

Learning How to Coexist with Coyotes Lesson Plan

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### **Abstract**

This lesson plan focuses on the importance of learning to coexist with coyotes by engaging high school students to discover and analyze possible solutions to the issues surrounding coyotes. As an apex predator in North America, coyotes are an essential part of our ecosystem. However, coyotes have been misunderstood for decades now. Human-wildlife conflict occurs all over the world, but this is an issue happening right in our backyards. As Zoo Atlanta sits in the heart of an urban area experiencing human-coyote conflicts, it is important that the facility provide this informal education experience for students who would otherwise not have the opportunity. In this setting, students can discuss their personal experience, interact with experts in the fields and research possible solutions. The goal is to have the students create a proposed solution to the issue and also provide constructive feedback about each other's ideas.

### **Learning How to Coexist with Coyotes: A Lesson Plan**

In our ever-growing technological environments, informal education has become a major influencer in how learning occurs. Today zoos, aquariums, and museums provide excellent resources for informal education. It has been estimated that 86.7% of children's lives during school years are spent outside of the classroom which entails that informal learning is crucial during this time of their lives (Denson et. al., 2015). Because of this fact, it is important to understand the benefits of informal learning. Denson et. al. discovered eight benefits of informal learning which include: feeling of accomplishment, time management skills, and building confidence (2015). These are just a few of the ways this lesson plan will influence the students.

#### **Instructional Context**

Zoo Atlanta is located in Fulton County, Georgia which is home to over 95,000 students as of 2016 and provides many of these students with informal education. Typically, the students that come through the zoo are elementary and middle school students. I want to focus my audience on high school students. However, this lesson plan can be used with any age groups.

Atlanta is a great example of the “melting pot”. There are so many different kinds of people living here with many different backgrounds, as you can imagine there are numerous demographics living well above the poverty line but there are also many that are not quite there. Around 21.6% of the population in Atlanta is below the poverty line. Of the population in Atlanta around 18.5% around under the age of 18. Around half of these students are likely to make it through college. About 65% of them will probably have to get a job to help support their

families (U.S. Census Bureau, 2019). The numbers express the difficulties a typical high school student living in Atlanta can face.

As a keeper and educator at Zoo Atlanta, I find it very important for the facility to keep these numbers in mind and understand that we have a responsibility to connect with these kids. It is our job to get them engaged with nature; not just understanding nature on a global level but more importantly on a local level. Zoo Atlanta can provide informal learning opportunities for all learning levels but is lacking in the 9-12 grades. With the ability to take the kids outside and give them opportunities to interact with experts, the students will likely become more compassionate about their surrounding environments. One study discovered that once a child has made a relationship with nature in some way, it is likely to persist as they get older (Barthel et. al., 2018). These students are the future of our world and it is vital that they understand how to protect it. The issue that this lesson plan focuses on is coexisting with coyotes.

Coyotes have come to be considered a nuisance around the city and metro-Atlanta areas. For instance, a recent study showed that residents of Atlanta typically have negative attitudes about coyotes (Hooper, 2016). This is in part due to the way the media portrays the species. When a resident presumably has an indirect negative experience with a coyote, usually involving a pet, there is no investigation to show that it was a coyote. Thus, coyotes are just given a bad name (Hooper, 2016). As these animals continue to adapt to urban settings and learn to survive in the concrete jungle, residents wrongly become scared. However, they serve a very important role of keeping balance within our ecosystem. A study done in 2019 followed a pair of coyotes living in an area around Atlanta. It discovered that contrary to popular belief, the area was thriving in biodiversity (Mowry and Wilson, 2019). Within the study site surrounding the coyote

den, there were twelve mammal species, two reptile species and as many as twenty-two bird species. (Mowry and Wilson, 2019). This misconception of coyotes and the problems they cause is nothing new to Atlanta. In fact, this lesson plan will encourage students to follow organizations dedicated to preserving our environments such as the Atlanta Coyote Project (ACP).

ACP is an organization working to change the way residents think about coyotes. Dr. Mowry, founder of ACP, once said to me, “Too often, coyotes are mis-persecuted and wrongly defined as invasive species. Really, they are just doing their job and helping fix what we ruined many years ago.” Through this lesson, high school students will interpret the history of coyotes in the southeast, discover the importance of coyotes in our area, and discuss ideas on how to coexist with coyotes in the city of Atlanta.

### **Instructional Input**

In today’s society, younger generations are more likely to express pro-environmental attitudes (Ballew et al., 2019). As the importance of understanding climate change and our environmental impacts has grown over the last few decades, it makes sense. One analysis found that around 70% of adults, ages 18 to 34, are concerned about global warming whereas only about 56% of the sample ages 55 and older, which is still a considerable amount, but the difference between the age groups is drastic. This study defined this as the “global warming age gap” (Ballew et al., 2019). These numbers express that we are definitely on the right track when it comes to having an understanding of our environmental impacts, but do they show the understanding of actions that can be taken?

