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Mimicking Nature to Create a Classroom Culture

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Introduction

I have often heard that managing a carpet of five and six year-old kindergarten students is like “herding wild cats”. There is some truth to this idea. Students beginning their public education voyage can have a feral look to their eyes and bodies that want to move and dart about. If we consider kindergarteners as “wild cats” herding them is one way to go. The herding of wild cats fits nicely in the pioneer viewpoint of dominating “nature” (or five year-olds). But to look from many indigenous viewpoints or through the lens of biomimicry, perhaps we can study what nature has been steadily improving upon since it began between 3 or 4 billions of years ago. For example, a wolf pack is a very orderly community. Could we learn from the wolves to better succeed in kindergarten? What about elephants? Five year-olds (and maybe even teachers in their 50s) love elephants. Can we learn anything from elephants that would improve our classroom culture? Surely a flamboyance of flamingos would have nothing to do with a classroom culture. Would it?

Half of my students’ short lives have been impacted by the pandemic. Some come to kindergarten lacking the tools to meet the social-emotional challenges of formal schooling. Some enter the class with mental health issues. This unit will utilize examples from nature as models for creating a successful classroom culture which in turn could bolster mental health. All students, but especially young ones, love nature. They love plants and they love animals. I will be leveraging this love to inspire students to come together in class and develop an orderly community in which learning will be achieved at a high level and to improve the mental health of the class through communication, cooperation, and connection within our community.

My ‘wild cats’ attend school at Kathleen Wilbur Elementary School in New Castle, Delaware. Oddly enough the mascot of our school is (you guessed it) the wild cat. Wilbur is a large school of almost 1,200 students, which represent diverse backgrounds. They come from mansions, motels, and everywhere in between. I teach in one of the eight kindergarten classes found at the school. In each of these eight rooms you will find students of varying skill levels. Some will have grown as they attended years of preschool. Some will have learned much from Sesame Street, an older sibling, or an inspired parent. Other students may never have held a book before. Typically, my class ranges between 20 and 22 students. As last year closed, I had 22 students on my roll. I had an even split between male and female students (though this is atypical). My class was predominantly (55%) of African-American descent. The rest (45%) of my class was pretty evenly split between Caucasian, Hispanic, and Asian backgrounds. Seven of my students were pulled out during the day to receive

English Language support. Throughout the school year three of my students were regularly pulled from class to receive additional academic support. I also had one student who would go out weekly to receive behavioral intervention support. One student had an Individualized Education Plan put in place in her preschool setting. These numbers are pretty common among kindergarten classes at Wilbur and I anticipate a similar class makeup in future years.

Learning Objectives

Throughout the learning in this unit, my students will be developing and practicing skills with a goal of gaining strength in those areas while forging connections between themselves, other students, and school staff. I will be focusing on three objectives. Students will use animal role models to gain proficiency in executing classroom routines. With this goal in mind, we will be examining animal rituals. My students will also learn how animals communicate through body language, vocalization, and mechanical sounds. They will then apply this knowledge to better communicate with other members of our classroom and school community. In addition, students will notice and describe patterns of behavior found in animals (including humans) and plants.

Content Objective

One Health

There are three domains related to the concept of One Health. Those domains are environmental health, animal health, and human health. One Health states that these domains are interconnected and that an issue in one domain will impact the other two. These impacts can be beneficial or detrimental. For example, suppose the health of the environment was impacted by a rise in global temperature. The health of animals would also be impacted. One example is polar bears losing hunting grounds as ice melts. The health of humans could also suffer. People with respiratory or cardiac conditions could find those conditions exacerbated. The Center for Disease Control and Prevention (CDC) feels that attending to the domains of One Health “has become more important in recent years. This is because many factors have changed interactions between people, animals, plants, and our environment.”¹ Some of those factors include environmental issues like global warming and changes in land usage, human population growth, and the proximity of animals to humans which can lead to infectious diseases jumping from the former to the latter or vice versa.

What does One Health have to do with five-year-olds sitting on a kindergarten carpet? It is all about the interconnection of three domains and health. The pandemic, which is theorized to have started because of human proximity to bats which may have led to interspecies disease transmission, changed the complexion of my classroom. Due to social distancing recommendations (and mandates in some cases) my students were limited in their opportunities to learn critical socialization skills. While at the same time stress and trauma increased greatly within my students, their families, and communities. As a result, in the time since social distancing ceased, many of my students have struggled to successfully navigate the classroom community. I have noted an increase in challenges related to communication and forming connection between my students. These struggles impact mental health in our class. Social Emotional Learning (SEL) skills have suffered.

I propose that our classroom community, like One Health, has three interconnected domains. The mental health of students, the mental health of other members of our learning community (me for one, but also exploratory teachers, administrators, paraprofessionals, bus drivers, and anyone else that helps my students throughout the day), and the health of our classroom climate (which is pretty much the environment of our learning space). I'm going to call these interconnected domains kindergarten health or 'K Health'.

I found inspiration for boosting our 'K Health' not in a textbook, nor through the CDC recommendations related to One Health, but through ancient indigenous wisdom; "In the Western tradition there is a recognized hierarchy of being, with, of course the human being on top- the pinnacle of evolution, the darling of creation- and the plants at the bottom. But in the Native way of knowing, human people are often referred to as 'the younger brother' of creation.' We say that humans have the least experience with how to live and thus the most to learn- we must look to our teachers among the other species for guidance."² Interestingly, the "Western Tradition" has begun aligning to this ancient wisdom. Biomimicry is "the conscious emulation of life's genius. Innovation inspired by nature."³ To improve 'K Health', I should open my room and introduce my students to far wiser teachers than myself, the 'older brothers and sisters of the world', plants and animals.

Rituals

Rituals are an act or series of acts regularly repeated in a set precise manner. "Animals have incredibly sophisticated rituals that are related to all aspects of their lives. These rituals allow them to survive in a very complex world, to predict what will happen next, and to connect deeply with their families and communities."⁴ Students in my kindergarten class learn a series of rituals, though we call them routines. These routines will allow them to succeed in a new a confusing world, to predict what will happen next, and to connect deeply with their teachers and classmates. Yet students often don't understand the importance of these routines. Our routines pull us together as a classroom community. They help establish a culture based on respect through communication, cooperation, and connections to each other. By learning the rituals of animals (some our favorites, some we will be experiencing for the first time) we will develop an understanding that our own routines make our classroom community healthier. This will impact the mental wellness of individual members of the class, and all members of our community of young learners.

