Original Article

Preliminary evaluation on the use of an animal care journal written by elementary school students to monitor animal welfare and humane attitudes

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Abstract : A cohort of 20, 5th and 6th grade students at an elementary school in Atsugi, Japan, practiced caring for five rabbits during their Pupil's Association Activity. The researchers collaborated with the school for one year starting in April, 2009. Prior to this collaboration, there were no records monitoring the support students gave the rabbits. Starting in June, 2009, the students were asked to maintain journal of their care of the rabbits. Although the journal began simply to track and ensure the completion of animal care chores, the rich notes and comments made by the students. In order to investigate the effect of recording management and our support of animal care, an analysis of the journal entries was conducted. The results indicate that frequencies of the practices to care for the rabbits were low compared with the total possible frequencies. This suggests that some of the students skipped their duties. Analyses of the comments of the journal, it was shown that the students interested in observing rabbits' behaviors could express the gratitude to the teachers for the teachers' help in the end. This suggested that the animal journal might be a kind of communication tool between students and teachers and be one of the means to evaluate the students' scientific sense for observing animals.

Key words : animal care journal, animal management, animals in schools, humane education

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Pets can provide many benefits to people, including supporting their owners' physiological and physical health (Baun, 1983; Friedman et al., 1983; Katcher, 1985; Motooka et al., 2006) and facilitating both social (Voith, 1985, Limond et al., 1997) and therapeutic (Levinson, 1971; Odendaal, 2000; Jalongo et al., 2004) interventions. Given the educational opportunities they can also provide (Walters and Stokes, 2008; Friesen, 2010), pets are often kept in schools (Rud Jr and Beck, 2003). Recently, a dog visiting program was performed for a junior high school students in Japan, and provided them developing of social skill and catalysis for social interaction (Nakajima et al., 2006, 2007). These reports show that animals are needed for people's life.

In Japan, many public elementary schools keep vertebrates—primarily chickens or rabbits. Typically, upper grade students care for the schools' animals in the school yard under the supervision and ultimate responsibility of their teachers. However, it was reported that many of those schools have poor management for animal health (Nishimura, 2000). It showed that teachers focused on students' health conditions, but did not pay attention to animal care condition. In order to improve animal care conditions in schools, housing animals in classrooms is recommended (Nakagawa, 2004) and it provides students humane educational benefits (Nakagawa, 2007). Although the number of Japanese schools that keep vertebrates seems to have recently declined, it is reported that support to keep animals in schools by Japan Veterinary Medical Association is positively planning to improve the animal caring conditions (Nakagawa, 2007). Keeping animals in schools always bring both risks and benefits. For example, students can learn either the importance

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of caring for another living being, or they can tacitly learn that it is acceptable to neglect them.

Nonetheless, some teachers believe that caring for animals is a powerful way to nurture humane behaviors and attitudes in their students, as well as described by Rud Jr and Beck (2003). Indeed, many students do respond quite positively to the opportunity to interact with animals, and classes can provide a safe and controlled environment in which to guide these interactions (Nakagawa, 2007). It is therefore not uncommon for elementary schools continue to keep animals.

The current study investigated a way to help to monitor and control the interactions between upper elementary students and a herd of rabbits kept at the school expressly for students to learn about their behavior and care.

This report discusses the contents of the animal daily written by the students to evaluate keeping animals in school with our support. The works of the activities were conducted mainly by students, and we supported them by simply facilitating the practices of the students. Therefore, we should consider if keeping animals in the school supplied any educational benefits for the students and if our support was efficient for improving the management of keeping animals. Then, this report was the first to evaluate the support from the perspective of the comments written by the students in the animal journal.

We investigated the animal care journal with permission of the elementary school's teachers.

Methods

1. Participants and course

The elementary school is located in Atsugi, Japan. Atsugi city with a population around 225,000 is located in Kanagawa Prefecture, near Tokyo metropolitan.

The group of students currently studied were all members of Animal-Care Association as Pupil's Association Activities. As is true for many Japanese elementary schools, students enroll in a Pupil's Association Activity in which they can practice a special interest to them, such as broadcast media, books and library services, basic health care (through the school nurse), animal care, etc. Since the size of these associations is fixed, not all students can pursue a topic they prefer. Nonetheless, the student sample likely includes those who have strong interests in animals and their care.

