, and music. Experiential environmental education and community service also form a vital part of the curriculum. Fridays each week of the school year are typically devoted to field studies and students are given several choices of trips and activities. Overnight and week-long camping opportunities are offered, with longer stays for the older students. In the spring, middle school students may opt to study environments in more distant places, such as the Florida Everglades National Park and sites in other countries.²

Community High School (CHS) represents a new and unique niche in education: the museum school. This concept has emerged only recently with only about twenty examples in the US and those

¹ Man: A Course of Study (MACOS), an NSF funded curriculum project of the 1970s was a course that helped kids perceive such a long view.

² My own daughter visited tropical forests in Bolivia as part of a student exchange with a Bolivian middle school.

representing a variety of designs. Community High School is charting new territory, particularly in developing the practice of collaborations between a formal school and multiple informal educational agencies and real-world learning sites.

Both CS and CHS are examples of schools where environmental education is infused in an integrated curriculum and where teachers value experiential learning. In both schools studies outside the classroom walls are a frequent part of students' learning. The education offered by these schools is characterized by:

- * learner-centeredness
- * community-connectedness
- * low student to teacher ratio
- * integration of social justice and environmental education across the curriculum
- * infusion of the visual arts, drama, movement, and music into the curriculum.

Teacher education and professional development for teachers represent another area where there are examples of exemplary practice. My colleague Claudia Melear's worked for many years with graduate students and pre-service science teachers on Ossabaw Island. The course involves an extended camping trip to a remote and pristine island off the coast of South Carolina. Teaching duties are shared with scientists from the fields of ecology, biology and other disciplines. During the program, students make extensive collections of specimens, use field guides, and plan environmentally based lessons for their own future students. Melear's work in facilitating studies and reflection in the island's natural setting is an example of the kind of preservice education and professional development that we need for teachers that results in a bonding with nature and the development of a conservation ethic. Her work can be accessed at <http://web.utk.edu/~ctmelear/ossabaw/>.

I myself have directed a number of grant-funded professional development institutes for teachers that have included extensive field studies and emphasized community-connectedness. The most recent of these is the 2009-2020 Hollins University Inquiry, Integration and Differentiation Project, which involves an intensive 2-week summer institute for grades 4-6 teachers and follow-up academic year seminars. This project is funded by an Improving Teacher Quality grant from the State Council for Higher Education of Virginia. A unique feature of the project is the partnership with local museums, a zoo, a wildlife center, a soil and conservation district and a land-grant university outreach program. More information about this project can be accessed at <http://www1.hollins.edu/classes/hesit/>.

One last example that represents a hopeful development is online parent education. I would recommend you explore the enormous bank of accessible resources available freely on the popular Education.com Website. This online parents' resource currently receives some one million visits per month. For Earth Day 2009 I served as editor of a "Special Edition" for Education.com focusing on NDD (<http://www.education.com/topic/nature-deficit-disorder/>). The thirty-three essays in the issue

provide information to parents on specific ways they can help their children more richly experience natural environments from rivers and beaches to fields and forests.

As parents become more aware of the value of outdoor experience, new organizations are created to provide such opportunities. A new organization where I live is Kids in the Valley Adventuring (KIVA). The purpose of the organization is to provide opportunities for kids in the Roanoke Valley to get outdoors and explore. The family that started the group received a \$1,000 award from Disney and Family Fun Magazine and now hundreds of families participate in the group's hikes and other nature activities. See: <http://kidsadventuring.org/blog/>.

Finally, one result of Richard Louv's wake-up-call is that the No Child Left Inside Act (NCLI) passed the House of Representatives in 2008. The Senate did not consider the act and thus it has not been enacted into law. However, if the act is brought back it could provide funding for schools and non-formal environmental education centers as well as authorize the creation of state environmental literacy plans so that children would have more opportunities to discover their personal connections to the natural world. This act should become law for the simple reason that today's youngsters are tomorrow's leaders. We should not want to have people as our leaders who are alienated from wild environments or ignorant of the value of nature's ecosystem services.

Conclusion

Standards-based reforms may eventually fade away, as did "management-by-objectives" (MBO) and other technicist educational fads, but for the present environmental educators must be pragmatic and make the best of the situation. Top-down standards-based reform is a modernist curriculum development model and conception of the work of the teacher and deserves to be severely criticized, since, among other things, it changes things by prescription rather than negotiation and ignores the reality that teaching practices are embedded in the assumptions and professional motivations of the teacher (Bentley, 1998).