Communication

There are many ways in which communication occurs in nature. Bees do the waggle dance to tell other hive members where to find honey. Gorillas pound their chests to show off their size and fighting ability to size up rivals and attract a mate. Flowers bloom brightly to attract attention from insects for purposes of pollination. Howler monkeys... howl to mark territory. Plants and animals do communicate though we often are not sure what they are saying. Likely, because we don't have the opportunity to observe them too often. Nor do we generally make a lot of effort trying to communicate with plants or animals. However, there are a group of animals with whom we do communicate frequently, pets, specifically, dogs. We will focus on two ways in which dogs communicate. They use body language and vocalizations to draw attention or to express their emotions. Once you get to know them, the body language of a dog can tell you a lot about their feelings. A tail held stiff and high can signal that the dog is feeling aggressive. That same tail tuck down low between the hind legs indicates that the dog is feeling timid or unsure. And, of course, a wagging tail usually indicates a dog at ease and feeling happy. Much like the tail tells, so too do the ears reveal emotions in a dog. Ears perked up show that the animal is alert and maybe on the aggressive side. Ears laid back against the skull tell that the dog is scared. Despite what the painting *Dogs Playing Poker* by Cassius Marcellus Coolidge would have us believe, dogs would be lousy poker players; far too many tells. Dogs can also communicate through

vocalizations. Vocalizations are sounds produced through an animal's respiratory system. Essentially, suck in wind and blow it out in a manner that causes sound. Determining the meaning of canine vocalizations can be a little tricky. A barking dog may be calling an alert (perhaps for the delivery person approaching the front door), but it might also mean 'pay attention to me, I want to play'. Growling often signals that trouble is on the way if you continue doing what you're doing, because the dog isn't happy about it. A whimpering dog is likely in pain. A whining dog is probably asking for something it wants. It can be difficult to determine what the dog wants, but if you're opening a package of cheese, the whines become somewhat easier to puzzle out. Some animals also communicate in a third way by producing mechanical sounds. An example of a mechanical sound would be the gorilla who is thump, thump, thumping away at his chest. If you witness this act, you'll want to vacate the area, because the gorilla is getting aggressive and may attack. To help my students improve their own communication skills, I will be bringing (through video, audio, and stories) animals as guest teachers. Following the suggestion of Robin Wall Kimmerer, author of *Braiding Sweetgrass* we will be learning from plant and animal educators who have been communicating with other members of their ecosystem since before *Homo sapiens* took their first steps. A goal for my students is to strengthen their own communication skills, while also improving our performance on classroom routines.

Guest Teachers on Body Language

Some of our classroom activities will be addressing SEL standards connected to communication specifically understanding body language. With the eye of a biomimic, I will look towards animals which excel at communicating warnings and their desires. Let us sit under the learning tree of skunks and flamingos.

There is a certain animal that will always elicit an "eww" from the kindergarten carpet. But this particular animal is amazing and can provide us a lesson about communication. Skunks are small mammals (roughly the size of a cat) that are related to weasels, badgers, and otters. There are 12 species of skunk and they are mostly found in North and South America.⁵ "Skunks are most active at night. They sleep in dens lined with leaves during the day. Their favorite foods include fruit and plants, plus insects, bird eggs, small rodents, and birds."⁶ Yes, skunks are predatory animals. However, given their stature skunks are also possible prey in their own right. "Skunks have few predators—hungry coyotes, foxes, bobcats, and cougars, also large owls (which have little sense of smell)."⁷ Sharing an ecosystem with many predators requires the prey animal to have a plan. In the case of skunks, they pack a powerful chemical defense. These animals can produce a noxious spray in two glands at the base of their tail. "Skunk spray is a thiol, an organic compound with sulfur as a principal component. Sulfur has that classic rotten egg smell, and it's what gives thiol its gag-inducing power. For detection purposes, thiols are added to otherwise smell-free natural gas, so that it will have a noticeable odor. In the case of skunk spray, the thiol is so potent that it can be smelled a half-mile away." "Generally, the spray doesn't cause much harm—maybe stinging in the eyes or temporary blindness, and nausea in humans—but it can definitely linger on fur or on a roadway, long after the skunk has made its escape or taken its last walkabout."⁸ Skunks, however, use their spray only as a last resort. It would take a skunk over a week to refill its glands once it empties them in defense. Skunks try to communicate with any predator before unleashing the odor. Many animals use camouflage as a primary defense against predation. They try to hide and not be noticed. Skunks are the opposite. Black fur with brilliant white flares is meant to announce the animal's presence. It is as if a skunk is shouting out "Hey! Skunk over here, right here" just by its coloration. This may seem a strange strategy of defense. But skunks are fairly abundant and generally, once a predator has experienced skunk spray, they would prefer to look elsewhere for a meal. In fact, researchers documented a case where a puma was run off its kill by an encroaching skunk. Pumas are nearly 100 times the size of skunks.⁹ As skunks are relatively common animals, many wild animals have a prior experience and know

better than risk the spray. However, if a possible predator should make the skunk nervous, the skunk will use body language to announce a final warning. A skunk will begin the warning by facing the perceived or imagined danger. It will stomp its front feet on the ground, which is saying “you should back off”. If that message does not dissuade the threat, the skunk will raise its tail high and walk on its front legs toward the target. If the encroacher still does not respond the skunk will throw its body over its head and let loose the spray. Wild animals will recall this moment in the future when they cross paths with another skunk. Unfortunately, domesticated threats aren’t always so unwilling to engage with a skunk. Many a dog has received the spray, and likely a hose bath before being permitted back in the home. I can attest that my student can use a lesson in reading warning signs. Many is the time my lowering of my voice to a whisper, closing my proximity to a student, and unloading with my “teacher eyes” falls on oblivious eyes and ears. Had I the ability to walk on my hands of release the noxious thiol toward the inattentive, perhaps they would attend. Until I learn those tricks, I’m going to let the skunk teach them.