There were 20 students in this association, 8 of whom were from the 5th grade (4 boys and 4 girls) and 12 of whom were from the 6th grade (6 boys and 6 girls). The students were divided into 5 groups of 4 students each. Each group was assigned the duties of caring for the rabbits on a given day, Monday to Friday, without holidays and vacations. During holidays and vacations, some of the teachers came to the school to care for the rabbits. The program was set for the students to practice once a week individually. Therefore, each student had a chance to make an entry into the animal care journal and also to write down his or her name on it every time they finished their duties.

In this association, the students were required to complete nearly all of the feeding and cleaning chores for two male and three female adult rabbits that were housed outside in the school. Although many of the students chose to enroll in this activity, students would neglect or forget their turns to care for the rabbits. This made for uneven care for the rabbits and oblige those who did do their tasks to also complete the tasks that had been skipped. In addition, the tight school schedule at times left the students insufficient time to do their activities. Be this as it may, many of the students obviously loved to care for and handle the rabbits; some indicated they thoroughly enjoyed caring for them and even doing the less pleasant chores to keep the rabbits happy and healthy.

2. Intervention

We began our intervention in April, 2009, with the goal of helping the teachers improve the management conditions of keeping the rabbits on the school grounds. The teachers indicated that the management before our support was poor. The rabbits had not been given names, and no one knew their age. Although the rabbits were not in bad health, no records were kept of their care, so the extent of care before our intervention cannot be clearly discerned.

Our intervention began by recommending that the class consult the animal management brochure made available to the general public by the Kanagawa Veterinary Medical Association (online at http://www.kvma.serio.jp/08shiiiku.pdf). We then collaborated with the teachers in the school to prepare an animal care journal to monitor the rabbits' care. The journal was created in June, and the students started using it

in the end of that same month.

The animal care journal contained the following information: (1) date; (2) the name of the students who practiced to care animals; (3) the time when the students started their chore; (4) a summary of the work they did including checks columns for feeding (was or wasn't done), cleaning (was or wasn't done), appetite (yes or no), and walking form of the animal (normal or abnormal); (5) the number of visitors to the animals; (6) messages from the current student to other students of the next day and/or the teachers, and (7) message of support to the students. Although not the original intent, this last section was used by the teachers to communicate with the students.

The rabbit chores were performed before the beginning of classes, between classes, at noon recess after lunch, and/or after school. Therefore, students could interact with the rabbits up to four times a day. The rabbits' enclosed living space was built outside on the school grounds with wood and metal mesh. The space contained two separate hutches for the males and females. Each hutch was approximately 140 cm x 240 cm x 230 cm high. The floors of the hutches were concrete covered with newspaper and cardboard bedding; the floor in their run was dirt. At the beginning of a student's shift, he or she were to remove the dirty bedding and food and water dishes. They then swept the floor with a broom to remove feces. Sometimes rabbits walked around outside their hutches for about 5 or 10 minutes and were petted or hugged by some students who were not the member. Next, the students covered the floor of the rabbit house with newspaper and cardboard bedding. In fact, we only had to support general animal care practices twice a week throughout the year as they were clearly doing it on their own. We conducted our biweekly visits during the noon care time.

In addition to our biweekly visits, we worked with the students once a month to further improve their management of the animals. Among the monthly interventions were naming the rabbits, measuring the rabbit pellets, and practices for proper handling and care. Our observations during the biweekly visits affirmed that these suggestions were continued until the end of the term of the year. Also during the monthly meetings, we assessed the students' practices through approved questionnaires. We also presented previous findings to the students and the teachers, and suggested ways to improve the condition of the management any changes based on our findings.

Results

There students wrote a total of 84 pages in the animal care journal. Given the number of school days, the total number of times students should have done animal care chores 143 times during the time the animal care journal was kept. The total and actual journal writing frequencies throughout the year are shown in Figure 1. We excluded the first month (June) from the analysis because it was not clear exactly on which day the journal started. There were no duties for the students in August because they were on summer vacation.

