

Center for Food Security and Public Health

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Introduction

As a part of the *Influenza Education Among Youth in Agriculture Pilot Project*, the Center for Food Security and Public Health (CFSPH) developed an online course, *Excellence in Exhibition: Preventing Disease in Animals and People*, for youth aged 13–18 years who are involved in animal agriculture. This summary describes an evaluation of components of the course in relation to knowledge outcomes as well as effectiveness of the delivery method.

The first objective was to evaluate the effectiveness of this specific web-based course for middle–high school youth. To accomplish this objective, a web-based pretest and posttest were administered to a group of 112 high school youth who were required to take the online training (www.bluenotflu.org) before participating in a disease prevention workshop hosted by CFSPH during the Iowa 4-H Conference and Animal Science Roundup in June 2018.

The second objective of the evaluation was to compare two methods (online and train-the-trainer in person) of presenting this specific zoonotic disease prevention information to youth involved in animal agriculture. To accomplish this objective, pretest and posttest paper evaluations were administered to 122 youth completing an in-person workshop as a part of a biosecurity workshop within a county in Iowa. The workshop was led by a state 4-H program specialist; this specialist was trained in course content and delivery at a train-the-trainer workshop that was instructed by the developers of the *Excellence in Exhibition* online course at CFSPH.

Results

Students that completed the online course had completed grades 8 (13%), 9 (33%), 10 (20%), 11 (20%), and 12 (13%); two participants reported “other” as their grade, and may have been adult volunteers. Of the 112 students completing the online course, 104 (92%) had taken care of farm animals, including cattle, goats, sheep, pigs, turkeys, chickens, horses, and others, in the past; 93 (83%) had taken those animals to shows or exhibitions. Almost half of the respondents indicated a desire to work as a farmer or rancher (46%) or animal health professional (45%), followed by medical professional (20%) or business owner (20%).

Students that participated in the in-person workshop led by a trained trainer were currently in grades 9 (33%), 10 (38%), 11 (18%), and 12 (12%). Of the 122 students participating in the in-person workshop led by a trained trainer, 105 (87%) had taken care of farm animals, including cattle, goats, sheep, pigs, turkeys, chickens, horses, and others, in the past; about half (48%) had taken those animals to shows or exhibitions. Again, almost half of the respondents indicated a desire to work as a farmer or rancher (48%), followed by animal health professional (27%).

The data from the online posttests were compared to that from the online pretests. For all behavior-based desirable responses (e.g., handwashing, cleaning and disinfection, implementing quarantine, etc.), the percentage of students reporting to “always” complete the desired activity increased following course completion, and the percentage of students reporting to “never” complete the desired activity decreased (Figure 1). For all behavior-based undesirable responses (e.g., eating in animal areas, sharing equipment), the percentage of students reporting to “never” complete the undesired activity increased following course completion, and the percentage of students reporting to “always” complete the undesired activity decreased (Figure 2).

