

Teachers' Guide To Animals Activities

Background - The Animals Game is derived from an early artificial intelligence program; an expert system that gradually learned to be a more expert expert. It was an all-text game called **Animals** that shipped with my very first computer, an Apple II+, in 1982. **Animals** was open-ended: You could think of any animal, and the computer would use a logic tree approach to close in on the answer. After a few yes/no questions to narrow down the possibilities, the computer would guess. If the guess was wrong, the computer would request you to enter a question and answer to distinguish between the correct answer and its incorrect guess. It would add that question and answer to its database, and gradually it would become more accurate.

The Animals Game 2008 - I realized that a simpler version of this game would be a fun and valuable class exercise. One change was obvious: add graphics for both the clues and the animal guesses. That's what I did for the original 2008 versions (Classroom Suite, Clicker 5, PowerPoint, and the PDF versions).

I knew that an open-ended approach would be too complex for me to code, especially if I wanted to have those graphics. In addition, asking the students to enlarge a database seemed a bit too much. So I set up a similar logical structure, but limited it to 28 specific animal choices. This still results in over 50 pages, but by using only background graphics, I was able to keep the file size reasonable for the 2008 versions. It only takes a few questions to reach an endpoint for any given animal. After the computer commits itself to a guess, students are invited to play again, but also have the option to stop for the day.

The Animals Game Online 2019 - File size is not a limitation in the 2019 online version, but I've still kept it to 28 specific animals, enough to have animals from many different groups, including land and ocean animals, vertebrates and invertebrates, carnivores and herbivores, and so on. I couldn't have every single animal group, but there are mammals, birds, reptiles, amphibians, fish, insects, crustaceans, and arachnids, to name a few. Having 28 animals to choose from keeps the activity fresh, and demands quite a bit of scientific knowledge from students.

Want more free activities, tips, and graphics? Look in the Attic!

I have completely re-drawn all the clues, the little computer cartoon, and all the animals. I think you'll find that the look and feel of the game is much improved over the original. Another bonus is that I can give you ALL the art as part of a really extensive clip art collection. I've included the stage and easel, and a large and small size for each animal, for you to use to build other projects for your classroom.

Animal Videos

I've added one other element to the online version: short videos of each animal that students can view at the end of each round of **The Animals Game**. There is a **Play Movie** button on each page where the computer makes its guess. Clicking that button opens a pop-up page with the video, or videos, for that animal, so students get to see the real animals in motion. Click in the middle of the video to start it. Hover the cursor over the animal name on the movie page, or click it, to hear the animal name spoken aloud.

I have more than one video for some animals, like the turtle, where there are many different kinds. For turtles, for example, there are freshwater turtles, land turtles (including tortoises) and the sea turtles with their flippers. Click the instruction sentence on movie pages with multiple buttons to cause it to read out.

These videos are meant as a sort of reward or bonus for successfully guiding the computer to the correct answer. Students are welcome to watch all or part of any of them, or skip them if they prefer. Sometimes they may be more intent on playing another round, and sometimes they may get lost in watching videos and talking about a particularly interesting animal. I do predict they will want to go through **The Animals Game** many times!

Mechanics Of The Game

The first page after the cover introduces the game; and students won't see this page again, or the cover, when they use the **Play Again** option. The most complex page is next, where they choose an animal. Each button you see is really two, one atop the other. Clicking anywhere on an animal button,

EXCEPT on the animal name, goes to a page with a larger picture of the animal. Clicking on the animal name speaks the name aloud. As a visual clue, the cursor changes to a speaker on the animal names.

The page highlighting the chosen animal gives the student a heads-up about what kinds of questions the computer will ask: what the animal looks like, and what it does. If you are working one-on-one with a student, or introducing the game to a class, you might want to spend some time on this page talking about common animal traits, such as how many legs, and about animal actions like flying, slithering, or swimming. You can hover the cursor over the animal name on the choice page, or click it, to hear the animal name spoken again. In case a student regrets the choice, just use the browser back button and choose a different animal.