1. Frequency of recording tasks completed in the journal

The number of times per month the students actual wrote in the journal ranged from 6 to 14; the total number of times the students should have written in the journal was between 14 to 22 (once per school day) for different months. The highest actual frequencies were seen in July, September, and December. The actual number of times the students wrote in the journal was quite low. Noting this, we investigated activity of the students during the four times per day they had the opportunity to care for the rabbits. The actual number of visits per school day are also given in Figure 1; this rate could have been as high as four times the number of total school days. We found that students cared for the rabbits more often than they wrote in the journal. Rate of actual caring frequency per number of school days was significantly higher than that of actual writing frequency per number of school days (Friedman's test, $p<.01$). This indicated that students came to the rabbits' space to care for the animals more than once a day.

The lowest rates of actual writing per total number of school days were seen in October and November; the highest rates were seen in July and December. Conducting a cluster analysis of the rates of actual writing per school days by month, we found that July, September, December, and January were all assigned to the same cluster of higher actual writing rates. The students have many activities and days off during the second term (from September to December). These included smaller events –such as a three-day trip for

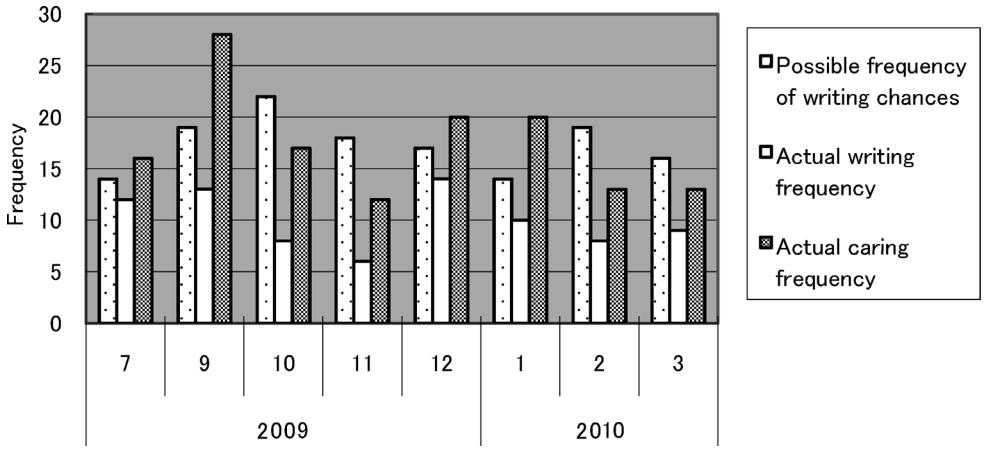

Fig. 1 Comparison of the frequnecy for caring the animals in the journal
Possible frequency of writing chances was number of the school days. Actual writing frequency showed the number of the journal pages described by the students. Actual caring frequency showed frequency of visiting per school day. When the frequency of care action in a day was plural, it was counted up as a frequency of activity. The students had 4 times of chances to care the animals.

the 6th grade students and an annual field day for every students– and larger some events –such as classes temporarily closing due to the H1N1 flu epidemic spread through Japan during that fall. These days off not only deprived the students of opportunities to write in the journal, they also deprived teachers of time to monitor the journal writing. Of course, these exigencies were not the only reason students did not write in the journal; the low frequency of writing in it also reflects the busy life of the students. It is interesting that the higher rates of actual caring frequency per school day were seen in the months immediately before and after vacations or other, longer times off.

2. Frequency of recording one's name in the journal

A maximum of four students' names could be written in one page (i.e., one day) of the journal. The total possible number and the actual number of students' names recorded in the journal are presented in Figure 2. The range of total possible names for the various months was from 56 to 88, while that of the actual number of names written per month ranged from 8 to 25. The lowest rate was seen in October (9%) and the highest rate was seen in July (45%). This difference in the actual number of names recorded per month was significant (X^2 (7)=16.615, $p<.05$). In addition, the ratio of actual number of recorded names by total number of possible names was significantly lower than the ratio of actual writing frequency per total possible writing frequency (Friedman's test, $p<.01$). This latter result indicates that students write comments or check off chores more often than they put their name down as the one who recorded those events in the journal.

