This paper reviews the importance of the human-animal bond (HAB), and suggests a manner of teaching it within the confines of a two-year veterinary technology program. The American Veterinary Medical Association defines the human-animal bond as “a mutually beneficial and dynamic relationship between people and animals that is influenced by behaviors that are essential to the health and well-being of both” (“Human-Animal Bond”). The awareness of the interconnection between our own cognitive/emotional state and that of those around us – human and animal – is one definition of mindfulness. In order to be effective, veterinary technology students must be mindful of the relationships formed by the client (the person who belongs to the animal), the patient (the animal), and the caregivers (the professionals such as veterinarians and veterinary technicians).

It can be argued that the HAB represents the relation between, on the one hand, the technical, medical, and technological information our students must absorb and, on the other, the psychological evaluation of the patient/client relationship that, once made, informs the students’ ability to treat the patient. A strong HAB can be a positive force for client participation in patient care; however, if the HAB is too strong, patients may suffer. Individuals who hoard many animals tend not to care for them well, despite their profession of love (Berry, Patronek, and Lockwood). A violent or neglectful relationship also demonstrates an aberrant bond (DeGue and Dilillo; Yin). Doctors and technicians must be able to recognize types of relationships in order to determine how best to serve client and patient.

The recognition of the bond between humans and animals extends back thousands of years. Some of the earliest understanding of life in the Stone Age comes from cave paintings that depict daily experiences. Whether symbiotic or adversarial, relationships between animals and
humans are prominent in paintings discovered by Chauvet and his fellow explorers (Chauvet, Deschamps, and Hillaire). Tens of thousands of years old, they include spectacularly detailed images of animals. Clearly, the HAB existed even in prehistoric times; it is important that our students recognize its power.

The Problem
Veterinary medicine has advanced tremendously in the past ten years. Procedures once thought to be the province of human medicine have found their way into veterinary medicine. Similarly, many veterinary technician students will specialize in areas such as dentistry, radiology, nutrition, emergency care (criticalist), and internal medicine. Radiology has expanded to include MRI and CT scans routinely performed in specialty practices; some large referral centers have linear accelerators for radiation therapy in cases of feline and canine cancer. Technicians also offer services such as acupuncture and physical therapy. Given the breadth of information our students must acquire, little time is left to teach the HAB, despite its importance in clinical practice.

Literature Review
Study of the HAB has been approached from a number of perspectives. One area of research is the relationship between companion animals and the physical and emotional well-being of the elderly. Investigating the effects of the interaction with pets on institutionalized older adults, Kawamura and his colleagues found that for those who had the opportunity to visit with animals on a regular basis, there was a significant increase in self-care activities, as well as greater interest in interacting with others. Another intriguing study, using both live and plush (“stuffed”) animals, looked at the impact of dogs on persons with dementia. The study found a clear increase in engagement with the environment in individuals given regular opportunity to interact with dogs; interestingly, the study subjects were most engaged by live puppies, next by plush toys, and least by living small dogs (Marx, et al.). Other measurement indices regard the relationships between animals and humans. Commonly used is the Lexington Attachment to Pets Scale (LAPS), a paper-and-pencil survey that establishes the depth of a person’s attachment to a companion animal (Johnson, Garrity, and Stallones).
Professions beyond veterinary medicine are looking at these measures as ways to assess the human condition. Increasingly, people in social work and forensic medicine study the relationship between humans and companion animals when either or both are under duress. A study done at the University of California at Davis looked at the relationship of homeless people and their pets (Singer, Hart, and Zasloff), a companionship so strongly felt that 93% of the men and 96% of the women indicated that they would refuse shelter or public housing if their pets could not accompany them.

The relationship between animal abuse and domestic violence has also been studied. In general, persons exposed to, or participating in, animal abuse have experienced physical violence in the home; they may even initiate domestic violence themselves (DeGue and Dilillo). Studying battered women and their pets, Strand and Faver found that after leaving the abuser, abused women often return home to feed or check up on their pet, a decision that can expose them to further abuse or danger. Some women will not leave home, fearing the harm the abuser will do, or threatens to do, to the animal (Strand and Faver; Faver and Strand). Forensic veterinary science has begun to deal with signs of abuse in animals, learning to recognize its signs in the clinic and to diagnose it during necropsy. Sophia Yin has identified signs of animal abuse that all veterinary personnel – doctors, technicians, and front-office staff – should be aware of to serve their patients and clients.

