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Consciousness for animal welfare: A trial of multidisciplinary education

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ABSTRACT:

Cats and dogs have been living with humans for centuries in various conditions and for various reasons. Various factors such as different housing conditions, owner's expectations and attitudes may affect the well-being of domestic animals. It is the responsibility of veterinarians to ensure that the environment meets their needs, which further determines the welfare levels of animals. In order to meet the needs of different pets, the products used for pets should be designed in line with these needs. It can be suggested that products that fully meet the needs of pets are possible only with a multidisciplinary education model including design and veterinary behavior. In this study, a multidisciplinary education model was used for the 3rd-grade industrial design students at the Department of Industrial Product Design, Middle East Technical University in the autumn 2018-2019 Semester to develop design solutions for improving the well-being of cats and dogs as well as their owners. 30 design students attended the program. They divided into 9 teams according to the species, and environment they chose. Two lecturers from the Faculty of Veterinary Medicine gave lectures about the emotional needs of dogs and cats to the design students and supervised them during the design process. As a result, significant improvements were detected in the awareness of the industrial design students of biological, emotional and behavioral needs of cats and dogs. Thirty different products with ideas targeting different problems such as dental health, drug application, grooming were designed by different teams. Most of the end products were scored between good (75-79) and outstanding (90-100) by the instructors from the Faculty of Veterinary Medicine. The results of this study show that multidisciplinary education and the exchange of information between different professions have a significant impact on product development success to improve the quality of life in animals.

Hayvan refahı için bilinç: Bir multidisipliner eğitim denemesi

ÖZET:

Kedi ve köpekler yüzyıllardır çeşitli koşullarda ve çeşitli sebeplerden dolayı insanlarla birlikte yaşamaktadırlar. Farklı barınma koşulları, sahiplerinin beklenti ve tutumları gibi çeşitli faktörler evcil hayvanların refahını etkileyebilir. Hayvanların refah seviyelerini belirleyen çevrenin ihtiyaçlarını karşılamasını sağlamak veteriner hekimlerin, özellikle de hayvan davranışı uzmanlarının sorumluluğundadır. Farklı ev hayvanlarının ihtiyaçlarını karşılayabilmek için, kullanılacak ürünler bu ihtiyaçlara paralel olarak tasarlanmalıdır. Evcil hayvanların ihtiyaçlarını tam olarak karşılayan ürünlerin sadece tasarımı ve hayvan davranışlarını içeren multidisipliner bir eğitim modeli ile mümkün olduğu düşünülmektedir. Bu çalışmada, Orta Doğu Teknik Üniversitesi Endüstriyel Ürün Tasarımı Bölümü 3. sınıf öğrencileri için 2018-2019 güz döneminde, kedi ve köpeklerin yanı sıra sahiplerinde refahını iyileştirmek için tasarım çözümleri geliştirmek amacıyla çok disiplinli bir eğitim modeli kullanılmıştır. Eğitim programına 30 tasarım öğrencisi katılmıştır. Öğrenciler seçtikleri türlere göre örneğin kediler, köpekler ve insanlar (evcil hayvan sahipleri) ve çevreye göre örneğin ev, barınak veya kampüs olmak üzere 9 takıma ayrıldılar. Ankara Üniversitesi Veteriner Fakültesinden iki öğretim elemanı tasarım öğrencilerine köpeklerin ve kedilerin duygusal ihtiyaçları hakkında dersler ve tasarım süresi boyunca da danışmanlık hizmeti vermişlerdir. Sonuç olarak, endüstriyel tasarım öğrencilerinin kedi ve köpeklerin biyolojik, duygusal ve davranışsal ihtiyaçlarını konularındaki bilinçlerinde önemli gelişmeler tespit edilmiştir. Farklı ekipler tarafından diş sağlığı, ev ortamında ilaç uygulaması, tımar gibi farklı sorunları hedefleyen fikirleri olan otuz farklı ürün tasarlanmıştır. Son ürünlerin çoğu Veteriner Fakültesi öğretim üyeleri tarafından iyi (75-79) ve olağanüstü (90-100) arasında puanlanmıştır. Bu çalışmanın sonuçları multidisipliner eğitim ile farklı meslekler arası bilgi alışverişinin, hayvanlarda yaşam kalitesini iyileştirmek için ürün geliştirme başarısı üzerinde önemli bir etkiye sahip olduğunu göstermiştir.