Flamingos are amazing birds. They are also a favorite of young students, likely due to their size and coloration. The greater flamingo is the largest of these birds. Greater flamingos can grow to almost 60 inches in height and reach a maximum weight above 8 ½ pounds. Flamingos feed in shallow, high salinity waters where they scoop from the bottom crustaceans, mollusks, worms, crabs, and occasionally small fish. They will also ingest algae. The flamingo’s pink coloration comes from its diet, specifically carotenoid pigment found in the crustaceans. Flamingos are excellent at sharing their ‘dating profile’ through body language in the form of a ritualized courtship dance. The season of the dance varies based on location but the dance itself remains the same. Large numbers of the birds, both male and female, gather in the shallow waters forming a flamboyance (the term for a group of flamingos. Also, a term that I would anticipate kindergarteners loving). The dance is quite organized. Part of the ritual is preening, or the cleaning of feathers. The dance itself includes “synchronized wing-raising, and head flagging (raising necks and beaks) and turning their head from side to side.”¹⁰ The ritual generally lasts about five minutes. Throughout the dance, the flamingos will partner up. To try and determine how partners were chosen, scientists tracked the number of ‘dance moves’ and assigned scores based on number of moves and postures in between those moves. Pairs of flamingos tended to have closely matching scores in the study. Good dancers chose partners of similar dancing skills. Partners would mate and nest and stay together for one season. Come the next courtship ritual they would dance in search of new partners for the new season.¹¹ Much information was communicated throughout the ritual. First, the richness of the pink coloration sends a visual message. Hence, the preening which puts the feathers in their best light. Presenting a deep hue of pink tells potential mates that this bird has access or can find very good feeding spots. Pink means, “I can find those crustaceans that we all seek”. The precision of the postures during the dance and the speed of transitioning from one move to the next shows proficiency in the dance. Flamingos highly proficient in the ritual are revealing that they possess the skills to adroitly gather food. In other words, “I can be a good provider”. Through the dance the flamingos are showcasing themselves and basically singing Lenny Kravitz “But what I really want to know is, are you gonna go my way”.¹² Communicating something that they would like or need is not always a strength in kindergarten. Students very rarely ask for help when they are confused or unable to accomplish a task. Sometimes students aren’t even able to ask a friend to play with them on the playground. But perhaps learning about how the flamingos communicate will open up some new ideas throughout the class.

Guest Teachers on Vocalizations

Elephants are the largest land mammals on the planet. They are massive with a lengthy trunk used for producing vocalizations, greeting other elephants, grasping objects, and sucking up water for drinking or bathing. The large ears of elephants are also used for communicative purpose. Elephants have tusks which

are used for lifting objects, for stripping bark off trees, for eating, and for defense. Elephants can be left tusked or right tusked, similar to handedness in people. As useful as they are, tusks are also the primary reason why so many members of the species fall to poachers. Poachers illegally hunt the elephants for their tusks which are made of ivory and valuable. Amazingly, some elephants have developed a genetic mutation which sees them born tuskless. In male elephants this mutation is lethal, but female elephants can survive the adaptation.¹³ The poaching of elephants can upset the entire ecosystem, as elephants are an ecosystem engineer. They ford paths through heavy forest which allows other animals to move about more freely. The footprints they leave behind, when filled with rainwater, can become a habitat for tadpoles and other organisms.¹⁴ Elephants are a keystone species which means that their entire ecosystem is dependent upon them. Without elephants their ecosystem would be altered substantially. Elephants are often the subject of kindergarten art. Children are enthralled by these giants and should be interested in learning about elephants communicating. Elephants do produce vocalization as a means of communication. One method in which they vocalize is known as rumbling. Rumbling is an infrasound; its frequency is so low that it is almost inaudible to human ears. This frequency exists at the very low end of the audible range of human hearing. Researchers who experienced the rumbling up close say they could “feel” the sound in their chests as the vibrations traveled through the air, similar to feeling the bass at a rock concert.¹⁵ Elephant rumbles communicate information about the producing animal such as its age, individuality, and arousal level. Other vocalizations are produced through the trunk. Elephants trumpet by forcing air out of their trunk, very much like a person pushing air through tightly pursed lips. Trumpeting sounds tend to signify great excitement, inspired by either fear or joy. Elephants use vocalizations to coordinate group activities. One example is similar to a teacher telling a class to line up. “A dominant individual initiates a departure by stepping away from the water and emitting a long, low-pitched rumble. In a coordinated, synchronized response, other individuals respond in a turn-taking manner, vocalizing one right after the other, with a small overlapping segment at the end of each call.”¹⁶ Through my lens of biomimicry, I am drawn to the “coordinated, synchronized response” bit of this process. 5- and 6-year-old humans making a line to depart a classroom for recess, generally lack coordination or synchronization. Score a point for the elephant teacher, this idea will impact the “line up” routine in my classroom (see Activities).

People often believe that wolves howl at the moon. While it is true that they do some of their vocalizations through howling, it sends a different message than “Hello, Moon”. Our pet dogs can trace their roots back to the wolves. So, it shouldn’t be surprising that the vocalizations of dogs and wolves are fairly similar. Wolves communicate through vocalizations of 4 different types; barking, whimpering, growling, and howling. Both domesticated canines and wolves bark. In both cases the bark can be used to warn of approaching danger. The wolves often combine barking with howling to show aggression when engaging in the defense of the pack. Wolves will also whimper. Whimpering could be a mother informing her pups that she is available for nursing. In a different situation, it could also signify submission to a more dominant wolf. Growling is also a vocalization of wolves. Unlike the whimper, the growl is a sign of dominance. A dominant wolf is likely hoping to elicit whimpering from a wolf of lower stature, through an intimidating growl. Much like barking, growling could also indicate the approach of a source of danger. However, despite these other forms of vocalization, howling is the iconic sound of the wolves. It is a very versatile form of communication. Howling can be heard over a long distance (up to 10 miles on the tundra, somewhat less through the woods). It is used to keep the pack together across some distance. The same howl can serve as a warning to other animals found across that distance. Howls can also be used in the defense of pups or a recent kill. Sometimes wolves howl together socially. This could occur should they need to locate each other, to rally the pack, or just possibly because it is fun. I can attest that anytime I mention the word wolf (which happens a fair bit when reading folk tales) a chorus of howls erupt from the students on my carpet. Kindergarteners love wolves. They will be highly

interested to learn from these fascinating creatures. A lesson they could learn from these teachers is that listening carefully to how things are said, or at what tone things are said could provide hints to actual meanings of the vocalization.

