Beyond Conservation: Reimagining the Purpose of Energy Education

Posted By Jan E. DeWaters On January 17, 2015 @ 10:10 pm In Editorial

Editing this special issue of the Journal of Sustainability Education has been a fascinating journey into how energy education can be improved, and why energy itself may be the key sustainability issue we must tackle this century. As a team, we’ve been motivated from the start by the belief that something is missing—something big—from our dialog, our public consciousness, and our sincere efforts to educate people about energy use and sources. Perhaps that “something” is embedded right there in the idea of “use and source,” the misconception that energy is something that we obtain and dispose of, rather than understanding that, unlike many other resources, energy has no end or beginning, but is a physical entity that cycles through our systems, all of them.

While efforts to frame energy literacy as a matter of resource conservation are needed and certainly easy to be found on the “front line” of energy education materials, this cannot be the full extent of content or action related to education for an energy literate citizenry. Thus, we began with the premise that we must go beyond the typical conservation-focused energy education efforts. It all started with a little back-of-the-napkin calculation.

HOW GOOD IS THE CONSERVATION MATH?—A SCENARIO:

One of the most common motivations for increasing energy conservation is cost savings. Consider that the average U.S. residential electric bill is roughly $107 a month (http://www.eia.gov/electricity/sales_revenue_price/pdf/table5_a.pdf), depending on where you live (lowest total use in Maine, highest in Louisiana). Then consider that, with the purchase and use of more efficient appliances and with some improved conservation behaviors such as vigilantly turning off lights, powering down computers, and so on, a family may reduce their bill by 10% or even closer to 20% in some cases. That sums up to a cost savings of about $180 a year—certainly a ‘real’ cost savings that everyone should enjoy. Yet this savings comes as a result of convincing every household member to adjust their behavior dozens of times a day, every day, for a year. For a household of four people, that could amount to thousands of actions or decisions a month, and over the year tens of thousands of “if you are the last out turn the lights off” and “energy conservation is in your hands” messages with often diminishing follow-through. While these accessible behaviors are undoubtedly something we should all strive for, we should keep in mind, as we open up a dialogue on energy education, that this savings of $180 is a small reward given the thousands of actions required to achieve it. Clearly our “savings per action” is too low; we need something more.

If we come away from this math exercise saying “gosh, that’s just not a lot of money for the effort,” then we are a little closer to unpacking the basic elements of energy literacy that we need, including 1) energy is really cheap; 2) saving it, while a good habit, is not a convincing economic proposition without considering that; 3) there is a richer case to be made beyond conservation that includes where our energy comes from, how it is transferred and used, what are
the true costs of a given energy type and what are the efficiencies of a given system. Deeper still, strong approaches to energy literacy will address eco-social justice, advance community resilience, are built upon sound STEM (science, technology, engineering, and mathematics) fundamentals, and include the use of real-world data sets that maintain transparency of the whole costs in an energy system.

BEYOND CONSERVATION–THE LARGER ENERGY EDUCATION PICTURE

Conservation is not enough; yet what, in its essence, do people need to know, and what will change their behavior? We asked all the contributors to this issue to distill their “Great Ideas For Energy Education.” [2] into a common database. The database is structured in a way that makes few assumptions about what the core components — the “WHAT” of energy education — should be. It then asks the contributors to bring forth their best ideas regarding “HOW” to implement the education process, and finally “WHY” we should be educating about energy. We hope that the results, not only of this database, but the interesting scholarly work and case studies that the contributors have brought us, will trigger an on-going dialog about how to frame energy education in the much bigger picture of energy cycles and their fundamental importance to powering our civilization, and its increasingly energy-hungry industrialized, urbanized and digitized infrastructure.

Authors Blockstein, Middlecamp and Perkins [3] maintain that our approach to energy education needs to move away from the traditional disciplinary silos and embrace a comprehensive approach that addresses technical concerns within an environmental, political, economic, cultural, and ethical context. Their contribution, Energy Education: Easy, Difficult, or Both? [3] provides a compelling argument for stepping up to the challenges of instituting widespread energy education programs that prepare undergraduate students with the broad, interdisciplinary knowledge and experience they need to effectively contribute to global energy challenges. Using a similar systems perspective, McCaffrey [4] makes the case for a linked curriculum of energy and climate literacy as inseparable issues on our heating planet. At the K-12 level, authors Hendrickson et al. [5] describe Facing the Future’s newest hands-on, interdisciplinary energy curriculum (Global Sustainability: An Authentic Context for Energy Education [5]). Their “Fueling Our Future: Exploring Sustainable Energy Use” curricular packet engages students in a series of interactive lessons that requires them to explore energy issues through the lens of global sustainability. Authors Kerlin, Santos and Bennett [6] provide an early look at the reactions of teachers in grades 6, 7 and 8 who have recently begun teaching in a newly constructed ‘green school’ (Green Schools as Learning Laboratories? Teachers’ Perceptions of Their First Year in a New Green Middle School [6]).

ENERGY AS THE KEY TO A SUSTAINABLE FUTURE

As we bring this issue to “press,” or rather plug into our electric and digital grids to light up your screens with this “enlightened” view of how to educate about energy, we also find ourselves left with the realization that energy will be at the core of where we go this century, as a species. Since people began using fire, energy has provided the foundation for the evolution of human civilization. Our current economic and social systems (including food) depend on abundant energy, principally from fossil fuels, which have been, for the last century, powering
the transition to an industrialized, urbanized, and increasingly digitized, society. A major challenge to human quality of life in the 21st century is going to be our successful ability to shift the burden of our energy resources and the way we use them, as well as how we adapt our economic and social systems to accommodate changes in resource availability in the face of rising energy costs. So-called “early adopters” have shown that the challenge can be met technologically –on the production side through widespread adoption of solar and wind; and on the use side through changes in building, transportation and food customs. The real challenge is promoting widespread improvement in people’s behaviors and attitudes regarding energy use along with the political and social will to enact system-wide change. In other words, it’s a perfect challenge for sustainability education. We hope you enjoy this energetic start!

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[3] Blockstein, Middlecamp and Perkins: http://www.jsedimensions.org/wordpress/content/energy-education-easy-difficult-or-both_2015_01/


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