From that point, the computer asks yes and no type questions until it narrows down the possible choices and makes a guess. The longest path I see on the flow chart is eight questions, the shortest is three, and five questions is typical. It's okay to hurry the response before the computer speaks, and hit Yes or No. You may naturally do so when playing multiple rounds. If a student realizes they just entered an incorrect response, use the browser back button to recover.

I've given the computer some "thoughty" um's and uh's and a distinctive voice to give it more personality and convey how hard it's thinking. The sound of the text will automatically play on some systems, but on devices like iPad® that don't support autoplay, you must click or tap the **Speak Text** button. The **Yes** and **No** buttons also speak aloud, making it feel more like a real conversation.

There are several options once the computer makes a guess, one of them being to watch a short video. Many students may eagerly choose **Play Again**, which goes directly back to the choice page. There's no reason a student has to listen to the text or animal names on subsequent rounds; just choose another animal. The third choice after an animal is identified, is to quit and come back another time.

How To Handle Wrong Guesses

If the computer's guess is wrong, then at some point the student answered a clue incorrectly. You can use the browser back button to retrace the path. Go over the process with the student, and gently point out where the mistake occurred. Quite likely there are questions about animal traits that they have never really considered before. You may need to help the student through the first few times, discussing a question before they answer it.

Activity Goals

This is really a reverse test, but I think it's less stressful for students if it feels like they are in control, helping the computer. It's a chance to begin understanding the classification of animals, and how that classification expresses the relatedness and unique traits of various animal groups. I firmly believe that playing *The Animals Game* in the early grades will make it much easier for students when they later tackle the formal system of phylum, family, class, etc.

I have made it easier for students by avoiding most animals that might prompt ambivalent answers. Take the elephant. Does it have fur? Doesn't seem to, but it also doesn't have scales, feathers, or a shell. It doesn't exactly have fur, but it DOES have hair, though not very much! (Reminds me of my husband.....) Anyhow, the elephant should be grouped with other mammals like the lion, cow, and platypus, but I didn't use the elephant in this game. It would be too easy, and certainly understandable, if a student mislead the computer on that very first question about fur!

I did include a few animals that may lead to some interesting class discussions, such as the echidna. That's a mammal that lays eggs; the only other one being the platypus. It's spiny, but in between those spines are coarse hairs. And then there's the octopus. Does it have eight arms, or eight legs? It walks up on those tentacles, but it's so clever in using the the tips like hands (it can pick simple locks!) that we usually call those tentacles arms. In fact, once you see the movies of the spider wrapping up bees, you may begin to think of its eight legs as arms also!

Combat Digital Thinking!

One goal I have in this activity set is to partially offset something I call digital or binary thinking. That's the tendency to assume there's only one right answer; that something must firmly fit into one category or another. The thing is, we've all become accustomed to digital devices, but it's a continuous, analog universe we live in! It's good for students to realize that categories are just a handy tool to make sense of things like the animal world, but there will always be fascinating exceptions like the platypus, a mammal that lays eggs and has a bill like a duck.

I also want students to know that those categories are somewhat arbitrary. We have to choose standard rules to play the classification game, but our thinking needs to stay elastic. It's perfectly accurate to think of a spider's legs as also being its arms...or octopus arms also serving as legs. *Many times the answer to an interesting question isn't either this or that, but instead it's both, or something else, or all of those at once.* This insight is the most important one students can gain from playing this game, and certainly carries over to appreciating diversity in people and their cultures.

Supporting Book: What I like About Animals

This simple supporting book introduces the many characteristics found in animals and expresses the sense of wonder and pleasure in discovering that diversity. It should be used as an introduction to **The Animals Game**, and it could serve as a substitute activity for students for whom **The Animals Game** is at too high an academic level. There is a short comprehension test for this book, and any student who has any difficulty with the test should spend more time with the supporting book before trying **The Animals Game**.