Guest Teachers on Mechanical Sound

Rattlesnakes are ectotherms, which means they are cold blooded. For this reason, they count on the environment to stay warm. They can be found sunning themselves on rocks across most of North America and some locations in South America. There are around 30 species of rattlesnakes. Across the species they range from about a foot to up to 8 feet in length. Rattlesnakes are highly venomous and could easily kill a human if the bite is not treated quickly. But these reptiles would prefer to be left alone than to have an encounter with a human or other animal. The animals have a special adaptation that provides a warning to any animal (including humans) that are reaching an uncomfortable proximity. Rattlesnakes are known for the mechanical sound that they produce. The end of their tail is covered in interlocking scales that make a rattling sound when the muscles are contracted. This is designed to draw attention to the snake and offer an opportunity to move away, before a biting strike need occur. The classroom version of this mechanical sound would be the rhythmic hand clapping that is a 'go-to strategy' in many classes. The goal of the clapping is the same as the rattle, pay attention to me. Like in nature, occasionally students do not pay enough attention. Fortunately, instead of a bite full of venom, the students typically receive a withering 'teacher stare'.

Guest Teachers on Communicating Greetings

At my elementary school our day begins with a morning meeting. These meetings consist of a greeting, a sharing, an activity, and a daily message. So, a greeting is what truly begins our day. Greeting rituals serve three purposes; they reinforce bonds or welcome a friend, they reduce tension and foster reconciliation, they can also express submission to a dominant individual which promotes cooperation and a peaceful coexistence.¹⁷ Additionally, "greeting rituals generate an air of positivity and connectivity within our communities"¹⁸ But greetings are not exclusively a human ritual. Many animals greet other members of their species (especially if they are part of their herd, troop, or pack) upon meeting. These greetings often include body language. Sometimes the non-verbal communication is paired with the production of vocalizations. Our animal experts on greetings will be elephants, two species of the great apes (gorillas and bonobos), and wolves.

As referenced earlier, Elephants are very social animals. The females and the young animals form social groups called herds. Within these herds they share responsibilities like raising and watching over the calves. Elephants are also highly intelligent and considered by some researchers as among the most intelligent animals on the planet. Elephants have long memories. They can remember the location of watering holes even if they haven't visited the site in as much as a year. They can also recognize members of their herd sometimes after years spent apart. They have also been known to utilize twigs as a sort of tool to shoo away insects.¹⁹ Combining this intellect with tightly woven social bonds has led to documented cases of adult female elephants forming a protective circle around the calves of the herd when threatened by lions or poachers. It may come as little surprise that these social giants engage in greeting rituals when members of the herd reunite. Author, Caitlin O'Connell began the introduction to her book, *Wild Rituals*, with a recounting of one such reunification. Two elephants, dubbed Knob Nose and Donut, approached each other from the opposite sides of a roadway. Upon noticing each other they raced forward to begin the greeting. The elephants faced each other across the distance with heads held high. They began vigorously flapping their ears to each other. Donut then raised her trunk and trumpeted a thunderous roar, which in this case was an

exclamation of extreme joy. Following the bellowing vocalization, both animals rumbled softly. Donut then reached her trunk over to Knob Nose and touched the tip of her trunk against the side of the other's mouth like a kiss. Knob Nose reciprocated. The elephants then moved side by side roaring and rumbling wildly. And then the greeting ended (at least that where the kindergarten version of the story will end). And then both animals exclaimed their utter joy at reuniting by fully releasing their bowels and bladders in the road. Kindergarten is in no way a place where I would wish to mention a voiding of bowels or bladders for fear of speaking it into existence. Dr. O'Connell also shared that she was familiar with these two elephants and that they were mostly always found in shared company. She speculated that their time apart prior to this greeting was likely less than an hour.²⁰ For me the most interesting part of this greeting is the placing of trunk tips into mouths. I liken it to the fist bump that I generally greet former students with in passing through the halls at Wilbur Elementary. The elephants are extending their trunks into a vulnerable position, exposed to a potential bite. Similarly, a fist bump is exposing the receiver's knuckles to a pounding should the "bumper" wish to deliver a hard strike. Assuming bites and vicious strikes are not delivered, trust between the two greeters is established. I will say that in my experience there are often multiple 5-year-olds that strike my fist (or the fists of peers) far harder than I would prefer. Perhaps taking a lesson from Knob Nose and Donut will enlighten them to the true purpose of the greeting.

Humans are primates. Our genetically closest animal relatives are also primates including monkeys and apes. Considering monkeys and apes, humans are much more similar to apes. Great apes are larger than monkeys, they have larger brains, they have opposable thumbs and prehensile digits. Also apes and humans don't have tails, but monkeys do. Two of our closest relatives are gorillas and bonobos. Gorillas share 98.3% of their genes with humans.²¹ Bonobos share an astounding 98.7% of their genes with us.²² Gorillas and bonobos are both classified as endangered species. Mostly they are threatened by poaching and habitat loss. These animals also live in groups. They offer greetings to members of their groups that may seem familiar to us. This could be due to the similarities between these apes and humans. For example, gorillas have emotions. They can express sadness and even produce laughter. Sadly, because gorillas and humans share so much, gorillas are also susceptible to diseases associated with humans. The Ebola virus has ravaged gorilla populations. With regards to greetings, gorillas have been known to greet another gorilla to which they are bonded with hugs. This parallels human hugging closely as both animals relax into each other's arms similar to a human hug. Bonobos are even a closer relation to humans. Bonobos share and show kindness. In studies, a bonobo was given a plate of fruit covered in a cream that the species likes very much. The bonobo with the food was given the choice of eating the food alone or inviting another bonobo to share. The friend was invited in. An even bigger display of kindness was shared when three bonobos were in close proximity. One of the three was a stranger to the bonobo with food. In a majority of test trials, the unknown bonobo was allowed access to the food before the familiar bonobo.²³ As sharing is sometimes not a priority for some kindergarteners, the bonobos seem an excellent species to learn from and mimic. Amazingly, the bonobo greeting is a kiss. Though it should be noted that any mention of the word kiss in kindergarten will be followed by a course of 'ewws' that may rival the disgust expressed at the mention of a skunk.

Wolves are social animals so it should come with little surprise that they practice a greeting ritual. Before examining the ritual, I had to first explore the pack hierarchy system. The original studies conducted on wolves observed wolves in captivity. These wolves did not have a traditional pack. They were individuals tossed together in a Swiss zoo. These wolves had to determine and form their own pack hierarchy and their roles and identities within the pack. The leader of the pack was dubbed the "alpha", the secondary wolf the "beta", and on down the line to the "omega", which was the lowest ranking wolf in the pack. In nature, packs come together more organically. Naturally, the head wolves are some of the older breeding pairs of wolves.

