HORSES' VISION

EDUCATION | BUILDING A VIBRANT CLUB

EDUCATION
The elements of a vibrant club meeting are designed to meet youth needs of belonging, independence, mastery and generosity.

- Welcome (10-20 min)
- Education (20-30 min)
- Recreation (20-30 min)
- Business Meeting (10-20 min)

CONCEPT
Compare how youth and horses perceives their environment.

AUDIENCE
Intended for groups of two youth in grades 4-12.

PRIORITY AREA
- Ag and Natural Resources
- STEM

LIFE SKILLS
- Communication
- Team work
- Critical thinking

STANDARDS
MISSING

MATERIALS
- Yardstick or measuring tape

BACKGROUND INFORMATION

Did you know the horse has one of the largest eyes of all mammals? Most prey animals, such as horses, have eyes set on the sides of their heads, allowing them to see predators approaching from many directions. Horses have excellent capability of seeing movement at a distance. When trail riding, a horse may see a deer run across the trail long before humans would see the deer.

Horses use both binocular and monocular vision. Binocular vision allows the horse to use both eyes together to see directly ahead. However, their depth perception is limited because their eyes are so far apart. Monocular vision allows the horse to see on both sides of their heads, meaning the left eye and the right eye work independently and see different views. In fact, each eye sees across an arc of approximately 200–210 degrees around the body at one time. Approximately 20% of vision is binocular and 80% is monocular vision. Thus, the field of vision in the horse is seen primarily by one eye. The combination of binocular and monocular allows a horse to have a field of vision almost 360 degrees or in a near complete circle with small blind spots directly in the back and front. Humans only use binocular vision. Because our eyes are set close together, our depth perception is precise. Depth perception lets us know how far to extend our hand to pick up a set of reins while riding or place a brush on the horse to groom it.

All the horse must do is change its head position, and it can increase how and what they see. A horse may turn their head to the side or even towards their body to look at something more clearly. If a horse lowers its head and moves it slightly from side to side, a horse can easily scan the area all the way around them. To focus on distant objects, a horse raises its head. You can assess how a horse sees by visiting the horse vision simulation video at https://youtu.be/4_ijitbhT7w.

Horses have slightly less visual acuity compared to people. Visual acuity requires a horse to change focus much slower than people do. Our eyes are able to almost instantly change focus when we shift our gaze from near to far or vice versa. The horse's eye takes much longer. If something moves in the corner of our eye, we glance over to see what it is, and we can quickly determine if it is moving at us and whether or not it is a threat. When an unexpected motion is detected in the peripheral vision of a horse, the horse's first instinct to run to a safe distance, then turn and look. When the horse turns and looks, it helps to bring everything into focus. An example is riding on outdoors on windy days when everything is moving, making it difficult for a horse to determine what is a threat and what is not.

Knowing facts about how a horse uses binocular vision, monocular vision,

SPACE NOTES

This activity can be done inside or outside.

VIRTUAL ADAPTIONS

It can be done individually and explained via Zoom, but in person is the preferred method for this activity.

VIBRANT CLUBS BEST PRACTICES

Utilize older club members to design an obstacle course , and measure the distances to set up the course for evaluating binocular and monocular vision. Provide positive feedback and encourage youth to research how other animals see their environment.

placement of their head, and visual acuity allows us to take these into account when we work horses on the ground, train or ride them.

Try the activity below to see how a horse views the environment.

Terms: binocular vision, depth perception, field of vision, monocular vision, predator, prey, pupils, retina, rods, vision, visual acuity

For more terms related to horse behavior and anatomy of the eye, check out the glossary of equine terms on the Iowa 4-H Equine Science webpage https://www.extension.iastate.edu/equine/glossary-equine-terms.

DO

Explore how binocular vision aids in depth perception.

1. Pair up youth into groups of 2.
2. Choose one partner to start the activity. Have them stand about 4 feet away from a wall.
3. Have one youth cover both of their eyes and turn around 3 times.
4. Have that same youth open both eyes, but keep one eye covered.
5. Pointing towards the wall, have them walk forward until they think they can touch the wall. This will illustrate a horse's monocular vision
6. Have the youth reverse roles with their partners.

You can also add variety by making it more difficult. Set up an obstacle course where the youth must weave or turn left and right after turning 3 times. The course can be designed with colored tape, cones, or chairs.

REFLECT

1. What is something new that you learned today?
2. What is something that you already knew?

APPLY

1. What other senses do horses use to evaluate their environment?
2. How do vision and other senses influence the horse when you work on the ground or ride a horse?
3. Knowing the horse can see almost everywhere, how can you approach the horse to place a halter and lead rope on them?
4. How should you move around a horse when grooming or during a showmanship class?
5. Can you provide examples of how a nervous horse acts, for example on windy days?
6. What senses do you use when you work around a horse?

REFERENCES

Vision in the Equine
Horse Senses. Extension Horses.; Horse Vision. Extension Horses.

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For more information on the elements of a vibrant club, please see publication 4H 4004, Building a Vibrant Club at https://store.extension.iastate.edu/product/12893.

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