Youth participation is an important part of education and is defined as the process of involving young people in the decisions that affect their lives (Schusler, Krings, and Hernandez, 2019). This process initiates the interest and passion that these kids will bring with them as they grow up (Barthel, et. al., 2018). Critical youth empowerment builds on this notion of participation by incorporating “individuals, families, organizations, and communities gain control and mastery, within the social, economic, and political contexts of their lives, in order to improve equity and quality of life” (Schusler, Krings, and Hernandez, 2019). Encouraging students to engage in this concept allows them to develop a full understanding of their impact on their community. Including these strategies in grade-level education would aid in student involvement and understanding of their surroundings.

These are just a few goals of this lesson plan. Through Zoo Atlanta, I want to communicate to the students of Atlanta an understanding of their surrounding environment, how our ecosystem is connected and how humans can influence the ecosystem. I will accomplish this by engaging them in an environmental issue within their own community, an issue that may personally affect them, such as living with coyotes. As coyotes are very adaptable animals, they affect a lot of families across the country, including families that live in Atlanta. I think it is important that Zoo Atlanta keeps the high school students of Atlanta, GA engaged in local environmental issues. The students of this informal education experience will discover and create solutions to a real world problem.

Poessel, Gese, and Young (2017) state that having residents understand the variables in their environment such as those that may influence coyote interactions in the city might help out wildlife managers when creating management plans which expresses the importance of

considering all of our options. That is where the students will come in. This exercise will promote creativity and innovation from a novel group of people who can provide important insight on the issue. Though an environmental factors study was based in Chicago, IL and Los Angeles, CA, Atlanta is comparable as it is also a large urban area making it more likely to have these human-coyote conflicts (Elliot, Vallance, and Molles, 2016). Researchers have discovered possibilities in coexisting with coyotes in these urban areas. For example, practices such as education programs and landscaping changes that include wildlife habitats may reduce human-coyote conflicts in urban areas (Poessel, Gese, and Young, 2017). However, Elliot, Vallance, and Molles determined there is a wide range of opinions on wildlife and more often than not, residents of urban areas are fearful of predators residing close to them which may give wildlife managers difficulty when advocating for coexistence with coyotes (2016). In addition, the study suggests that education through various outlets will aid in promoting coexistence (Elliot, Vallance, and Molles, 2016).

With the help of the Atlanta Coyote project website and many other resources, the students participating in this lesson will have a better understanding of the conflicts involving coyotes in Atlanta. Some of the problems involving coyotes include: preying on companion animals, destruction of property, and attacks on humans (Fox, 2006). Rightfully so, those people develop negative opinions of coyotes. However, once it goes down the grape vine, many more people develop negative opinions based on an indirect experience and coyotes are considered problematic. Then the media paints a picture in everyone's mind that coyotes only cause harm to our communities. Coyotes do not receive the same respect that other wildlife does, yet they are just as important as any other form of life. It is because of this that many, many, many research

studies have been performed on the subject (Poessel, 2015). One study suggests that the occurrences of coyote conflict in urban areas like Atlanta is higher because these areas attract more coyotes than areas with a low population density ( Poessel, 2015). One of the most interesting findings of this study is that only 10% of urban areas considered conflicts with coyotes to be of high priority (Poessel, 2015). However, if we dive deeper into this subject, we gain a better understanding of these adaptable creatures.

For example, though coyotes tend to veer towards urban habitats, they greatly choose to not go in areas associated with human activity such as residential areas (Gehrt, 2009). Coyotes are smart and, as mentioned before, very adaptable which is why they use urban areas to scavenge and find shelter but know that being around humans could be dangerous. One study found that if conflicts do occur, it is usually associated with wildlife feeding by humans (Gehrt, 2009). An example of a way to coexist with coyotes would be to not feed wildlife. The most important thing anyone can do when interacting with wildlife is nothing. Feeding wildlife promotes unnatural behavior in wildlife and coyotes serve as a great example as they become habituated and some end up relying on human intervention as a food source. It is similar to when your dog begs for your home-cooked meal at the dinner table. If you give the dog a bite after it has been begging, they learn that if they beg, they will get food. This is called positive reinforcement which increases a behavior whether it is desired or not. So if you do not want your dog to beg or if you do not want a coyote near your house, do not feed it. The questions asked and answered in these papers align with the issue that the students of this informal education experience will be investigating. They will also need to understand how coyotes are connected to their environments.