Figure 1. Reported desirable behaviors from online pretests and posttests

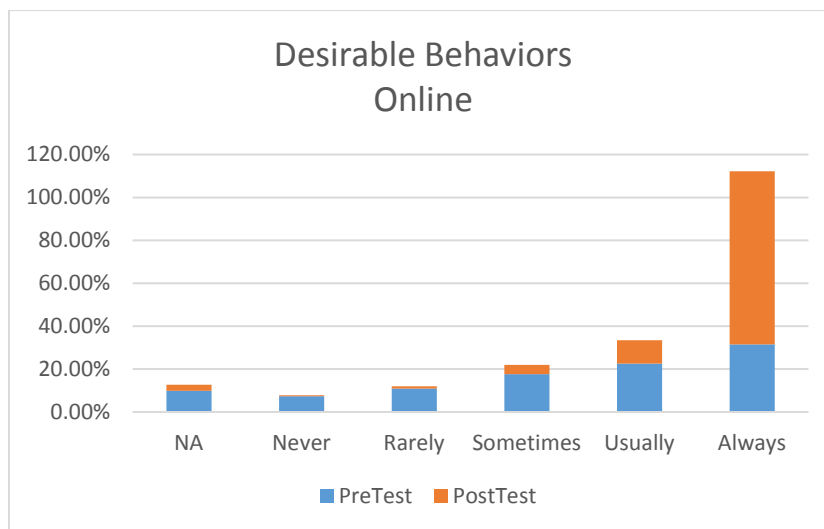
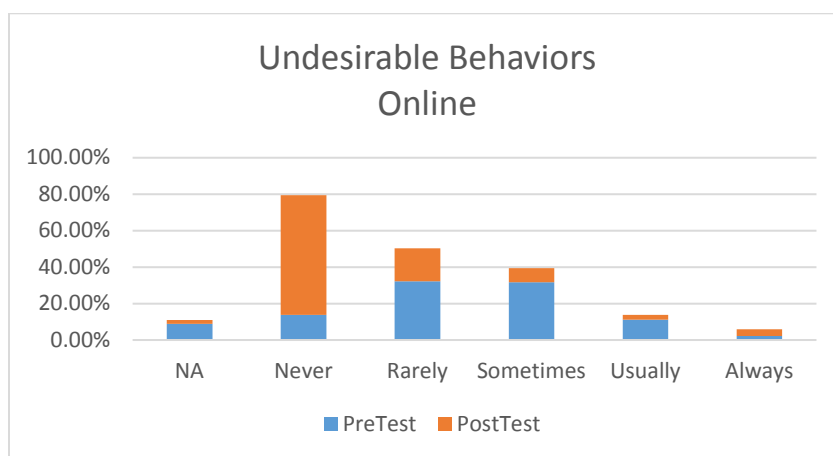


Figure 2. Reported undesirable behaviors from online pretests and posttests



Additionally, the number of activities that 100% of students were able to correctly identify as having the potential to result in exposure to germs increased from one to five (out of nine total possible risk of exposure activities). Finally, the percentage of students reporting that they believed animals could make them sick increased from 78% to 98% following completion of the course, and the percentage of students reporting that they believed they could make animals sick increased from 72% to 93% following completion of the course.

The data from the in-person trainer led workshop paper-based posttest were compared to that from the paper-based pretest. As shown in Figures 3 and 4, trends related to behavior-based desirable responses were similar to those seen with the online course (an increase in the percentage of students reporting to “always” complete the desired activity increased following completion of the in-person training, and the percentage of students reporting to “never” complete the desired activity decreased).