This is a time in the history of the world in which we all need to reassess how we live our lives in light of what the scientists are telling us about the "global macroproblem" –environmental pollution, land degradation, forest and wetlands loss, accelerating species extinctions, resource depletions, and global climate change. Part of a rational response to our current global condition is to better educate our children as to the reality of their connection to and dependency upon nature. Don't we want those who take over next to be grounded in reality, rather than in video game fantasy? I'll close with this bit of wisdom: "Conservation will fail unless it is better connected to people, and people start out as children who need to revere their connection to nature from a personal rather than intellectual, viewpoint" (Hofferth and Sandberg, 2001, p. 222).

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Appendix

Figure 1: An example of environmental content in the Virginia state curriculum standards.

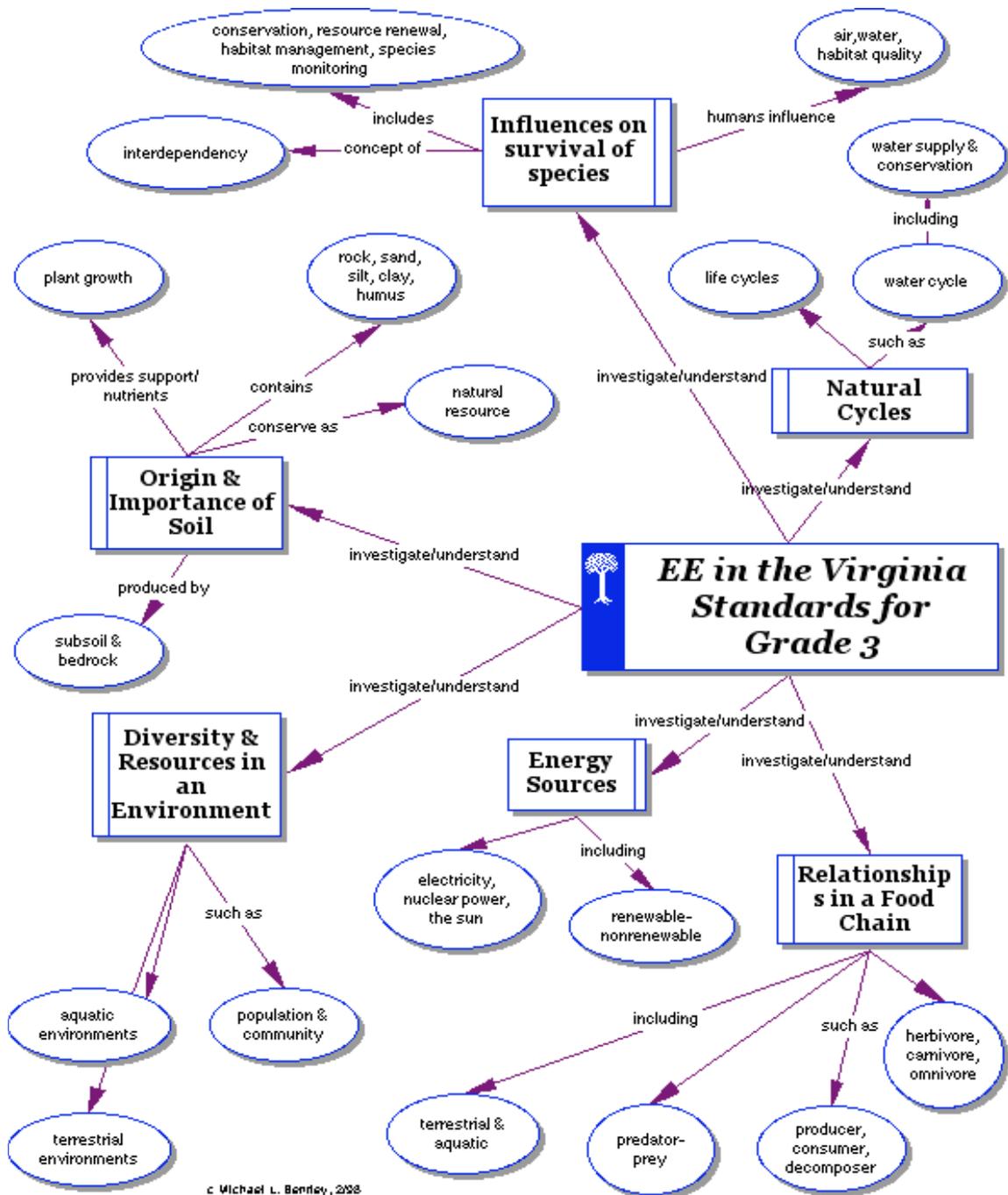
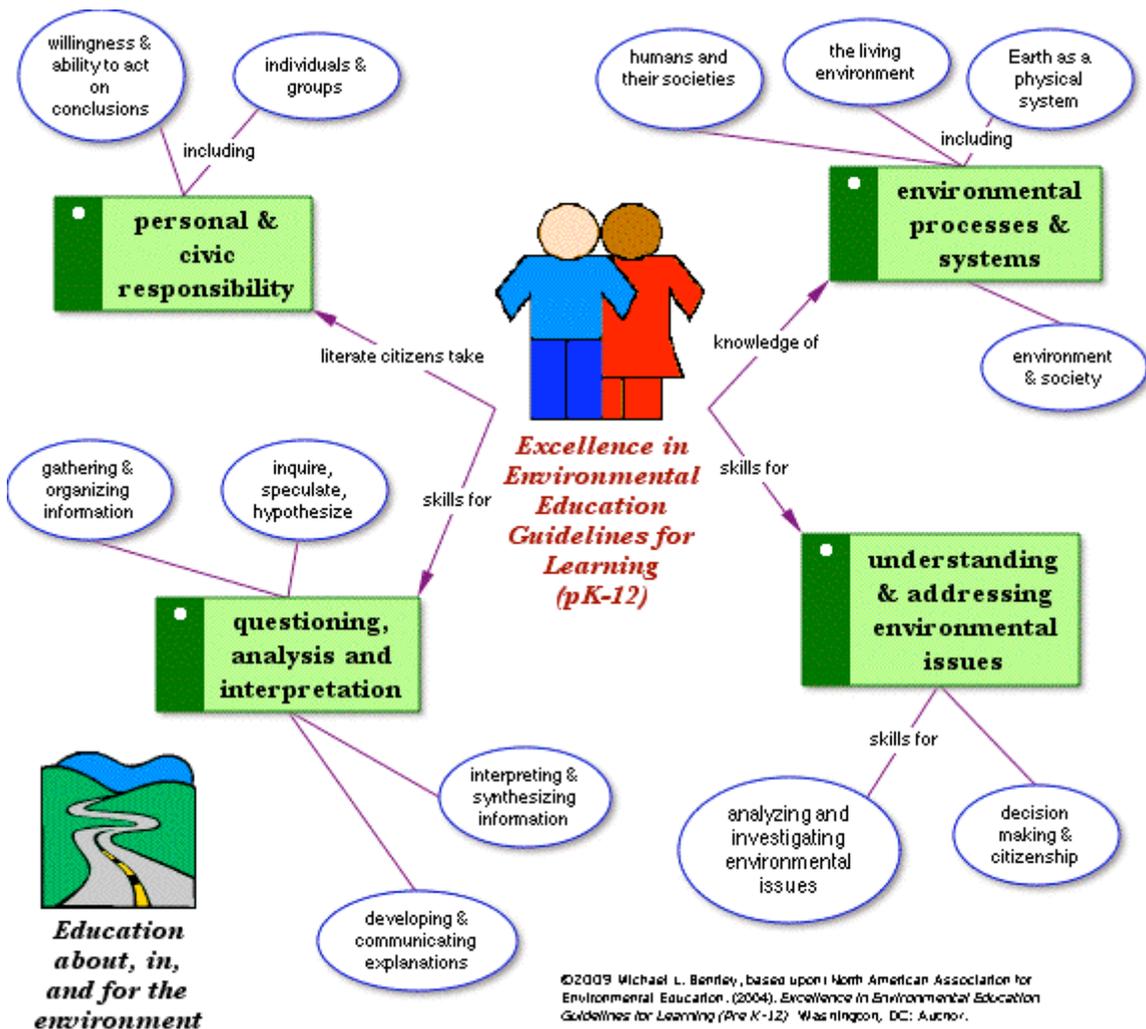


Figure 2: An illustration of the strands in the NAAEE (2004) guidelines.



About the author:

In 2006 Michael Bentley retired from the faculty of teacher education of the University of Tennessee, Knoxville. He earned degrees in biology and science education at King’s College (PA), the University of Pennsylvania, and the University of Virginia. His four-decade career has included teaching at all levels as well as work in museum education and curriculum supervision. He has directed many funded projects and was instrumental in the founding of two schools. He currently serves as board co-chair for Community High School, Roanoke, VA (<http://www.communityhigh.net>). He continues to teach part time and write. His latest book is *Teaching Constructivist Science, K–8: Nurturing Natural Investigators in the Standards-Based Classroom* (2007, Corwin Press). His interests include science and environmental education, teacher education, curriculum studies, international education, and the nature of science in science education. More examples of his work can be accessed at <http://web.utk.edu/~mbentle1>.