**Lesson Plan**

The lesson plan will occur over the course of four weeks, one day a week for about one hour per day. By the end of day four, the students should have developed a solution or idea of how to handle the growing coyote issue in Atlanta based on personal research.

This plan coincides with many Georgia Standards in Excellence in Science including but not limited to: biology, earth systems, ecology, environmental sciences and zoology. Throughout this lesson, the grades 9-12 GSE standards SB5 (interdependence of all organisms on one another and their environment), SEC2 (factors influencing population growth, density, and dispersion), SEC3 (community interactions), SEC5 (impact of natural and anthropogenic activities on ecological systems), SEV2 (stability and change in Earth's ecosystems), SEV4 (human impact on natural resources), SZ2 (evolutionary history of animals over the geological history of Earth), SZ4 (how animals interact with their environment and one another), and last but not least, SZ5 (relationship between humans and animals within various phyla) will be addressed (GaDOE, 2020).

*Day One: History and Pre-perceptions*

The first day of this lesson plan will focus on understanding coyotes' roles in nature, discussing the backstory of southeastern coyotes, and pinpointing the students' current perceptions of coyotes. I will first ask the students if they have heard of the Atlanta Coyote Project (ACP) to get an initial understanding of their knowledge about coyotes in the city. For those students who may not know of ACP, I will then introduce the organization to them. Using the [ACP website](#) and other resources, we will then learn about a coyote's role in its environment.

First we will watch a video on the website's homepage that explains coyotes in general and within urban settings. Next, we will discuss where coyotes came from and how they got into Georgia. Lastly, I will ask the students if they have had any experiences with coyotes and what their perceptions of coyotes are. This will be used to compare how they feel about coyotes at the end of our lesson together.

### *Day Two: Conflict or Coexistence*

The second day of this lesson will be focused on examining different examples of conflict. First, we will go over the Humane Society of the United States's [template](#) on coyote management and coexistence. In this template, there is a table that explains what you should do when you encounter a coyote. Depending on how many students I have, they will be split up into groups or pairs and each will be given a different scenario involving a coyote. In their groups or pairs they will discuss what they should do based on the template. Next, we will go back to the ACP and learn about the different ways Georgia has attempted to manage coyotes. Lastly, we will take a look at the ways we can coexist with coyotes. Before the class leaves for the week, I will show them how they can [report a coyote sighting](#) for the city of Atlanta on the ACP's website.

### *Day Three: Problem Solving and Long-term Goals*

The third day of this lesson will focus primarily on developing plans to coexist with coyotes in Atlanta. The students will work in groups or pairs to determine what they think is

the best way to coexist with coyotes. Most of the hour on this day will be spent communicating and conversing with their group members and putting together a 3-5 minute presentation that expresses the main goal of their plan (to ensure they understand this process), explains their plan on how to coexist with coyotes in Atlanta, and tells us why it is important to learn to live with them. The students are welcome to use all the available resources which include: any materials I provide such as articles or templates, talking with staff members at the zoo, and the internet. It will be interesting to see what each student thinks is most important.

#### Day Four: *Presentations*

The last and fourth day of this lesson plan will be spent hearing each groups presentations about coexisting with coyotes. After each presentation, we take some time to discuss the implications and factors included in each group's plan. It will also be important to look at the pros and cons of the plans. After everyone has presented and if time persists, we will take a quick walk through the zoo and find more animals that live with the same problems that coyotes do. The goal of these presentations is for the students to feel comfortable talking about the issue and extending the knowledge they learn to the people in their lives. By this day, students should have a clear understanding of human-wildlife conflict, particularly one that is close to home. They also should have developed a deeper understanding of what it means to coexist with wildlife and feel confident that they know how to do it. I hope that this lesson also opens them up to environmental sciences and gives them a greater appreciation for wildlife. Before the lesson is dismissed, I will ask the students again how they perceive coyotes.

**Reflection**

This lesson plan has not been implemented due to the zoo being closed and education department employees not being allowed on grounds. Overall, I believe this lesson plan encompasses all the necessary strategies and resources. It allows for inquiry-based learning while incorporating a real-world problem that many people can relate to. Throughout the plan, students are encouraged to use their critical-thinking, problem-solving, and communication skills. Students have the opportunities to work in a team or partner setting. I honestly believe the most effective part of this lesson plan is on day two when the students are introduced to different scenarios of encountering coyotes. After this lesson plan is over, it is important that students gain an understanding of biodiversity and also the effects humans have on the environment.

This lesson plan could be used across many age groups by simply modifying the resources used. A fair amount of technology is used throughout this lesson but I am sure there are ways to increase or change how technology is integrated into the lesson plan. This lesson plan can work for individuals, whole class or small group settings.

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