Figure 3. Reported desirable behaviors from in-person pretests and posttests

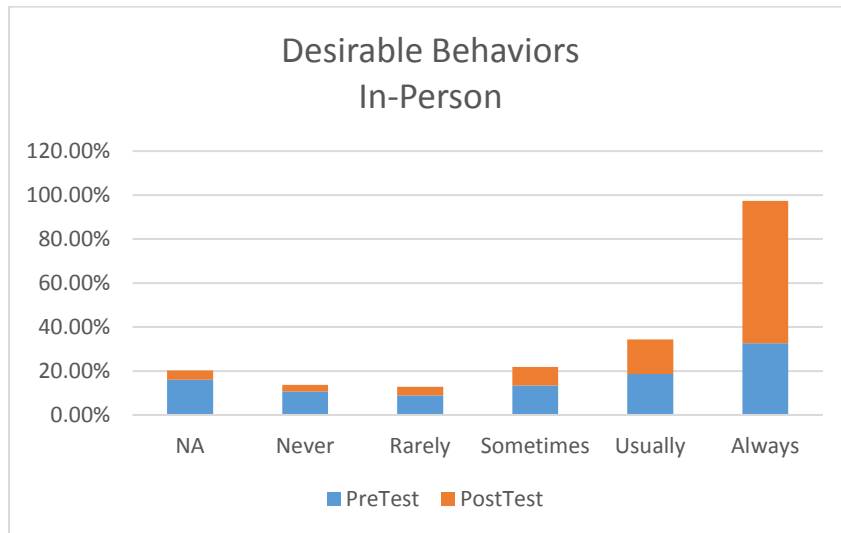
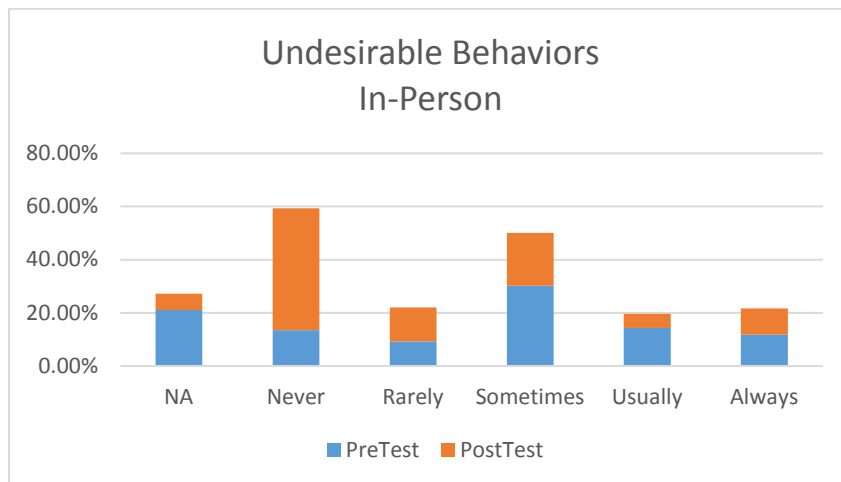


Figure 4. Reported undesirable behaviors from in-person pretests and posttests



In addition, improvements were seen in the percentage of students correctly identifying activities which could result in exposure to germs, as well as in the percentage of students reporting correctly that both animals could make them sick and that they could make animals sick.

In the online and in-person pretests, only 41% and 31%, respectively, of students reported they were very likely to change their behavior if it kept themselves healthy, and only 50% and 38% of students reported they were very likely to change their behavior if it kept other people healthy.

However, 65% and 59% of students reported they were very likely to change their behavior if it would keep their animals healthy (Figure 5).

Figure 5. Reported undesirable behaviors from in-person pretests and posttests



Discussion

The online course appeared to produce a greater percent improvement when comparing pretest responses with posttest responses (e.g., students reporting to “always” complete the desired activity often approached or exceeded 50% improvement) than for the in-person training (e.g., students reporting to “always” complete the desired activity was typically around 30% improvement). In addition, the desired activities reported to be “always” completed following review of the material appeared to be higher (a greater percentage of the total) for those who participated in the online course as compared with the in-person training. However, both the online course and in-person training resulted in an overall high level of knowledge, and improvement in knowledge, as assessed by the evaluation.

Possible explanations for the differences in online and in-person efficacy may include methods of instruction used by the trained trainer, selective content delivered by the trained trainer, interest of students, or other activities held as part of the workshop.

The data collected as a result of evaluation of the two sets of pretests and posttests support the value of web-based training and the efficacy of this particular course. Further value could be gained with a greater sample size and more in-depth statistical analysis of data collected. Furthermore, an evaluation of the hands-on workshop as a supplement to the online course could provide valuable information.

Students were more motivated to change behavior if it could protect the health of other people and most motivated by protecting the health of their animals. Targeted education linking biosecurity, animal health, and human health should be continued.

Questions included in the pretests and posttests are included below. Raw data (counts and percentages) from the pre and posttests collected as a part of this evaluation can be provided upon request.