3. Frequency and nature of comments recorded in the journal

The 84 pages written in the animal care journal contained 122 comments. Three of the 84 pages had no comments in the message columns and only had check marks in the check boxes. The 122 comments contained a total of 204 sentences. We grouped these comments into the thematic categories presented in Table 1. In general, messages to the teachers or the students described the need to purchase rabbit food, get more newspaper to be bedding for the rabbit hutches, etc. Comments requesting more food be bought were classified to as "messages to teachers". Comments requesting more newspaper were classified to as "messages to fellow students". Comments also included descriptions of issues, such as concerns about other students who did not do their share of chores for the rabbits or about students who did not properly write their entries in the journal; these comments were classified to as "instructions/claims". Finally, some comments were observations about the rabbits' health and behavior. Comments describing health issues such as the rabbits' appetite and the condition of their fur

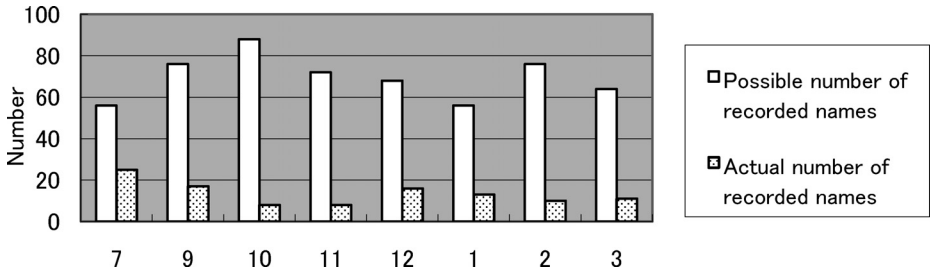

Fig. 2 Possible and actual number of students' names recorded on the journal

Table 1 Categorization of the comments

		comments
Messages to the teachers	instructions/claims	Please come to see the rabbits ! Please think about the rabbits.
	messages	There was no rabbit food. Please purchase food.
	gratitudes	Thank you for thinking about the rabbits.
Messages to the students	instructions/claims	Please come to see the rabbits !
	messages	There was no newspaper.
	gratitudes	Thank you for supporting my chore.
Observations	health	Appetites of rabbits were good.
	behaviors	A rabbit was grooming the other.

were classified as "health". Comments describing behaviors such as grooming and the interactions between rabbits were classified as "behaviors".

Changes in the frequency of comments throughout the year are depicted in Figure 3A-3C. This figure appears to find that there was some tendency for instructions or claims written to the teachers to be made in September, December, January, and March, but this trend was not significant (Figure 3A, X^2 (8) =7.0833, n.s.). Except perhaps for observations about rabbit health and behavior, comparing Figures 1 and 2 with 3A-3C finds no clear relationship between the number of comments and the frequency of actual record keeping or name writing. However, it is clear that the type of comments made does vary by month. After winter vacation from December to January, the students tended to focus on the basic care of the rabbits, commenting on such things are whether they needed food or the rabbits were healthy. More basic care comments were made during March, the last month of the year, perhaps indicating that the students who came to the rabbits' house to care of the rabbits might be fixed instead of their duty (as per Figures 1 and 2).

Comments concerning gratitude to the teachers were also most prevalent during the last months of the term. The highest frequency of gratitude comments was found in March, when the 6th grade students were graduating from elementary school. These comments included one sentence expressing gratitude to the teachers throughout the year who helped the students as they cared for the rabbits and three sentences expressing thanks for the teachers' support. The teacher's support was seemed about purchasing the food, making an addition of new pages to the journal, and writing a replay to the comments described by the students. These latter three gratitude sentences came from two 6th and one 5th grade students.