Flow Chart

A chart laying out the entire logic tree of **The Animals Game** is part of the packet of materials for teachers. While mostly intended for your use, some classes may benefit from a discussion of the flow chart. It could be used to make certain that students understand all the concepts and vocabulary included in the clue questions. It also is a good example of using a chain of logic to find an answer, a method students can use in many situations.

The **Flow Chart** can also be used in follow-up discussions about shared traits. For example, all the branches below the question, Does it have feathers?, are birds, since having feathers is unique to that group. That's about the only trait they share, since there are birds that can't fly, birds that live in ice and snow, birds that can run very fast, and birds that swim underwater, just in these four examples. This leads to interesting discussion about the difference between sharing general traits, like having bones or not, and sharing more specific traits like having eight legs. Thinking about the relatedness of animals in this informal way makes it easier for students when they later tackle formal classification of animals and plants.

Three Resource Collections

This project generated so many resources, that I've made a separate post about them. First, I've put together the most extensive and best clip art collection I've ever done, in creating art for **The Animals Game**. For each of the 28 animals, I made a larger size in the range of 500 pixels wide, and a very small version around 100 pixels wide. I've saved both sizes as jpg and png. Some applications make the white area around the jpg transparent, but others either make that solid, so you see the bounding rectangle on a color background, or they render all white areas transparent, which can make for some very strange-looking animals on various color backgrounds. If the jpg version has problems, try the png. It saves with a truly transparent background, usually distinguishing that area from white areas in the art image. No more green and black striped zebras!

I've also made a zip file of all the videos for you to download. I apologize for the size - over 400MB - but I think you'll find it worth the wait. These videos are a bit longer than I usually add to stories, but still very short, 1 to 2 minutes tops. By combining many short clips, I was able to get quite a bit of information into that short timespan. For example, for the spider you observe how it coordinates all those legs in walking, watch baby spiders hatch, watch it capture and speed-wrap bees, and marvel as it carefully constructs a web, all that in just under a minute. For the octopus, you see it walking upright on its tentacles, jetting along at top speed while shooting ink, flashing through a spectacular series of color and skin texture changes, and

finally slipping into a crack so small it seems to disappear, in a minute and a half. It's quite a wonderful library of animals from many different groups.

I've included a list of credits with information about the original movies that went into each of the animal videos. I was careful to use my own videos, public domain videos (mostly from Pixabay) and other videos clearly licensed for reuse and modification. You will need to include attribution when you use any of these videos, because at least some of the videos combined in each one require it.

Finally, I stumbled across a library of public domain sounds on the U. S. Fish & Wildlife Service site. As you've no doubt found out, many of the resources we all use from government sites are disappearing. The shutdown as I'm writing means many sites are not being maintained, and I fear that some resources won't come back anytime soon. So I went ahead and downloaded all of these nature sounds, and edited the few that had a lot of motor noises. There are all kinds of hard-to-find sounds here to use in classroom projects, including woodpeckers tapping, alligators bellowing (yikes!) and whales spouting. Each sound is .mp3 format, and many also have a .wav version. For the three I edited, I exported .mp3, .wav, and .ogg versions. I've included a key to this sound collection that replicates all the information on the web page, including terms of use.

Sorting And Matching Games

As part of the **Animals Clip Art Collection**, there is a folder containing all the artwork for the clues; not the entire page from the game but what is seen on the easel. I have included these for creating matching and sorting games as extension activities.

Sorting Games

You'll need to have multiple copies of each animal, because an animal may fit into multiple groups. Pick some of the clues, maybe five or six, and display them. Challenge students to match every animal that has each characteristic, and emphasize that animals often will match several characteristics. Decide on exactly what each clue means before they start.

For example, decide if "does it have six legs?" applies to a spider, which has MORE than six legs, or does it mean exactly six. Also, what about animals like an octopus, that uses its eight appendages to walk but more often uses them to grasp and manipulate things, more like arms with hands?

Animals Card Game Off Computer

Preparation Up to 7 players.

