

Science Education and the Zoo

By David Jones

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Last year the General Assembly appropriated an extra \$250,000 for each of the State's seven economic development regions. They were mandated to produce a vision for the most likely economic scenario, looking well into the future and to prioritize the actions that needed immediate attention. Although the priorities identified by each of the regions will differ to some extent, one common denominator, which comes through these discussions, is the need to support and help improve K-12 education in all subjects, but particularly in the sciences. The discussion in the Piedmont Triad region, where the Zoo is represented on the steering committee, was no exception in identifying that as a very high priority. That conclusion was reached within the context of preparing children broadly for the real world of 2020, making sure that they have all the basic life skills and more specifically, those skills needed for the jobs and challenges a global economy will require. One of the most important components of that preparation is to find novel and engaging ways in which students can recognize the value and purpose of the information they learn and be able to connect the dots between the individual science disciplines in ways which enable them to analyze, think through and make judgements using all the information available to them from memory and the multiplicity of external sources. None of these needs are new to the education profession, but resources in schools are limited, despite the efforts of succeeding administrations at State level. While adhering to a packed formal curriculum, it is difficult for teachers in classroom settings to connect what the students are learning now to jobs and to real life situations which they might later encounter.

It is unlikely that the 10,000 new teachers estimated to be needed in North Carolina will materialize any time soon. Indeed the State is seeing an exodus of at least 3,000 teachers a year, about the same as the number it produces annually in our colleges. Many of those leave for less demanding, better paid careers in other fields. Assuming for the moment that some modest additional resources could be found for education in the coming years, are there additional ways than the formal education system to engage children more effectively in the sciences, help them connect those dots and appreciate the relevance of the basics they learn, so putting them in a better position to apply that knowledge and fit it to global reality.

North Carolina has a number of relatively modern, informal science education facilities- museums, life science centers, botanic gardens and the State zoo and aquariums. The majority of these already have considerable experience in traditional teaching, allied usually to the needs of the State curriculum. At the moment though, those institutions are considered little more than a sort of "bonus field trip" if the trip can be fitted into the school year. No conscious effort has been expended to see whether these facilities, if brought in closer to the formal education system, might be able to contribute more significantly towards resolving this key issue.

Talking to science teachers, the need would appear to be two-fold. Firstly, children should have access to more advanced practical instruction in the sciences related to the likely present and future job prospects in any given region. Secondly, few opportunities exist within the schools to apply their basic knowledge to real life issues so that they can actually see the connection between the textbook, their learning efforts and how all such information comes together to help them analyze and make sound decisions, be that at home or on the job.

Coming closer to home. If, for example, the Zoo were to take primary "responsibility" for the surrounding 10 to 15 counties and work with middle and high schools in particular to address these needs.

Using a combination of State and private money, the Zoo might build a state of the art laboratory facility designed specifically to give children a much higher level of grounding in the knowledge, skills, principles and equipment that they might encounter in the worlds of earth sciences, geography, biotechnology, applied genetics and a range of the medical, veterinary, agricultural and associated sciences. The Zoo would design specific programs based around its own operations and its relationships and activities not only with the local community, but also using its national and international networks giving students opportunities to connect what they learn in the classroom to their thinking about the world around them and their own future.

Clearly because the Zoo's principal expertise is in the biological and related sciences and by virtue of that the relationships between the human economy, our wellbeing and the stewardship of our environment and natural resources, much of the subject matter would focus around that. Making these connections is becoming more and more critical so that all students when they leave school, have a clear understanding of the connection between their jobs, the global and regional economy, the resource base and the natural world.

Such an approach would have a number of major advantages. It would almost certainly engage and excite more students about science in ways that could not be conveyed easily in the classroom alone. In reflecting continuously updated knowledge about job opportunities and trends, particularly in the center of the state in the Zoo's case, we would adapt both laboratory and practical instruction towards the thinking, process and the knowledge and skills aimed at helping that student better prepare for life and a job in the region. It would do a great deal to connect present day students who are tomorrow's workforce, to understanding the relationship and the finite nature of the resources and life support systems on which our entire economy nationally and globally is based. There is no better way of connecting the dots of individual science subjects. If well designed, it would take pressure off classroom teaching and could probably accomplish in a single day far more than the schools could manage in a considerably longer period.

The way it would work is that classes would come to the Zoo for a whole day, not just a few hours to make the best use of transport facilities. They might spend half of that time in the advanced laboratory facilities and the other half engaged in real life problem solving along the lines set out above.

Investments focussing on this approach in a number of key institutions across the State, perhaps five or six in total, would provide facilities which no individual school could possibly afford or necessarily would use all the time. By utilizing this facility several times a year, a school would have access to resources it could not otherwise hope to obtain.

The State might be encouraged to examine such ideas and their cost effectiveness. It is likely that regional industry, given their need for the best possible trained and "thinking" recruits would also be prepared to invest in such an approach. The reality is that the countries that we are likely to compete with globally, notably China and India in the next 30 years are already looking to maximize their own wider education resources in order to be most competitive. Other regions of the U.S., in competing with us for those jobs, will also be looking for novel ways to prepare the best possible workforce and keep business thriving in their areas.

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