The fact that the students were actively monitoring each other's chore completion was also evidenced in the comments, as were glimpses of the relationships between the students and teachers. Instructions to fellow students were seen in July, January, and February, while messages to the students were seen throughout the year with the exception of November (Figure 3B, X^2 (12)=13.3632, n.s.). In November, the actual writing frequency, the actual caring frequency, and the actual number of recorded the students' names who practiced caring rabbits showed the lowest number

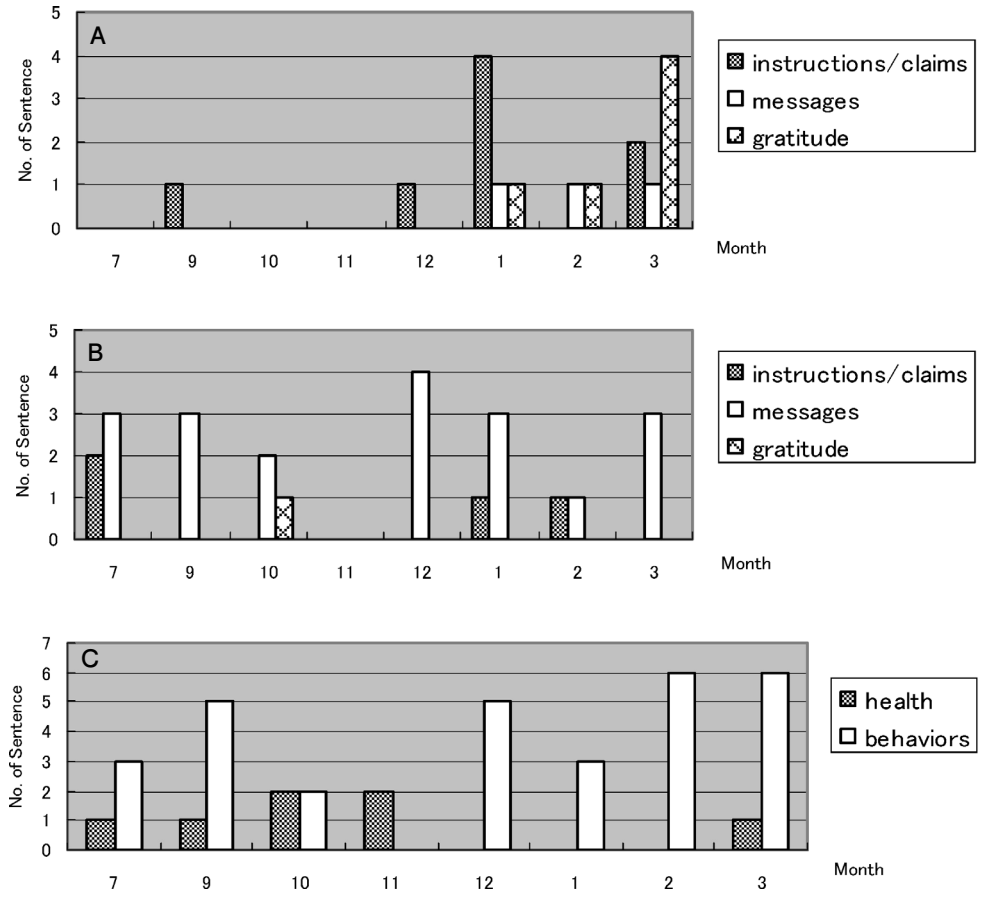

Fig. 3 Frequency of comments described by students in the journal through months
A: Messages to the teaches, B: Messages to the students, C: Observations about health for keeping and rabbits' behaviors.

(Figure 1 and 2). This seemed that the students were too busy to have enough time to write the journal. Nonetheless, the animal care journal played an important role as a messenger between a student who worked on one day and another student working on the following day.

Observations about the rabbits were found in all of the months, and the overall frequency of comments about the rabbits' behaviors were significantly more common than that of their health (Figure 3C, $X^2(7)=14.5717$, $p<.05$). Observational comments tracked the frequencies of recording events. Behavior-directed comments were found throughout the year while health-directed comments were seen more often during the earlier months. Behavior comments were especially higher in September, December, February, and March than the health comments (Friedman's test, $.05<p<.01$). That the frequency of health comments decreased suggests that the health management of the rabbits improved over the course of the year. That their rabbits' behaviors were always commented on suggests that this was always a source of interest to the students. Indeed, the absolute number of these spontaneous comments on their behavior was the second-most common type of comment, after comments to other students about what chores weren't or needed to be done. In addition to behavioral comments being made in nearly every month, there was also an increase in the frequency of behavioral comments over the course of the year. Perhaps keeping a journal helped students develop skills for observing the rabbits' behaviors.

