

## Evaluating the effect of AAE with horse at Mitaka elementary school in Tokyo, Japan

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### Introduction

Researches on dogs participating in educational settings is a growing phenomenon (Sandt 2019). Compare to horses, dogs have more opportunities to participate in treatment and education activities, which may be due to the higher cost of raising horses, the special requirements for venues and the difficulty of moving in cities. Consequently, there are fewer researches on horse assisted education, and very few quantitative studies on the effects of it.

In this study, we evaluated students' learning experiences with horse study programs conducted at a public school. Drawings and other data was provided to the university by a local board of education, along with simple methods used in psychology or other AAE programs, such as use of mood scale, indication of anxiety by students with the use of red and white cap for physical education, were used.

Drawing analysis system for horse drawings was developed for the purpose, and was used to evaluate the learning progress during the one-year program. It is based on the Draw A Man test (DAM), which is a developmental psychology test used to evaluate children's intelligence and or learning experiences.

### Method

In 2016-2019, an elementary school in Mitaka City, Tokyo Japan, provided 4 time a year AAE with hoses for 3rd graders. In order to evaluate the effects of the program, the local board of education requested Nippon Veterinary and Life Science University for the assistance.

Evaluation of changes in psychological mood

Measurement of student's mood and the riding skill evaluation: ①Anxiety measure: At the beginning of

the program, either the teacher or the handler told students to make sure they express their feelings by using the red and white cap, if anxious, then use the red side and happy, use the white side of the cap. The number of red and white caps were counted by the board of education official at the beginning of the program. ②Mood scale; After the riding program and the study session inside, students were asked to fill in the mood scale. ③Evaluation of the riding experience: Questionnaire of four simple questions with four choices were used starting 2018. Questions were a) were you happy with the riding lesson, b) did you ride well, c) do you think the horse were happy and d) do you want to ride again. The choices were very much yes, yes, either and not at all.

Evaluation of learning by drawing analysis

Drawings are used to measure the students' knowledge and cognition about the horses. In order to evaluate the drawing, an original horse-drawing scale, the Draw-a-Horse (DAH) (based on the Draw-a-Man (DAM)) test was developed. Goodenough developed the DAM test to evaluate children's intelligence in 1926. This was later improved by Harris (1963). A total of 482 drawings were submitted to the board of education following the riding programs. There were two sets of drawings: 309 first-time and 168 second-time drawings.

The first-time drawings were compared with the second-time ones to evaluate the effects of the program. Drawings were analyzed in two stages: 1) basic data direction of the horse facing and the number of people; and 2) an analysis of the drawing details using DAH.

The DAH analysis was only used paired drawings with the horse facing sideways (126 pairs). The DAH

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is only applicable to drawings of horses facing side-ways.

**Result**

Evaluation of changes in psychological mood

In anxiety indication using the red-and-white caps, students expressed anxiety the first time. By the fourth time, the number of red caps indicating anxiety decreased. Throughout face scale results at program in all years, students were always happy after each class. The results of the questionnaire in 2018, students rated their riding skill low in the third session. Students were concerned about the condition of the horses in the second and third sessions. Some students felt difficulty when the riding skill level increased, but they seemed to have achieved a sense of accomplishment by the fourth session.

Evaluation of learning by drawing analysis

The direction of the horse, whether it was facing left or right, and the number of people in the drawing were also analyzed.

Chi Square analysis showed that more students drew horses from different directions in the analyzed 2nd session. More students drew horses from other directions, such as from the front, top or back. Chi Square analysis indicated a significantly greater number of people in the drawing in the second session.

The total results of the DAH for the first and second sessions were compared. The DAH analysis was higher than for the first session. It is intuitive to see that the second score increase is objective.

Further analysis of general body structure, body attachments, and body details were conducted. Some of the details of various parts of the horse body are

easier or more difficult to draw, for example, the shape of the eyes, hooves, nose and so on, which appear completely in student’s drawings, but it is difficult to be accurate. (Fig. 1)

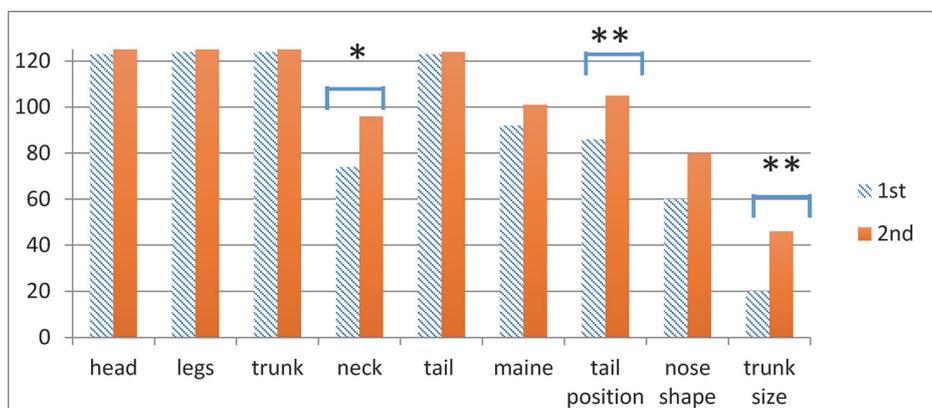
**Discussion**

In this research, several evaluation tools were used to measure the effects of AAE with horses in elementary school. Psychological states at various points of the program were measured. The results indicate 90% of students were satisfied and felt comfortable with the riding class, which is surprising considering that contact with a large animal was an experience that most of them had never had before. It suggests that the program was well carried out. As a school program, a 90% satisfaction level is very successful.

DAH was developed in this study to evaluate the educational enhancement of the horse program. Until now, drawings of horses have been evaluated mainly subjectively or with minimal objective factors such as the number of people shown in the drawing (Kakinuma et al, 2013). In this study, drawings of the first session and second session were significantly different, suggesting that students paid closer attention to the horse as they rode it. DAH can be used widely to evaluate the effects of similar educational programs. It is easy to administer and also easy to see the changes. It would be good data for the horse stable, but also for students and families that the accomplishment is measured objectively.

**Acknowledgment**

This study was conducted with the approval of the board of the education of Mitaka City.



**Fig. 1** How riding experiences influence drawings (n=126). For the most of basic body parts, children were able to details improved in the second time.