

Three ideas to inspire curiosity in natural history education



By Kiersten Formoso

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Natural history can captivate the minds of all manner of people for a multitude of reasons, but a shifting media landscape demands adaptation from public educators. Kiersten Formoso, natural history educator and assistant professor at Rutgers University, describes her three main aims when using mixed media in natural history education.

Throughout my career, I have educated people about natural history from many vantage points outside the formal classroom. From behind a museum table, instilling wonder into visitors with a 75-million-year-old fossil in hand, and attempting to answer the classic crowd-pleaser: “Who would win in a fight?” I have been in front of hefty television cameras, explaining how a mosasaur bursts out of the Cretaceous sea, and how devastating the end-Permian mass extinction was. I put myself in front of my much-more-humble phone camera, recording short-form educational video content for Instagram and TikTok. I have given public talks on the intersection of science and art. I even engage in Discord server ownership, where I manage a 18,000+ member community server dedicated to a dinosaur video game called *Path of Titans*. In my server, players learn scientific concepts as they game. Each of these educational avenues has its own limitations and tolerances for inaccuracy, and yet my guiding philosophy across all has remained simple.

In a world where a widespread understanding of most science is a constant battle, the goal is often to communicate broad concepts, rather than gritty details. I feel success as a natural history educator if a person walks away understanding three things: first, the Earth is exceptionally old; second, evolution is real; and third, humans are new to this planet and our impact on it in this short time has been extraordinary. Everything else – such as the precise swimming speed of a mosasaur, the exact position of a clade on a phylogenetic tree

or the proper anatomical details of a theropod wrist – is, in the grand scheme of public engagement, secondary.

Consider what it means to genuinely internalize those three ideas for the first time. To understand that the Earth has existed for 4.54 billion years and that complex animal life has been evolving for the past approximately 600 million of them is to glean a sense of deep time that frames the human story. To understand that evolution is not a colloquial theory but a documented, mechanistic reality that connects every organism is to grasp the interconnectedness of all life in our biosphere. And to understand that we, *Homo sapiens*, have existed for a geological blink of an eye, yet have altered the global climate, affected species distributions, changed landscapes and precipitated a mass extinction event is to confront a form of humility that no amount of political rhetoric can easily dismiss. Held together, these three concepts cultivate better stewards of the natural world. That sense of stewardship, ultimately, is my goal, and I use various educational approaches to achieve it.

This framework also releases science communicators from unnecessary burdens. The natural history community has no shortage of people who are willing to correct general scientific misunderstandings or inaccuracies in popular media. That impulse is understandable. Errors compound, and bad information spreads. But perhaps there is a point at which perfect accuracy becomes an obstacle to engagement. A movie that depicts an inaccurately sized dinosaur is not a failure if it leaves viewers persuaded that still-massive animals once ruled the Mesozoic, that they are long gone, and that humans did not share the planet with them. The dinosaur hooks people; its evolutionary existence and deep time are the lesson. Furthermore, this knowledge is a foundation for educators to build upon. On social media, I commonly use the science-fiction concepts in James Cameron’s *Avatar* saga – movies far greater in popularity than any biology textbook – to teach biological concepts.

Science communication supplements what formal education cannot do alone. In many

countries, a substantial number of adults have not taken a science course since high school. Media such as Discord and short-form video reach this population, often without any deliberate intent on the viewer’s part. People encounter palaeontology content while scrolling their feeds, watching thirty seconds of a ‘Fossil Friday’ reel between videos about cooking or TV shows. If someone likes it, their algorithm gives them more. These brief encounters probably aren’t ideal, but they are better than nothing. Passive exposure to accurate, engaging natural history content builds familiarity with scientific ideas in ways that are difficult to measure but impossible to ignore. In this environment, the communicator’s task is not to deliver a lecture – it is to spark enough curiosity that someone, somewhere, asks a follow-up question, or is at least awestruck for a moment.

The Discord server I manage demonstrates this passive education in action. Called ‘Nat Hist’ (Natural History), this digital community is built around a survival game in which you play as one of many extinct animals in a prehistoric setting. One educational mechanic of our custom ruleset requires players to understand which animals can coexist. For example, stegosaurs can group with ankylosaurids because both belong to the dinosaur clade Thyreophora. Few set out to memorize clade names, but players learn them because the knowledge is integral to the entertainment they have already chosen to engage in. Seventy per cent of Discord’s user base is under 34, which enables direct educational access to precisely the younger audiences that formal science education struggles to retain.

Of course, none of these approaches will last forever. Short-form video will yield to whatever is next. Nat Hist’s popularity might fade. Platforms rise and fall. But the underlying principle persists: natural history education is most durable when it meets people where they already are, asks nothing beyond curiosity, and trusts that the three big ideas are a sufficient foundation for everything else.

Natural history communicators are already doing this work: meeting people on TV screens, feeds, and servers, and doing it well.

To educators: follow your audience to where they go next, and keep the three ideas central to your efforts. The mosasaur can breach as high as it wants. What matters is that the audience comes away knowing, feeling, that the world is ancient, that life transforms across time, and that humans have arrived on this Earth very late and very loudly. Once that lands, we can go from there.

Kiersten Formoso ^{1,2,3} 

¹Department of Ecology, Evolution, and Natural Resources, Rutgers University, New Brunswick, NJ, USA. ²Division of Paleontology, American Museum of Natural History, New York, NY, USA. ³Dinosaur Institute, Natural History Museum of Los Angeles County, Los Angeles, CA, USA.

 e-mail: k.formoso@rutgers.edu

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