Director’s Corner: Adaptation Advantages

Reflecting on our school’s 50-year history at the dawn of a new year highlights the importance of secure foundations for adaptation to changing times. Here again, animals’ incredible adaptations to environmental conditions, particularly during such frigid weather as we are currently experiencing, offer lessons that we can apply to strengthening the ways we seek to raise and educate our children.

In western Pennsylvania, some birds avoid the cold by migrating to warmer southern regions, but others adapt to the cold by nesting in dense foliage, huddling together, or growing an extra layer of downy feathers. Deer have hollow fur to provide insulation, and they escape the elements by resting together in areas protected from wind. A few mammals, like woodchucks, hibernate for the winter, while others, like chipmunks, enter a state of torpor, spending periods of inactivity in underground chambers with access to stored food. Reptiles, like snakes, slow their metabolism to conserve energy so they don’t need food (called brumation), and they avoid freezing by sheltering in crevices below the frost line. The fact that these adaptations required generations of evolution to achieve is evident in one of our region’s relative newcomers, the opossum, which can be seen with frostbitten ears and “ice-abbreviated tails” during our coldest winters. Similarly, human populations adapted over generations to the environments where they live. Stocky body types with short appendages are more efficient at maintaining body heat, which is adaptive in arctic regions, while tall, slender body types with long limbs lose body heat better, which is adaptive in hot tropical climates. Even more so, technology and culture give humans the adaptive advantage because we innovate malleable ways to cope with climate conditions via clothing and shelter, etc., and then we share our ideas across populations and over time to distribute the benefit.

In fact, humans are unique in the animal kingdom for their adaptations to teaching and learning. Before birth, babies’ brains are wired to prefer sounds in the human voice range and they begin imitating behaviors within their repertoire (e.g., sticking out a tongue) within the first hour after birth. Within months, infants follow others’ gaze so that they attend to what interests others, while they quickly habituate (i.e., stop attending) to repeated stimuli that provide no new information. The fact that they can remember multiple patterns of interaction is evident from the smiling, cooing, and laughing games that they play with the diverse adults. These processes of attention, memory, and imitation are central to social learning in families, schools, etc. Before turning 1, children are reciprocally using pointing to both learn and teach, such as following an adult’s point to a new object that is being named or requesting an object or its name by pointing. By the time children are 2, they are already becoming teachers by changing their tone and choice of words, demonstrating actions, and supporting behaviors of younger children in the same ways that they have been taught. Herein lies the lesson of adaptation advantages: The better we understand how children are adapted for learning, the better we can synchronize our efforts with their natural tendencies, sometimes in counterintuitive ways. For example, if you need children to be quiet, try whispering. Focus your eyes where you want the children to attend. Children pay most attention to models with whom they identify and most imitate behaviors whose benefit is evident. So, as parents and teachers, we do well to take an apprenticeship approach to both child-rearing and education, such that we involve children in meaningful activity within varied conditions so that they are naturally motivated to participate as fully as they are able at each stage of development. In this way, we will build foundations for their future adaptability.