Excellence in Exhibition: Preventing Disease in Animals and People



Workshop Evaluation

PRETEST

ID _____

1. What grade are you in?

5 6 7 8
9 10 11 12
Other _____

2. What kind of work do you expect to be doing when you are older? Circle all that apply.

Farmer/rancher	Military/police/security
Professional business person or manager	Business owner
Computers/technology	Scientist/researcher
Medical professional (doctor, nurse, public health)	Animal health professional (veterinarian, veterinary technician)
Teacher	Artist (writer, dancer, painter)
Skilled craftsperson (carpenter, plumber, electrician)	Retail
Engineer/architect	Lawyer
Other	Don't know

3. Have you ever taken care of farm animals?

YES

NO

4. Which farm animals have you helped take care of? Circle all that apply.

- a. Dairy cattle
- b. Beef cattle
- c. Goats
- d. Sheep
- e. Pigs
- f. Turkeys
- g. Chickens
- h. Horses
- i. Other_____
- j. I don't take care of any farm animals

5. Have you ever taken your animals to an exhibition or show?

YES

NO

6. Which farm animals have you shown? Select all that apply.

- a. Dairy cattle
- b. Beef cattle
- c. Goats
- d. Sheep
- e. Pigs
- f. Turkeys
- g. Chickens
- h. Horses
- i. Other_____
- j. I've never shown any farm animals

Current Habits						
Directions: Select ONE answer per line by marking ☒						
How often do you....	Never	Rarely	Sometimes	Usually	Always	NA
7. Wash your hands right after working around animals.						
8. Wash your hands after touching animals at fairs or petting zoos.						
9. Wash your hands right before eating or preparing food.						
10. Wash your hands after contact with manure or dirty bedding.						
11. Wear gloves before contact with manure and dirty bedding.						
12. Clean and disinfect the equipment you use at an exhibition.						
13. Prohibit visitors from touching your animals.						
How often do you.....	Never	Rarely	Sometimes	Usually	Always	NA
14. Wear Personal Protective Equipment (PPE), such as clean rubber boots and coveralls, when you work with animals that might be sick.						
15. Talk to your veterinarian about how to keep your animal(s) healthy before going to an exhibition.						
16. Quarantine your animals after returning home from an exhibition.						
17. Contact your veterinarian if your animal becomes sick.						

Current Habits						
Directions: Select ONE answer per line by marking ☒						
How often do you.....	Never	Rarely	Sometimes	Usually	Always	NA
18. Eat or drink around animals or in animal areas.						
19. Share equipment with other exhibitors.						

20. Diseases can move between animals and people

TRUE

FALSE

21. Only sick animals can spread diseases to each other or to people.

TRUE

FALSE

22. Which activities could pass germs to you? Select all that apply.

- a. Touching animals
- b. Feeding animals
- c. Touching animal pens and railings
- d. Going inside an animal's pen
- e. Eating or drinking in animal areas
- f. Hugging or cuddling or kissing animals
- g. Sleeping in a pen or barn with animals
- h. Bringing animals inside the house
- i. Touching shoes or clothing that were in animal areas
- j. None of these

23. Biosecurity...

- a. Is a series of practices designed to prevent the introduction and spread of pathogens
- b. Prevents diseases from entering an area
- c. Prevents diseases from spreading to other locations
- d. All of the above

24. Select anything you've heard or seen at an exhibition or fair. Select all that apply.
- a. Clean and disinfect all tack, feeders, waterers, and show supplies between shows.
 - b. Wash your hands with soap and water when you leave the barn.
 - c. No food or drink in animal areas.
 - d. Isolate animals after returning home
 - e. Vaccinate pigs for influenza
 - f. I've never been asked to do any of these things

25. Do you believe that ANIMALS can make YOU sick?

YES

NO

SORT OF

26. Do you believe that YOU can make ANIMALS sick?

YES

NO

SORT OF

27. What would motivate you to wash your hands?

- a) Knowing it will keep my animal healthy
- b) Knowing it will keep me healthy
- c) Both
- d) Neither

28. What are some reasons you sometimes do not wash your hands after visiting animals?

Select all that apply.