Another dimension of the investigation of the HAB is the study of the deleterious effects of the serious illness or death of a pet on the family. Much time has been devoted to the study of the stages of grief as they affect not only the client who brings the pet, but also the medical personnel who treat them. Ross and Baron-Sorenson look at the effect of loss or death of a companion animal on both the veterinary community and the client. They discuss natural disasters such as Hurricane Katrina, associated with threat to both the emotional and physical well-being of its victims (ch. 10). Katrina survivors, as well as those who watched the disaster from afar, remember those who refused to leave their homes because they could not bring their dog or cat to government-provided shelter. In disaster, awareness of the importance of the HAB in governing human behavior is crucial. In fact, one of the most important things to note is that the veterinarian, the veterinary technician, and their support staff must recognize the needs of the client.
as much as those of the patient. A veterinarian of the author’s acquaintance remarked that recognition of the HAB is often the determining factor in whether veterinary personnel will even have the opportunity to do any treatment. Respect for the client’s needs and desires is as important as respect for those of the patient; the client who feels cared for by the veterinarian and technician will readily bring the animal in for treatment.

Discussing the relationship between the HAB and grief, Lagoni, Butler, and Hetts make a point of looking at both verbal (ch. 7) and non-verbal (ch. 6) aspects of counseling humans that figure importantly in helping them to deal with loss. Their work reminds us to be mindful not only of what we say, but also of what we are doing as we speak and what our listener is doing. There are many guidelines for dealing with matters relating to grief and euthanasia that help the practitioner, as much as the client, make reasonable decisions. When there is a strong HAB and a critically ill patient, the professionals involved are subject to vicarious traumatization, as noted in Figley’s remarks about the effect of compassion fatigue on health care professionals who become numb or unable to offer enough emotional support to the client. While it is, difficult for the client to accept the death of a beloved animal, the loss is hard for the professional as well.

As doctors and veterinary technicians, we recognize that a humane end to untreatable critical illness is a part of our work. This recognition does not, however, lessen our feeling that we have somehow failed. It is important that we make our students aware of the issues surrounding end-of-life situations, so that they are prepared for the strong emotions that they will experience.

The care of critically ill patients involves every member of the veterinary care team: veterinarian, veterinary technician, receptionist/front-office staff, and office managers. Yet, not all of this care will take place in the office or clinic. For example, in dealing with the geriatric oncology patient, there is increasing use of hospice and palliative care to provide a reasonable quality of life while allowing the patient to be at home. Villalobos and Kaplan have been strong proponents of this movement, which “[dignifies] the profession by expressing respect for the patients and their caretakers” (302). As veterinary hospice care is often provided by veterinary technicians, its skills are ones that our students must acquire.
The question thus becomes one of finding a way to convey the information about the human-animal bond to our students. There are a number of studies of extracurricular learning environments, particularly Journal Clubs (Sims, Howell, and Harbison; Lee et al.; Thompson). Journal clubs are environments where students bring in published material pertinent to a chosen area of interest and discuss what they have found. Cave and Clandinin conducted formalized research into the utility of this technique. Their year-long investigation into the effect of a journal club on medical students demonstrated improvements in standardized measures of collegiality and professional identity. Other studies however, relied strictly on anecdotal evidence as a way of evaluating the effectiveness of this approach to learning clubs (Sims, Howell, and Harbison; Lee et al.; Thompson). Certainly, a potential way to educate our students about the important topic of the human-animal bond is by going outside the classroom.

A Potential Solution
At LaGuardia Community College, the intense focus of the Veterinary Technician (Vet Tech) program on fundamental skills (vocabulary, math, psychomotor skills associated with physical exams, and nursing) consumes available class time. But given the weight of accumulating evidence on the importance of the HAB, it is clear that we must train our students to be mindful of the complexity of emotions associated with pet ownership. Using an extra-curricular mode of presentation is one way to communicate essential information that cannot be covered in class.

In May 2009, the Vet Tech program formed the Veterinary Technology Club. The students viewed it as an opportunity to engage in discussion of common problems, a forum for some continuing education activities, and a fund-raising vehicle. Among the areas of interest mentioned by the students were the issues of animal abuse, holistic medicine, and the HAB.

Hypothesis
The hypothesis of this research is that presenting information about the HAB in the less formal environment of an extracurricular activity, such as the Vet Tech Club, will accomplish the goal of education without sacrificing the classroom time needed for more technological topics.
Method
In November 2009, a pre-survey was given to the members of the class of 2010 during a lecture class that included the entire cohort. (See Appendix for pre- and post-surveys.) The survey was given to all students in the second (final) year of the Veterinary Technology Program. Although survey responses were anonymous, the students were asked whether they were members of the Veterinary Technology Club.