Basically, they are the parents of the pack. In times of food scarcity, the lead wolves may be the only breeding pair in the pack. When food is more abundant other pairs of wolves may also breed. The breeding pair in charge is what used to be referred to as the “alphas”. The male leads the male wolves and the “alpha” female leads the female wolves. Even though the term “alpha” has fallen out of fashion, it is highly ingrained in the lexicon related to wolves that it is still used frequently. This term also lives in the general public’s knowledge of wolves.²⁴ Actually the term “alpha male” has been taken and used to describe the most successful and powerful male in a group who also likes being in charge of others. This idea sullies what the leader of the pack is truly about. But for the simplicity of this piece, I will use the traditional terms for the wolves. The “alpha” wolf is not in the position because of a craving for power. Rather, it is in that position because of a responsibility to the pack. The “alpha” is the first wolf to scout out danger, it will put itself between a threat and the pack. When the pack gathers the “alpha” stands with head held high. When the “beta” approaches the “alpha” the “beta” lowers his head slightly below the “alpha’s” head. The “omega” will almost crawl on his belly to approach the “alpha” he may also lick the “alpha’s” mouth similar to how pups may ask for food. The degrees of head lowering do not signify fear. It is the ultimate sign of respect. This respect also strengthens the pack and keeps things peaceful and orderly.²⁵ Humans also incorporate respect into our greetings. Though instead of belly-crawling we typically extend a handshake and say some pleasantries while making eye contact. In the classroom we do not aspire to have a pecking order. Though we do want to have respect between all members of the class community.

Cooperation

Some animals are great cooperators and other are not so proficient. As mentioned earlier, female elephants share the responsibility of protecting and raising calves. Wolves in the wild are in the category of great at cooperating. A pack of wolves will coordinate a hunt to run down prey. They will then eat the kill in an orderly fashion that aligns with pack hierarchy. Wolves have such a natural instinct for participating in a group that a study was developed to test their level of teamwork. The wolves of the study were trained to pull a rope to get a treat. However, there was a catch; each wolf had to pull a separate rope at the same time in order to receive the treat. The wolves were able to do this, demonstrating amazing levels of cooperation.²⁶ Cooperation is also important in class. It helps establish and maintain a peaceful and productive classroom community. Yet, cooperation does not come easy to all students. Exploring videos of animals engaged in cooperative efforts will provide modeling that working as a team is an efficient way to succeed in a task.

Guest Teachers on Cooperation

Orcas, or killer whales, are a favorite animal of my students. In addition to being beautiful and graceful in the water they also excel at hunting. They often eat fish and squid, but a seal offers a grander meal, rich in fat and blubber. Seals are clever animals. It has been documented that seals climb aboard boats or onto an ice floe to get themselves out of the water when they detect predators in close proximity. Killer whales are also clever and use cooperation as a work around for the seal on the ice challenge. The group hunting technique is called “wave washing,” and it works like this: After identifying their target sitting on a piece of pack ice, a group of killer whales swims a short distance away from it. Then they turn and swim in formation toward the ice floe, beating their tails to make a wave. The wave reaches the ice and splashes over the seal, washing it into the ocean, where it rapidly becomes lunch.²⁷ It has also been documented that “wave washing” can break apart the ice floe which also ends rapidly in lunch. There is video showing this technique (which is easily located on YouTube by searching for “wave washing orca”). That level of coordination and cooperation should make an impact on my students with regards to teamwork on class tasks or routines. It seems appropriate to mention that should I neglect to hit pause on the video when the seal plops down in the water, the video could

be impactful in an unintended way.

When I think of honey (but spelled 'hunny') I think of the very portly Pooh Bear attempting to retrieve honey all by himself. He did not engage his friends in a cooperative effort, and while he did get a mouthful the experience wasn't a raging success. There are however a pair of animals that team up to get their fill of honey in nature, and they are not even of the same species. The African honeyguide bird and the honey badger are these animals. The honeyguide leads the badger to a beehive, with a series of vocalizations. Upon reaching the hive, the badger pulls it apart and exposes the honey within. When the badger is full of honey, it moves along and the honeyguide moves in to eat its fill. Both species benefit from this symbiotic partnership.²⁸

Connection

There are many examples of animals making connections together. Knob Nose and Donut the elephants obviously have a strong connection as evidenced by their reunification greeting. The male and female "alpha" wolves mate for life. The dancing greater flamingos form a connection that lasts a year and then they form new connections. Making connections and growing together as a class is at the heart of a strong classroom culture. Teachers can guide the formation of connections by engaging the class in sharing or by providing time for collaboration and having students do an assignment together. But there is another powerful vehicle for making connections: play. Caitlin O'Connell suggests that "Expending energy on play is actually very important to physical and social development and even to survival."²⁹ The survival bit of this statement is referring to animals. In fact, young animals frequently practice critical adult skills like hunting or hiding from predators, through play. And so do people. Through unstructured play children begin to develop social skills like turn taking and cooperation. Unstructured play is also an important part of fostering creativity. In the book *Zoobiquity*, authors Barbara Natterson-Horowitz and Kathryn Bowers share interesting connections between animal health and human health. Barbara Natterson-Horowitz is a cardiologist who concluded that animals suffer from many of the same diseases as humans. Though the animal and human diseases often have different names, they frequently present with the same symptoms. She began exploring how the animals are treated and looked for implications for the treatment of humans and vice versa. She also stated that in response to every search she made for a human disease, an equivalent disease was found in another animal species. I was inspired by this idea. Looking through the lens of a teacher I asked if dogs get attention deficit hyperactivity disorder (ADHD). The answer returned as "yes" but in dogs the disorder is hyperkinesia. Hyperkinesia must be diagnosed by a veterinarian because the symptoms can also look like hyperactivity or poor training. A piece of the treatment for either hyperkinesia or hyperactivity is exercise. Part of the challenge with these dogs is that they can be difficult to walk, which can lead to less exercise. This in turn elevates the symptoms.³⁰ With *Zoobiquity* fresh in mind, I wondered if my students that are presenting ADHD symptoms in class may not be having increased difficulty due to our recess being limited to one 20-minute recess period across a full day school schedule. Perhaps this choice is something to explore. Could the mental health, the social skills, and the creativity of my students be improved by increasing the amount of unstructured play time that if available to them?