Discussion

It is not clear whether our support helped improve the management of the rabbits, except in their naming and in making the animal care journal. We were not able to measure factors –such as the quality of interactions the students had with the rabbits– well

enough, and the number of times the students recorded caring for the rabbits did not significantly increase over the academic year. Nonetheless, the animal care journal itself proffered several advantages for helping and recording upper elementary students' animal care. Perhaps most importantly, it was spontaneously used to record messages from shift to shift, helping the class as a whole collect its information and encourage each other to model responsible and observant animal care behaviors. The journal also provided the students with a valuable opportunity to learn how to observe animal behavior. The sheer number of instructional and observational comments attests to the importance students place on these tasks, and the journal appears to be helped them develop these skills further. Based on these two findings, an animal care journal used among upper elementary students can function as a fundamental tool to promote communication between students or students and teachers, and also prepare the students for more advanced scientific observations.

However, these results showed that it was difficult for elementary students to keep writing in the journal every day. This suggested that it might not be adequate to have one journal for several elementary students, and that a premium should be placed on making it easy and natural–perhaps even habitual–for the students to write in it. For example, the place where the journal is kept should be easy and obvious for the students to access. Reminders could also be placed around animals' quarters to encourage students' record keeping.

Even with the rather low response rates of the students, the type and frequency of comments made by the students afforded an especially rich area of investigation. Their relation to outside events and perhaps the students' own development offered interesting insights into the interactions between each other and with the animals.

This report represents a pilot use and analysis of an animal care journal with upper elementary school students. In addition, to keep our report concise, we limited our analyses here to the frequency of comments and the contents of the comments recorded by the students. The teachers also made comments and, of course, interacted with the students.

To maintain as much objective analysis as could be done without compromising the rabbits' care, we kept our interventions limited; the naming and journal represent the most significant components of it. Nonetheless, these data were collected over a time during which we investigators were present twice a week plus one more day a month. Therefore, we cannot fully tease out any effects our presence had on the results. Fortunately, the animal care journal represents a valid and simple way to continue to monitor at least some aspects of students' interactions with school-based animals with minimal investigator intervention during future investigations.

Finally, issues do remain about the value of keeping animals at a school in light of the demands made to give the animals both adequate attention and proper care. In addition, recording information in the journal and the daily tasks of animal care do not always give the students considerable pleasure. Some students were quite eager to care for the rabbits while others were much less eager. Although it is arguably a worthy task to teach students both responsibility and animal care through hands-on activities, these educative tasks must be weighed against the needs of the animals. Interactions with the animals for children will likely need to be largely pleasant to reinforce their developing attitudes towards animals, but –for many reasons– the animals must be kept safe and healthy at all times. Argument that animal health conditions would affect people's physical conditions is not uncommon. By the report that described about keeping animal conditions in schools, teachers paid attention to animal-related infections (Nishimura, 2000). Nakagawa (2004) suggested that small pets as rodents should be obtained from companies for producing laboratory animals, because origin and healthy condition of laboratory animals are guaranteed. Health management for people intervened with pets is suggested by Khan and Farrag (2000) and Friesen (2010). In those, it seems that the easy, simple and important way for children is pre and post hand washing with detergents. Even thorough hand washing might be not easy for children. Basically, healthy animals given adequate care might be able to provide some benefits to a person who is in healthy condition.

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小学生が記述した動物飼育日誌の利用についての評価の試み

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要約：2009 年 4 月から我々は神奈川県厚木市内の小学校において飼育動物の飼育支援を実施している。支援開始当初当校には日誌の設置がみられず，さらに飼育動物が命名されていなかった。しかし，6 月中旬より日誌を設置し，児童が記入を始め今日に至っている。そこで今回，2009 年度において児童が記録した日誌記述から飼育活動および支援についての評価を試みた。日誌記録回数は，活動予定数に比べて低い数値であり，これは一部児童が活動を欠席していることによるものであった。また，日誌記述内容から，児童の動物の行動観察への興味が養われたこと，年度末には教員の援助への感謝の念が見られたことなどが明らかとなり，飼育日誌が児童間だけでなく児童と教員との意志伝達の手段になったこと，および動物観察という科学に対する感性を養う可能性のあることが示唆された。

キーワード：飼育日誌，学校飼育動物の管理，学校飼育動物

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