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1. Introduction

Multidisciplinary education refers to the multidisciplinary curriculum including topics from the viewpoints of more than one discipline (6) It has been considered as a new educational approach to educating competent practitioners in different disciplines (2,3). The main aim of this approach is to solve problems in the field by using the knowledge gained from different disciplines.

The present developed veterinary medicine has exacted its own autonomous space and has now attained professional, social and scientific recognition as an autonomous discipline with several specializations. Various forms of collaboration have grown both inside the professional fields and among other professions who also include professionals only occasionally interested in the sector (1). For example just for detecting animal well-being among veterinary approaches pathology can detect breakdown in biological functioning, while epidemiology identifies the circumstances under which such breakdown is likely to occur. Physiology can determine “pre-pathological” states such as reduced immune competence, which are predictive of the breakdown of biological functioning and corroborative measures of short-term negative experiences such as fear and pain. Behavioral approaches include the study of abnormal behavior, expression of emotions, environmental preference tests, and various approaches to studying motivation strength, which provide insights into the animal's positive and negative reactions to their environment (5). Knowledge of animal behavior is an extremely important component of modern veterinary practice. Appreciation of species-typical plays a pivotal role in the diagnosis of health and welfare problems in animals, including the recognition of pain and distress (10).

Until recently, animal welfare was mostly discussed within the frame of the five freedoms which outline the minimum requirements for animal well-being (4). Accordingly, freedom from hunger or thirst, freedom from discomfort, freedom from pain, injury or disease, freedom to express (most) normal behavior and freedom from fear and distress were considered as conditions meeting animal needs. However, a new model called “Five Domains” including a new topic related to the mental state of animals was introduced by Mellor and Beausoleil in 2015 (8). Considering these two models, today quality of life for animals can be described as general enjoyment of life, which includes five main constituents: a satisfaction and predictability of basic physiological needs, a high degree of biological functioning, satisfaction of core needs of the regarding species and opportunities for pleasure and minimal distress (14).

By looking with different perspectives on animal welfare it is clear that animals living under different housing conditions and living with different social groups create different needs even in the same species (11). Recently, there is a growing interest in products targeting quality of life in pet animals as a result of increased awareness of animal welfare. To design a product that meets the need for “quality of life”, product designers need to have basic knowledge of behavior and emotional motivations of the animal species involved. There are several technologies targeted towards animals have been around for a long time including robotic milking systems and biotelemetry devices. In the successful ones, animal factors including their cognitive, physiological and behavioral characteristics, needs and preferences have seldom played a determining role in the design of these technologies (7).

Product design is a generic term for the creation of an object that originates from design ideas – in the form of drawings, sketches, prototypes or models – through a process of design that can extend into the object's production, logistics and marketing (12).

Although animal behavior specialists have important ideas for the products they need for the well-being of animals, they need collaboration with industrial product designers to design these products. Also, industrial designers need to know what fulfills the needs of the animals in different contexts for stronger design ideas.

Based on this point of view, a joint course was developed by the Faculty of Veterinary Medicine, Ankara University and the Department of Industrial Product Design, Middle East Technical University. The aim of this course was to use a multi-educational approach to develop design solutions for improving the quality of life in cats and dogs

and also to evaluate the differences in awareness of the students about the emotional needs of these species before and after the education.

2. Material and Methods

A joint project course was conducted for the 3rd-grade industrial design students in the autumn 2018-2019 Semester. From a veterinary perspective, the main criteria for all these products are to design dog and cat-friendly products. In total, thirty students attended this course. Before the course started, informed consents were collected from the students

Questionnaire: For understanding the knowledge of basic emotional, biological and behavioral needs of cats and dogs, a questionnaire was applied to the students before the first veterinary lecture.