Guest Teacher on Forging Connection through Play

Children can connect strongly to *The Lion King* movie. I think part of the reason for this is that the protagonist, Simba, starts the story as a child. As a lion cub, Simba and his best friend Nala engage in play and children can relate. However, when I look at how Simba and Nala play and consider what lessons they are learning through their games I can see where the real-life inspiration for the sequences were found, with actual prides of lions in Africa. When my students watch, they only see friends playing. In a pride of lions "play is more than

just a fun way to pass the time. It ignites innovation and exploration, and it promotes risk-taking and a flexible mindset for solving problems. Simba stalking Nala and then pouncing upon her only to have her innovate a response by rolling with the force of the pounce and ending up on top of him looked like play. While writing of play between real lion cubs, Caitlin O’Connell wrote “he stalked them again, making himself as flat as possible as he slunk across the top of the bunker. The tip of his tail swished back and forth in anticipation of the catch. Then he made a flying leap onto the backside of a sibling and pretended to bite his spine, near his backside.”³¹ As I read these words. I can picture Simba leaping through the air at Nala and her creativity that resulted in pinning Simba to the ground. Both the fictional and actual cubs were playing and having fun. The other thing they were doing was practicing life skills that would help them feed themselves, and maybe their own cubs someday. Shortly after O’Connell’s observation, the mother of the cubs joined them in the play. She walked into the shallow waters nearby. An adventurous cub approached his mother. As he entered the water, she charged him with claws and teeth exposed. She sent him running with a swat to his bottom. The mother reentered the water and waited patiently. Soon the cub returned to the water. His mother charged at him much more aggressively this time. What happened to the play? It became a lesson. Although lions can cross a river if need be and many will follow prey into the shallows, they are not superior swimmers and often avoid water. The adventurous cub was receiving a lesson about the perils of water. “Play behaviors are, by nature, ritualized or exaggerated forms of routine behaviors that serve important adult skills, such as hunting, competing for a mate, or avoiding a predator.”³² The same serves true for human children. Play is a critical component of growing into a successful adult.

Guest Teachers on Interdependence (It Happens to One It Impacts All)

“The relationships between trees and fish shows just how complicated ecosystems can be. Tree growth can be almost completely dependent on these flashes of silver, especially in areas where the soil is low in nutrients. Fish and rivers, it turns out, play an important role in nutrient distribution.”³³ Picture if you will the Northwest coast of North America. A river runs through a forest of Sitka spruce trees. This river empties into the Pacific Ocean. But much farther upstream is a special location: the spawning grounds of salmon. It is the place where the fish hatch before making their way out to the sea. For two to four years the fish feed in the ocean growing large and fat. Then they make their way back up the river on a final return to the place of their birth. On the trip, some salmon are taken by bears. The predators eat their fill and leave behind bits and pieces of the fish for the scavengers. Birds, and smaller mammals snatch up those bits and spread them throughout the forest as they make off with their finds. Fish that die after spawning often end up in bits spread through the forest too. The bits of fish spread throughout the trees provide nitrogen, fertilizer for the plants including the Sitka spruce. Those Sitka receiving the gift of nitrogen from the fish grow up to three times faster than Sitka not benefitting from the extra fertilization. In return, the large healthy Sitka lining the banks of the river means more leaves falling into the waters and more leaves shading the river. This leads to additional fish and other organisms. Because of this interdependence between salmon and spruce the entire ecosystem flourishes. Imagine what happened when people came in and dammed the river. The salmon could not make their way back to the spawning grounds. The bears and scavengers do not drop fish bits throughout the woods. The growth of the trees slows. The amount of leave and shade around the water diminished. So do the numbers of fish and other organisms. When one species is impacted by habitat change, others can also be impacted. Fortunately, in this case. The dams were removed, people transplanted salmon eggs into the spawning ground. Those eggs eventually hatched and started their way to the ocean. And that started the ecosystem towards recovery. This can relate to the classroom. If a student is suffering from poor mental health due to trauma, or any other stressors it could upset the tone of the entire culture in the room. How do we break down the traumatic “dams” that are impacting mental health? Empathy and a willingness to surround the child with

routines that offer support, and the comfort of knowing what's next, and being part of and accepted by something that is bigger than oneself. Students can be the Sitka and salmon in the river that is a healthy classroom.

Guest Teachers on Diversity Makes Us Stronger

Once upon a time there were three sisters. But these sisters were not little girls or grown women. These sisters were vegetables. And even though all three of the sisters were a different species of plant, they were far stronger because of their differences. But before we meet the sisters let's look at modern farming and monocultures. Imagine looking across a field and seeing row after row of wheat stretching into the distance. All at the same stage of growth, all due for harvest at the same time. All the same row after row. That is a monoculture which means the growth and cultivation of a single species of plant on a piece of agricultural land. That is big business farming. But that is also a big risk. Wheat (as any plant) has specific strengths and weaknesses. Aphids are insects and pests that can ruin wheat. If all you grow is wheat and aphids find it in large numbers, the entire crop could be destroyed. Suppose the farm is in the middle of an extremely high heat wave or a drought. All of that wheat could easily be destroyed. Monocultures run the risk of dying all together for reasons that are not controlled by the farmer. Monocultures are fragile and lack strength.³⁴ Imagine a kindergarten carpet filled with all students who are excellent at math but need support and help at reading. This group of students would be excellent in math class. Unless they had to read a word problem then none of them could offer help to their classmates. Imagine a full carpet of kids that had all the same ideas. That would make for a very bad turn and talk or noticed and wonder. Back to the sisters. Indigenous people ranging from Montana to Mexico know the three sisters. Even more impressive they understand the natures of the sisters. The first sister is corn, the second beans, and the third sister is squash. When these three seeds are planted together in a mound of earth something special happens. Each of these sisters has unique abilities that the others cannot do. Corn for instance grows early and when it grows it grows tall and straight and strong. Beans form vines that curl and climb. Even more unique, beans can pull nitrogen from the air and use it to produce usable nutrients. Squash is also special. The leaves on squash are very wide and low to the ground. These leaves also grow bristles which make them unfavorable to caterpillars that enjoy eating crops. The specialness that happens when they are planted together goes like this; The corn plant sprouts first giving it a head start on the growing. When the bean sprouts, it unfurls leaves and begins to twirl vines around the corn stalk. As the bean climbs higher and higher up the stalk it draws nitrogen from the air and depositing the usable nutrients into the soils. These extra nutrients feed the corn and the squash. The wide, low leaves of the squash cover the ground. This ground cover blocks the sun and helps keep the earth below moist and full of water to aid the corn and beans. The bristles on those squash leaves discourage insects from nibbling on any of the sisters. Combinations of different crop growing together are called polycultures and they are much less risky than any monoculture. Because of the unique gifts of the sisters, they are stronger than they could ever have been if grown in isolation or in a monoculture. The lesson we can take from the three sisters is that when the students on the carpet have different viewpoints, ideas, skills, strengths and needs, our class is stronger. If our carpet was a monoculture, we would be fragile, not strong like the sisters. The things that make each of us unique are the things we should celebrate because uniqueness makes our classroom culture shine.