In April 2010, the Veterinary Technology Club sponsored an evening of discussion of the HAB open to both Club and non-Club members. Present were a veterinarian (the author) and two social workers. The lecture lasted approximately two hours, with time for questions afterward. The post-survey was administered in May 2010. The questions in the pre- and post-surveys were identical, with the single exception that the post-survey asked if the respondent had attended the Club event described above.

Results
Survey Return Rate
The thirty-four students in the class ranged from twenty to fifty-one years of age; 98% were female. The return rate of the pre-survey was 76%. The twenty-six completed pre-surveys were designated as Group A. Eleven of the students who completed the pre-survey also completed the post-survey (42%). These eleven completed post-surveys were designated Group B.

Club Membership
In Group A, eighteen students (69%) were Club members. In Group B, six students (54%) were Club members. However, not all of the students who returned the post-survey had attended the presentation. Of the seven students in Group B who attended the Club presentation, six (86%) were Club members. The table below compares the characteristics of the students in the two groups and their responses to survey questions about the study of the HAB.
<table>
<thead>
<tr>
<th>Table 1</th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td><strong>Group A</strong></td>
<td><strong>Group B</strong></td>
</tr>
<tr>
<td></td>
<td>(pre-survey,</td>
<td>(post-survey,</td>
</tr>
<tr>
<td></td>
<td>November 2009)</td>
<td>May 2010)</td>
</tr>
<tr>
<td></td>
<td>% (number/total)</td>
<td>% (number/total)</td>
</tr>
<tr>
<td>Survey return rate</td>
<td>76% (26/34)</td>
<td>42% (11/26)</td>
</tr>
<tr>
<td><strong>Student characteristics</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Club membership</td>
<td>69% (18/26)</td>
<td>54% (06/11)</td>
</tr>
<tr>
<td>Work with animals</td>
<td>50% (13/26)</td>
<td>46% (05/11)</td>
</tr>
<tr>
<td>Attended HAB workshop (April 2010)</td>
<td>data unavailable</td>
<td>64% (07/11)</td>
</tr>
<tr>
<td><strong>Student responses</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Used word “relationship”</td>
<td>15% (04/26)</td>
<td>66% (07/11)</td>
</tr>
<tr>
<td>Felt that HAB was taught well in curriculum</td>
<td>35% (09/26)</td>
<td>9% (01/11)</td>
</tr>
<tr>
<td>Felt that study of HAB is of primary importance</td>
<td>38% (10/26)</td>
<td>57% (4/7)</td>
</tr>
</tbody>
</table>

**Working with Animals**
In Group A, thirteen students, 50% of the cohort, worked with animals outside of the Vet Tech program. Students who did so, as, for example, a part-time assistant in a clinical practice, spent from five to thirty hours per week in direct client contact. In Group B, five students, 46%, worked with animals, outside those in the program, for two to twenty hours per week.

**Concept Application**
In Group B, seven students, 66% of the cohort, used the word “relationship,” one of the key words used to define the HAB in the lecture given at the Club meeting. In Group A, only four students, 15%, used that specific word.

**Coverage**
In Group A, nine of the students, 35%, felt that the subject of the HAB had been well covered throughout their clinical coursework. In Group B, only one student, 9%, felt that the subject was covered sufficiently; another commented that the discussion as part of the Vet Tech Club lectures was a very valuable contribution to her understanding of the subject.
Importance of the Concept
Students used a scale to indicate their perceptions of the influence of the human-animal bond on client compliance with medical recommendations. In Group A, ten students, 38%, felt the study of the HAB was of primary importance; 52% felt it was of major importance, and 10% had no opinion. Of those who attended the lectures in Group B, four of the students, 57%, felt that the study of the HAB was of primary importance. Three students, 43%, felt it was of major importance. No one felt it was of minor importance.

Discussion of the Intervention
An early discovery was that the nature of the Club activities depended a great deal on the degree to which meetings were planned and agendas constructed. As a new club, agendas were in flux, and meetings were often held on different days of the week and at different times of day. This fluctuation was caused by student commitments to the care of the animals at the College, the occurrence of major and/or final examinations, and the newness of the project. Because the Club was not well-known, attendance varied considerably. As a result of these variables, the Club discussion of the HAB was postponed until April, although our pre-survey was given in Fall I. In addition, this meant that only one evening was devoted to the HAB, a direct consequence of the difficulty in scheduling regular meetings. Ideally, further sessions would have been provided.