The questionnaire includes different type of questions such as:

- Demographic information;
 - Name (Nick allowed)
 - Age
 - Income status
- Open-ended questions;
 - Do you own a pet animal?
 - What is the role of the pet animal in your life?
 - What kind of product do you plan to design?
 - What is the average price range of the product you will design?
- Yes/No questions;
 - I don't know how to communicate properly with pets
 - The primary needs of campus dogs, shelter dogs, stray dogs, and campus cats are the same.
 - I have enough information about brands that manufacture pet products in Turkey.
 - I have enough information about brands that manufacture pet products globally.
 - Have you done any research on pet products so far?
- Correct match questions;
 - Considering the prior needs; match campus dogs, shelter dogs, home dogs, adopted stray dogs and campus cats with basic needs such as physical activity, mental activity, resting, cleaning, nutrition and privacy.
 - For the product group you will design, which group of needs (such as indoor physical activity, mental activity, resting, privacy, nutrition, outdoor physical activity) would you bring together?

The course plan covered topics related to industrial design as well as animal behavior and welfare. The students were expected to develop design solutions for improving the well-being of domestic owned cats and dogs, pet owners, stray dogs and cats at the campus as well as shelter dogs. At the beginning of the course, one lecturer, who was a specialist on animal behavior, from the Faculty of Veterinary Medicine gave a seminar covering topics such as:

- Emotional motivation and behavior
- Emotional intelligence in dogs
- Emotional intelligence in cats
- Origin of dogs
- Origin of cats
- Environmental and emotional needs of home dogs
- Environmental and emotional needs of home cats
- Urban free-ranging dog and Campus dog differences
- Environmental and emotional needs of free-ranging dogs
- Environmental and emotional needs of Campus dogs

The course was further including topics such as idea generation workshop, preliminary trials, pre-jury and final jury assessments. After the seminar, the idea generation workshop was organized conducted by the Faculty of Industrial Design (Figure 1). After students decided on their working group, they developed some prototypes in order to test them in a concerning environment. Preliminary trials were conducted in different places such as home, shelter, campus or veterinary clinic (Figure 2). The veterinary team (2 supervisors for each team) accompanied the students during their visits to the dog shelter and the Faculty of Veterinary Medicine. They also gave feedback about the other prototypes after watching the videos recorded by students. Thus, the team from the Faculty of Veterinary Medicine supervised the students during the entire development process.



Figure 1: Idea generation workshop

Şekil 1: Fikir üretim atölyesi



Figure 2: Preliminary trials using working prototypes of the products at shelter visits

Şekil 2: Barınak ziyaretlerinde ürünlerin çalışan prototiplerinin kullanıldığı ön denemeler

At the end of the course, the students presented their designs to the jury. The jury from the Faculty of Veterinary Medicine evaluated the designs from the animal welfare perspective and gave feedback to the students. In order to assess the success of this multi-educational course, the same questionnaire at the beginning was also applied to the students again.

Statistical Analysis

Statistical analysis of the data was performed by SPSS ver. 14.01 program (13). Questionnaires applied to students before and after education were compared statistically. The differences between the students before and after answers of the basic needs of animals according to the given contexts were analyzed with paired sample t-test. A value of $p < 0,05$ was taken to indicate a significant difference.

3. Results

Distribution of topics:

Thirty students, divided into 9 teams according to their working topics:

Team 1 students focused on shelter dogs. They try to produce solutions suitable for outdoor conditions by mentioning mental and resting needs for those dogs

Team 2 students also focused on shelter dogs and they work on guidelines and standards for caring for shelter dogs after reviewing current shelter conditions in Turkey.

Team 3 students focused on stray cats. Their topic was physical activities and games for cats. They try to develop products taking into account how cats communicate, which emotional motivations affect behavior, how they behave while playing games, hunting, chasing, cleaning themselves, sleeping, etc.

Team 4 students focused on stray dogs. Their topic was physical activities and games for dogs. They also try to develop products taking into account how dogs communicate, which emotional motivations affect behavior, how they behave while playing games, hunting, chasing, cleaning themselves, sleeping, etc.

Team 5 students focused on home dogs and pet owners. Product for comfort, fun, feeding, sleeping, carrying, hygiene, cleaning and others.

Team 6 students focused on home dogs. Their topic was dog behavior, caring and training. They try to develop products taking into account how they behave, how they learn, how they interact with humans, how they spend their time, how they change as they get older, etc.