Print out the Animals chart and display it during the game, for reference. Have something (cardboard square, poker chip, coin) to cover each animal image once it has been used. Print all the clues on card stock, cut apart, stack like cards. Shuffle the stack. Print all the clues on card stock, cut apart, stack like cards. Shuffle the stack. Each player should have three tokens representing guesses; these could be any small thing like buttons, beans, paper clips or the like. Have a container for these as players pay for a guess.

Order of Play

Deal out the animals, four for each player. Put the remaining stack (if any) in the center. These will be the first animals to guess. If center stack is gone, the player who is "it" chooses one from their set of animals. Decide who goes first; that player draws (or chooses) an animal. Player to the right draws a clue, and asks the question on it. If the answer is "Yes", questioner draws another clue. If "No", play passes to the right.

Scoring

Players who are trying to discover the chosen animal can declare a guess at any time by paying one of their tokens. Each player gets three guesses, then is out for the rest of the round. For a correct first guess, a player gets 25 points...but if incorrect, player who is "it" gets 25 points. A player's second guess is 20 points to the guesser for correct, or 20 points to "it" for incorrect. The third guess for a player is 15 points to the guesser for correct, or 15 points to "it" for incorrect.

A correct guess ends the round. If all clues are drawn, the player drawing that last clue has to guess after hearing the answer. If correct, the player

who drew the last clue gets 30 points, or "it" gets 30 points if the guess is incorrect.

After each round, put the chosen animal card aside, and block that animal on the chart, so that students have an accurate picture of what correct guesses are possible. Each player should have a chance to be "it" and draw or choose an animal. If there are only a few players, maybe only 2 or 3, players might decide before the game to double the number of rounds, giving each player a chance to draw animals twice, and/or they might decide to draw more animal cards for each round. High score after all rounds is the winner.

I haven't tried playing the game in this way, but I think it will be an interesting variation. A clue for the players is that they know the correct answer is NOT one of the animal cards they hold. Another clue is to keep track of which animal is eliminated in each round. Since each animal is removed once it is chosen, then each round gets a tiny bit easier, as the total possible is reduced by one.

Without the logic tree, many more "Yes" answers are possible. For example, in the game using the logic tree, "Does it lay eggs?" is asked after a positive answer to "Does it have fur?", and if the answer is "Yes", that narrows down the possibilities to two, the platypus or the echidna. But "Does it lay eggs?" could occur at any point in this card game, so a "Yes" answer could include, besides those two monotremes, the swan, fish, ostrich, turtle, frog, snake, spider....well, you get the idea! Students can still use logic, however, and keep track of what is eliminated by the answers. In the above example, a "No" answer means it can't be any animals in that long list of egg-layers, so in this case a "No" answer is more valuable.

Some Final Thoughts

The Animals Game works by carefully following a course down a logic tree. It's trying to narrow down the possibilities until there is only one answer left; a very important reasoning skill, but not the only one inherent in classifying animals. Sorting the animals is almost the opposite: grouping ALL animals that share a trait. Some of that kind of thinking is buried in the game. For example, at the point where the computer answers "Yes" to, "Does

it have legs?", there is more than one animal further down the chain of logic that has legs. The computer must ask more questions, like "Does it have 8 legs?", to narrow down the list even further.

By also setting up sorting games for students, it will be more clear to them that many animals share traits, though the computer didn't happen to ask questions about those traits while trying to eliminate all except the correct guess. Using the same example "Does it have legs?", MANY of the animals on the chart have legs, besides the chameleon, alligator, and turtle that are on that branch of the logic tree. If you present that clue for students to match, besides those three they can add the lion, beetle, crab, bird, etc; a huge assembly of very different animals, yet all sharing the trait of having legs.

This kind of activity also reinforces the idea that animals may share a trait with one group of animals, and another trait with a different group of animals, plus there will be multiple overlaps with yet other traits. I think this ties in nicely with discussions of diversity in humans as well.