- a. Sometimes it feels like a waste of time when I have other things going on
- b. Sometimes my hands don't seem to be dirty so they don't need to be washed
- c. Sometimes I don't think it does much good - my hands are only going to get dirty again
- d. Sometimes I use hand sanitizer instead
- e. Sometimes I cannot figure out the handwashing station
- f. Sometimes I can't get to the handwashing station (too far away, lines too long, couldn't find them)
- g. Sometimes I think the handwashing stations are too dirty
- h. Sometimes I can't find any soap, running water, or paper towels at the handwashing station

29. How likely would you be to change your behavior at your farm or an exhibition to keep YOURSELF healthier?

- a. Not likely
- b. It depends
- c. Somewhat likely
- d. Very likely

30. How likely would you be to change your behavior at your farm or an exhibition to keep OTHER PEOPLE healthier?

- a. Not likely
- b. Know
- c. Somewhat likely
- d. Very likely

31. How likely would you be to change your behavior at your farm or an exhibition to keep YOUR ANIMAL(S) healthier?

- a. Not likely
- b. It depends
- c. Somewhat likely
- d. Very likely

Excellence in Exhibition: Preventing Disease in Animals and People



Workshop Evaluation

POSTTEST

ID _____

Future Habits						
Directions: Select ONE answer per line by marking ☐						
How often will you....	Never	Rarely	Sometimes	Usually	Always	NA
1. Wash your hands right after working around animals.						
2. Wash your hands after touching animals at fairs or petting zoos.						
3. Wash your hands right before eating or preparing food.						
4. Wash your hands after contact with manure or dirty bedding.						
5. Wear gloves before contact with manure and dirty bedding.						
6. Clean and disinfect the equipment you use at an exhibition.						
7. Prohibit visitors from touching your animals.						

How often will you.....	Never	Rarely	Sometimes	Usually	Always	NA
8. Wear Personal Protective Equipment (PPE), such as clean rubber boots and coveralls, when you work with animals that might be sick.						
9. Talk to your veterinarian about how to keep your animal(s) healthy before going to an exhibition.						
10. Quarantine your animals after returning home from an exhibition.						
11. Contact your veterinarian if your animal becomes sick.						
Future Habits						
How often will you.....	Never	Rarely	Sometimes	Usually	Always	NA
12. Eat or drink around animals or in animal areas.						
13. Share equipment with other exhibitors.						

14. Diseases can move between animals and people

TRUE

FALSE

15. Only sick animals can spread diseases to each other or to people.

TRUE

FALSE

16. Which activities could pass germs to you? Select all that apply.

- a. Touching animals
- b. Feeding animals
- c. Touching animal pens and railings
- d. Going inside an animal's pen
- e. Eating or drinking in animal areas
- f. Hugging or cuddling or kissing animals
- g. Sleeping in a pen or barn with animals
- h. Bringing animals inside the house
- i. Touching shoes or clothing that were in animal areas
- j. None of these

17. Biosecurity...

- a. Is a series of practices designed to prevent the introduction and spread of pathogens
- b. Prevents diseases from entering an area
- c. Prevents diseases from spreading to other locations
- d. All of the above

18. Do you believe that ANIMALS can make YOU sick?

YES

NO

SORT OF

19. Do you believe that YOU can make ANIMALS sick?

YES

NO

SORT OF

20. I learned something by taking this workshop.

TRUE

FALSE

21. I thought this workshop was

- | | | | | | | |
|-------------|---|---|---|---|---|----------|
| a. Boring | 1 | 2 | 3 | 4 | 5 | Fun |
| b. Too easy | 1 | 2 | 3 | 4 | 5 | Too hard |
| c. Useless | 1 | 2 | 3 | 4 | 5 | Useful |

22. What was your favorite part about this workshop?

23. What didn't you like about this workshop?