Team 7 students focused on home cats and pet owners. Product for comfort, fun, feeding, sleeping, carrying, hygiene, cleaning and others.

Team 8 students focused on home cats. Their topic was cat behavior, caring and training. They try to develop products taking into account how they behave, how they learn, how they interact with humans, how they spend their time, how they change as they get older, etc.

Team 9 students were on home pets (cats and dogs) and pet owners. They try to develop products for comfort, fun, feeding, sleeping, carrying, hygiene, cleaning and others.

Assessment of basic needs:

Thirty different products were designed by different teams. At the beginning of the course, the basic needs were determined as privacy for cats, mental activity for both species and resting for shelter dogs by the veterinary team. However, during the pre-assessment, none of the students chose resting as one of the basic needs of shelter dogs. Only 3 students stated that mental activity was important for those dogs.

Similar to those findings, a minority of the students chose feeding (6/30) and privacy (5/30) as one of the basic needs for campus cats. At the end of the course design ideas for shelter dogs mainly included resting places and mental activities, whereas for campus cats safe places for resting and eating were mainly designed. There was a significant increase in consciousness about the basic needs at the end of the course due to the differences between the students before and after answers in the questionnaires of dogs ($p < 0,05$) and cats ($p < 0,05$).

Most of the students ($n=18$) developed design ideas for shelter and campus environments. During the preliminary trials, the students detected that shelter conditions were very stressful for the dogs. They also observed drainage behaviors such as licking, chewing and destroying daily objects like beddings and toys which were designed suitable for the home dogs. The veterinary team underlined the stress caused by social isolation and also gave

information about the coping strategies of the dogs under stress. Accordingly, some of the students changed their products considering the coping behaviors of shelter dogs and some of them planned new designs that met the social needs of the dogs.

During the home visits, students stated that they were surprised as most of the owners expressed their needs rather than animals. The topics which were created as a result of those home visits were drug application in the home environment, quality time activities in the home environment and grooming. Accordingly, several different product ideas targetting different problems such as dental health, drug application within the home environment, grooming, etc. were also developed by teams 5,6,7,8 and 9. Consequently, most of the products (27/30) designed by students were evaluated between good and outstanding by the veterinary team considering the criteria such as meeting the right needs of the targeted animals, safety to animal when using, ability to achieve same kind of products in Turkey.

4. Discussion and Conclusion

Until recently, a multi-educational approach mostly covered related disciplines such as “One health” disciplines (1). Considering that animal welfare is not only affected by health issues, but a novel multi educational approach was also developed by two different disciplines such as veterinary medicine and industrial design. This study was the first effort to apply and evaluate a multidisciplinary education for improving animal welfare.

Considering the statistical differences between before and after assessments, one may suggest that this education model increases the awareness of the design students about the emotional needs of animals. The key point of this success might be multifactorial. During the training, the students had the chance to attend seminars, visited different places to observe behavior and to receive feedback from the veterinarians. The direct experience together with the lecture may have an effect on increasing success within a short time. This study is the first to show the contribution of the science of animal behavior in designs for pets.

One of the interesting findings of this study was that the majority of the students developed designs solution for free-ranging cats and dogs. Turkey is one of the developing countries facing a serious free-ranging animal problem (9). Thus, there is a huge number of free-ranging dogs in shelters as well as free-ranging cats and dogs in open areas, such as University campuses. However, campus dogs can not totally be specified as free-ranging dogs, since they are mostly cared by caregivers at the campus. As considering that the students who did not have any previous experience with pets, the first bonding with animals were established during campus life. This result may be related to the daily interaction between campus animals and students.

In parallel with other multidisciplinary studies conducted for industrial design students (15), the challenge for veterinary staff has been to develop a greater appreciation of the product, while design staff has needed to work to better understand the veterinary discourse and approach to product design.

This results suggests that a multidisciplinary educational approach is important for improving success in developing products in certain fields such as veterinary science, finding solutions for improving the quality of life of free-ranging dogs in developing countries such as Turkey and designing affordable, durable and environmentally friendly products for improving animal welfare.

Although the end products of this education seem to be beneficial for only improving designs for pet animals, it has further critical importance on positively affecting animal well-being in the long term.

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