The poor return of the post-surveys most likely reflects the fact that the surveys were given in late May. At this point, students were almost ready to take their final exams, and had other things on their minds. Taking time during class to complete and return the surveys would improve the return rate. Given the low response rate, the percentages indicated above must be viewed with caution. However, a few general conclusions stand out. First, students who attended the HAB lecture were already Club members. If we hope to offer additional educational experiences to our students by way of extracurricular activities, we must find ways to encourage nonmembers to attend educational presentations. Second, working in a veterinary practice outside of school seems to have no bearing on student interest in the topic of the HAB. Whether or not they were in contact with clients on a daily basis, the same percentage of students came to the lecture.
Third, the purpose of noting the use of “relationship” in defining the HAB is that this concept was a focus of the material presented in the lecture. All of the speakers used this concept to define and describe the HAB. In Group A, 15% of the students used the word “relationship” compared with 66% in Group B. Once again, although these percentages are impressive, they are not statistically significant, given the small experimental cohort involved. However, they do suggest that the lecture had some impact. With regard to the data collected on the importance of the HAB, the students who had been to the lecture, in comparison with those who had not, felt that the HAB was of primary importance in determining whether the client would seek treatment for an animal.

Lastly, it would seem that even with the additional HAB information presented in the Club, most students felt that they did not get enough exposure to the subject. Many rated coverage of the topic in the classroom as fair or poor. Given that we have insufficient time to teach the HAB, it is not surprising that students feel deficient in this area. Conversations with students after the event revealed that they uniformly enjoyed the presentation and felt they had learned a lot from it.

Note that analysis of the qualitative questions in the pre- and post-surveys have not been presented here. It is beyond the scope of this paper to look at non-quantitative results. A general study of student attitudes toward the definition of the HAB and its impact on their professional lives certainly merits further investigation.

### Conclusion

It would appear that the use of an extra-curricular activity as a way of adding to students’ learning experience has drawbacks when applied to a technological curriculum. Erratic scheduling of Club meetings and difficulty in scheduling more than one event on a given topic are possible explanations for the lack of conclusive evidence of the utility of this approach.

Trends noted above suggest that further study of the HAB should be a part of the learning experiences of veterinary technicians, and that club forums might be a way to provide it. To provide more consistency, the presentations would need to be formalized and student awareness of the availability of such learning experiences would need to be increased. Further study should be directed at developing multiple presentations on the topics, organizing informal student discussion groups, without a
guest speaker, and with a faculty member as a moderator. Recognition of the importance of the topic should also be established. To stimulate student participation, attendance at these events could be rewarded.

The strength of student interest in the subject suggests the need to acquaint our future veterinary technicians with a greater appreciation of the HAB. Modifications to teaching and learning such as those discussed here will likely lead to greater student participation, validating the utility of this approach.

Appendix

Pre-survey, administered in November 2009

1. Are you a member of the Vet Tech. Club? ____ yes ____ no

2. Are you currently working in some capacity in a clinic or hospital (not including research facilities)? ____ If so, how many hours or minutes a week do you spend interacting with clients? _____________________________________________

3. In a sentence or two, please define what the phrase “Human-Animal Bond” means to you.

4. How would you rate the influence of the human-animal bond on client compliance with medical recommendations? (check one)
   ____ of primary importance
   ____ of major importance
   ____ of minor importance
   ____ has no real influence
   ____ I don’t know

5. List three benefits to the client of a close human-animal bond.


7. Define the term “family practice” as it applies to small animal outpatient care.

8. What do you think is the biggest challenge facing a client in dealing with long-term illness in regard to a companion animal?

9. How well do you think the concept of the human-animal bond has been covered in school?

10. How would you go about getting more information about the study of the human-animal bond?
Post-survey, administered in May 2010

1. Are you a member of the Vet Tech. Club? ____ yes ____ no

2. Did you attend the lecture regarding the human/animal bond and domestic violence given in April 2010? ____ yes ____ no

3. Are you currently working in some capacity in a clinic or hospital (not including research facilities)? ____ yes ____ no
   If so, how many hours or minutes a week do you spend interacting with clients?

4. In a sentence or two, please define what the phrase “Human–Animal Bond” means to you.

5. How would you rate the influence of the human-animal bond on client compliance with medical recommendations? (check one)
   ____ of primary importance
   ____ of major importance
   ____ of minor importance
   ____ has no real influence
   ____ I don’t know


7. List three benefits to the animal of a close human-animal bond.

8. Define the term “family practice” as it applies to small animal outpatient care.

9. What do you think is the biggest challenge facing a client in dealing with long-term illness in regard to a companion animal?

10. How well do you think the concept of the human-animal bond has been covered in school?

11. How would you go about getting more information about the study of the human-animal bond?

12. If you attended the lecture sponsored by the Vet Tech Club in April, did it change your view on the nature of the human/animal bond? How?
WORKS CONSULTED