Teaching Strategies

Notice and Wonder

In this strategy the teacher presents a picture, video, or object and challenges the students to look carefully and share what draws their attention about the object. Sometimes the teacher records student responses to revisit or revise at a later time.

Modeling

Modeling involves performing an activity or task and having the students watch and share what they saw. The teacher can be the model, other students can be the model, or animals engaged in a manner that we might utilize in class could also be the model. Role playing often is connected to modeling. The teacher sets up a situation and selected students act out the situation.

Brainstorming

Brainstorming is a strategy for activating prior knowledge or making connection to content. The new content can be connected to the students themselves, connected to something they notice in the “real world”, or connected to a familiar story. Brainstorming is essentially asking student to think on a topic and name things that they believe are related to the topic. At the time of brainstorming, we are not evaluating the correctness of answers just recording responses. Brainstorm is very useful in rooting out misconceptions related to the topic.

Activities

Activity One- Communication

I begin this activity by asking students to brainstorm routines that we engage in at school (entering the class, breakfast routines, visiting lockers, lining up, walking in the hall, etcetera). I would record their ideas on chart paper for future reference. I then ask the students if animals have routines. After they weigh in, I'll let them know that animals have many routines but we call them rituals. I will then tell them that they will get to see a video of animals participating in a ritual. They will then watch a flamingos dancing video. Videos of this ritual are readily available on Youtube. I searched for “flamingo courtship dance” and several popped up. I would highly suggest that any video be viewed all the way through before sharing it with students. After the video I would ask them to do a Notice & Wonder. On chart paper I will record the things they saw as well as the questions they may have raised. My first follow up questions to the class will be “why do you think they are doing that”. I doubt they will get the correct answer which is to find a mate (or in K terms a boyfriend or girlfriend flamingo). The next question asked is “what does the dance get them”. That answer would be an egg and after it hatches a flamingo chick. I will then connect the courtship ritual to our line routine. The flamingos are very synchronized in their movements, and while they make a bit of a crowd as they wade through the shallow water, we will not be crowding down the hallways. Instead, I will take the students out to the hallway and practice walking. Our focus will be on staying together in line, stepping as best as we can in

unison as I count the 1-2-3, left-right-left, cadence. If the students are getting that, I may elect to have them turn shake their heads left and right on the count of 3. Over the next week or two we will continue to practice our flamingo walk. Throughout the school year, in times when the line gets sloppy, I can remind them of the flamingo ritual and begin the 1-2-3 counts again. This is a simple activity that the students will be able to do. Doing this together in synch will bond our class together and elevate our classroom climate. Plus, our line behavior should be much improved as the students will likely be focused on the rhythm and count and not on touching stuff on the walls, or each other, or any of a million things they typically would do as we move about the school. After practicing this on the initial day, we will sum things up by the students drawing (which the CCSS defines as a part of K writing) the flamingos engaging in dance. As a bonus to connect this lesson to our classroom routines, I have found a book, *How to Dance Like A Flamingo* by Moira Butterfield, which as the title suggests will sequence instructions on how to do some postures that loosely connect to the courtship dance ritual. The book also includes movements meant to mimic other animals. This book will be an excellent source of movement breaks and should add a layer of connection between my students and animal teachers.

Activity Two- Cooperation

I will begin the activity by having students turn and talk. The guiding question of this sharing opportunity will be; "How do we show cooperation throughout the school day?". After a few moments I will call the students back together as a group and have the pairs share something they discussed. Following this, I will ask them if animals cooperate in nature. I'll accept ideas and move on to a read-a-loud of the book "Packs: Strength in Numbers" by Hannah Salyer. This book explores several animals that operate as groups to accomplish some tasks. After the reading we will briefly discuss how cooperation/teamwork helped these species succeed. I will then bring up another situation related to animals cooperating; the honeyguide bird and the honey badger. I will show the students images of these two animals and ask if they can find any connections between the two of them. They will come up with answers and may get the one I'm hoping for which is that they both have the word honey in their name. I will then share a video of the cooperation between these animals (see content objectives under "cooperation" for the answer to how they are alike). I will then ask the students how the honeyguide bird and the honey badger are different from the animals we read about in *Packs: Strength in Numbers*. The answer is that the book focused on single species cooperating but the video showed two different species cooperating because it benefited each of them. In this case, both animals with a taste for honey receive a belly full of honey. I will close the lesson by allowing the students to draw (I will provide labeling) any of the cooperative groups of animals that we had discussed today. When it is time for the routine, I will connect the animal cooperation to our classroom routine of cleaning up. Can we do a better job of cleaning up quickly and safely if we cooperate together on the task, just like the honeyguide bird and honey badger, or the dolphins, zebras, wildebeests or any other animal featured in the lesson. As a bonus, cooperating on tasks is also tied to civics standards in Delaware kindergarten. Yay cross-curricular connection (SEL, science, social studies).

Activity Three- Connection and Diversity Makes us Stronger

I will begin the lesson by showing the class a picture of a single ripe cornstalk. I will then ask the students what they notice or wonder about the plant. I will have a piece of chart paper prepared with two vertical lines that divide the page into thirds. I will label the first column "corn" (and draw a corn stalk next to the label. As students provide notices, I record them in this column. I will be looking for the notices that the cornstalk is tall and straight. If these traits are not shared by the students, I will share them and add them to the list. I will then share a picture of a monoculture field of corn and ask the students what they notice about this field. I will be looking for an answer like, "It's all corn". I will then introduce the term monoculture: the growing of a single

crop in an area (though they do not need to know this term, K students generally really enjoy ‘big kid words’). I will then share a collage of pictures of animals that eat corn from the field. Some of the animals featured could be birds, deer, raccoons, and squirrels. These are animals commonly found in Delaware. I will ask the students, what they think all of these animals have to do with corn. I imagine that someone would suggest that they all eat corn. The follow up question will be, “what do you imagine would happen if bunches of those animals found the field of corn from our picture of the monoculture?”. They would likely say that the animals would eat all of the corn. We could then discuss whether this farmer could lose his entire crop because the animals found the field. During the discussion I will bring up that a problem of monocultures is that natural events like animals feeding or even weather conditions could ruin an entire crop. I will also share that presently almost all of our food crops are grown in monocultures. I will then explain that long, long ago Indigenous people had a different way of growing crops. Has anyone ever heard of the “Three Sisters”? I will tell them that the sisters are not people, and that the first sister is corn. I will then introduce the second sister by showing a picture of a bean plant. I will again ask the students what they notice or wonder about the bean plant. While they are looking, I will also label the second column of the chart paper as “beans” and draw a sketch of a bean plant next to the label. As with the corn before, I will record their notices in the column. This time, I am looking for the trait of curvy or twisty vines and possibly shorter than the corn. If they are not mentioned I will note these features of beans. The kids will then be told that beans are the second sister. I will also mention that when beans are raised in a monoculture, they have the same weaknesses as a monoculture of corn. They could be destroyed by animals that like beans or a weather event with which beans would struggle. To introduce the third and final sister I share a picture of a squash plant. I again ask the students to do a notice a wonder about this new plant. After some thinking time, I have students report back on their notices or wonders and record them in the final column of our chart. This time I would like to focus on the size of the leaves on the squash plant. Should it not be noticed I will guide them there. As before I would point out that as in any monoculture, a field of squash plants would have weaknesses.

When the three sisters are grown together they become stronger than when they are grown in monocultures. The corn is straight and tall and the corn stalk provides a place for the bean vines to twist and curve around and around allowing the bean plant to reach higher and higher to the sun. Bean plants could not “rise above” other plants without the literal support of the corn stalk. The bean plant also has a superpower. It releases nitrogen (kind of like fertilizer) into the ground. This nitrogen feeds the beans, but also the corn, and even the third sister the squash plant. The squash plant grows those big leaves that cover the ground around the first two sisters. These leaves make it hard for weeds and other plants to grow around the sisters. The leaves also provide a lot of shelter from the sun. This means that the ground around the sisters also holds in water better than if that ground were just out in the open sunrays. So, the diversity of these plants helps all three of the them succeed. The plants help each other to better gather sunlight, receive nutrients from the soil, and for that soil to retain water. The unique structures and abilities of the plants make the team much stronger when they are together. This is just like our class. If we all had exactly the same traits, background knowledge and skills, then our class would be a monoculture. For example, if we all had amazing math skills our class would be great at counting, adding, and even subtracting. We would be amazing... until we got to a word problem. If our entire class could not read the sentences, we would fail. Monocultures are alright as long as the conditions are perfect, but a polyculture, which is when a diverse population of crops (or people) are together, is so much stronger. If our class had some kids that were great at reading and also a group of kids really good at math skills. We would be amazing working together to solve challenges that require a combination of skills, like story problems. When I look across our carpet, I am thrilled to see so many different kids each with unique skills. I am thrilled to see our classroom polyculture. A challenge to the class is to now pay special attention to our skills and the skills of our classmates. Being focused on other students’ answers and ideas during class

discussions is one way to figure out the skills of classmates. If you are struggling in a skill that we are practicing, like identifying numerals, you may know another student in the class that seems good at that skill. You may be able to get help from them. If you are very strong and a classmate is struggling, you can offer support. Of course the teacher is also a member of our community and you can seek help from that person too. We can be like the “Three Sisters” and support each other, because we are all stronger together.

These activities while seemingly simple, will elevate the class and our culture in several ways. First, we will be improving our social-emotional learning skills by learning from the animals and plants. We will make gains in the areas of communication, empathy, and cooperation. At the same time, we will be connecting to science standards related to patterns in nature. Finally, we will be developing an appreciation for the natural world by coming to know the plants and animals that we share the Earth with. This appreciation of nature can ultimately improve our own health. One health is showing that our health (even mental health) is very much connected to the well-being of the animals and the plants of our world. We cannot remain healthy ourselves without preserving nature. That starts with appreciating nature.

Three activities have been outlined in this unit. However, interesting rituals reside in animals of all species and some plants. The activities described above can be used as a model for using nature to elevate the classroom. Find an animal you believe will engage your students. Think on or research what unique rituals or behaviors does that animal practice. Then connect it to a classroom routine or social-emotional skill that you feel your class could benefit from. A few quick examples from the animals I detailed in the content section. Elephants, wolves, gorillas, and bonobos all engage in greeting rituals. Could these examples could be utilized during “morning meeting” as we greet each other on the carpet to start the day? Rattlesnakes, skunks, and dogs are very easy to understand if you can read their forms of communication (body language, vocalizations, and mechanical sounds). Could learning to read animals better help the student understand each other or you? Wolves and killer whales orchestrate hunts. Could we learn from their teamwork to better handle classroom tasks more cooperatively? Can we learn from a pride of lions that play is highly important to the development of skills for adulthood. Are your students are really excited by axolotls (I didn’t know what they were either until my students talked about them all last year) and can I cash in on that excitement to improve some aspect of my classroom routines? I wrote this unit because I believe the answer to these questions is yes.

Appendix on Implementing District Standards

Delaware Social and Emotional Learning (SEL) Competencies

3A Demonstrate awareness and consideration of other people’s emotions, perspectives, and social cues. This standard is most specifically addressed in Activity One. Though it can certainly also be addressed in Activities 2 and 3. It could be brought into the Notice and Wonder teaching strategy as well as during modeling.

4A Use positive communication and social skills to interact effectively with others. This standard is addressed in all three activities. It can be part of all three stated teaching strategies. Communication is also an essential part of most rituals/routines.

Next Generation Science Standards

K-LS1-1 Use observations to describe patterns of what plants and animals (including humans) need to survive.

Students can be led to discussing this standard during notice and wonder, and the strategizing strategies while we are discussing the rituals of our master teaching animals.

Resources

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Notes

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