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Collaborating Students as Caretakers for Maintaining a University Farm for Teaching in Rabbit Farming

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Abstract: The viability of maintaining a farm for teaching in Rabbit Farming at the Faculty of Agriculture (University of Seville, Spain) using collaborating students and the collaborating students' perception of the educational usefulness of the activity were analysed. The collaborating students, organised into groups of three, spent 1.55±1.04 h day^{-1} in cleaning, feeding and taking care of the rabbits. They regarded the activity as being quite easy (mean±SD = 2.44±2.50, where 10 = extremely difficult) and compatible (9.19±1.10, where 10 = totally compatible) with their other academic activities. The coordination between the collaborating students within each group was high (8.53±2.14 with 10 = totally coordinated). Most of them (85.3%) opined that a group of three people was an appropriate size for the working subgroups. The degree of the collaborating students' independence with regard to the professors in undertaking their tasks was noteworthy (7.82±2.14 where 10 = totally independent). The collaborating students regarded the activity as highly useful (7.57±2.20 where 10 = very useful) for acquiring skills in animal production. Overall collaborating student satisfaction with the activity was high (9.18±1.71, where 10 = completely satisfactory). Maintaining a teaching farm using collaborating students is viable since they perform their tasks efficiently and regarded the activity as highly useful for acquiring skills in animal science.

Key words: Education, caretaker, teaching farm, animal sciences, students, rabbit

INTRODUCTION

When teaching animal sciences, it is useful for students to gain practical experience on farms that enables them to relate the theoretical knowledge gained to the more practical aspects of livestock handling and the management of farms. Some universities and institutions, with the aim of increasing the efficiency of practical knowledge assimilation and of acquiring livestock handling skills, establish their own teaching farms (Harrison, 1983; Marshall *et al*., 1998; Reiling *et al*., 2003). The maintenance of these teaching farms requires teachers and departmental staff to invest time and effort in the project (Reiling *et al*., 2003). However, teachers are unable to assume the care of the animals and farm maintenance personally (Granstrom, 2003). To overcome this, the teaching farms must rely on suitably trained personnel whose specific responsibilities are these tasks (Granstrom, 2003; Reiling *et al*., 2003). On some occasions however, universities do not have such technical staff available, while on others they fail in their attempts to attract and retain well-trained carers and to recognise the knowledge and skills that are required to carry out the tasks efficiently (Granstrom, 2003). When there is a complete lack or scarcity of a workforce whose specific function is to maintain and run a teaching farm, several options exist such as charging the students enrolled for subjects employing animals with the tasks (Reiling *et al*., 2003) or alternatively, organising groups of collaborating students not enrolled on such courses who maintain the teaching farm. The aim of this research was to analyse the viability and educational usefulness of maintaining the teaching rabbit farm belonging to the Faculty of Agriculture at the University of Seville (Spain) using a group of collaborating students.

MATERIALS AND METHODS

Teaching farm and animals: During the 2002/2003 academic year a teaching farm of meat rabbits (*Oryctolagus cuniculus*) was implemented. The structure and organisation of the farm has been previously described by Caravaca *et al*. (2010). It was composed of 15 female and two male breeders, housed in

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multi-function flat-deck cages identical to those used in commercial farms and handled under similar conditions (Lebas *et al*., 1997). The farm was located in a conventional facility a 10 min walk from the Faculty of Agriculture and was kept in operation during the length of the elective, Poultry and Rabbit Science (second semester of the academic year), given in the Faculty of Agriculture of the University of Seville, Spain. The farm was used for doing the practicals given in this course.

Recruitment of collaborating students and organisation of their tasks: Each academic year a team of 15 collaborating students, whose task was to maintain the teaching farm was formed. The call for collaborating students was open to all students at the Faculty of Agriculture, not just those enrolled on the Poultry and Rabbit Science course. The decision to open the call to all students in the faculty was taken in order to facilitate the recruitment of collaborating students who showed great interest in the activity and whose timetables made it compatible with the rest of their academic activities. The main selection criterion for collaborating students was their academic record, priority being given to those who had passed the greatest number of subjects in the area of animal sciences. Those who completed the activity as collaborating students received a certificate accrediting the fact but they did not gain any academic credits. Once selected, the collaborating students were organised into five teams of three. Each team was responsible for the cleaning, feeding and care of the rabbits on one specific day of the week, form Monday to Friday. At the weekend the farm went unattended since the size of the hoppers meant that after being filled on Friday, they did not need to be replenished until the following Monday. Furthermore, the breeding and handling of the animals was organised by the bands system with mating taking place on Mondays or Thursdays according to the dictates of the academic year's teaching calendar, thus making it unnecessary to attend to any breeding or reproductive tasks on Saturdays or Sundays (Lebas *et al*., 1997). The collaborating students received instructions concerning their activities in a meeting and they were then trained in the tasks to be performed by the Poultry and Rabbit Science course's teachers and the laboratory technician who also tutored and supervised their day-to-day functions. This training is of great importance because the people responsible for the care of institutional animals must be suitably informed of the teaching aims and the care and use of such animals (Granstrom, 2003).

Evaluation of the collaborating students' activity and perceptions: To evaluate the maintenance work performed by the collaborating students on the teaching rabbit farm and their opinions of it, the 43 students (16 male, 37.2% and 27 female, 62.8%) who collaborated during three courses (2002/2003-2004/2005) were provided with an anonymous written survey (Table 1). Thirty-four students (79.1% of the total) responded to the survey, divided into 11 male (32.4%) and 23 female (67.6%). Most of the questions were on a scale from 1-10.

In the question related to the time spent per week in performing the tasks, respondents were required to answer with a number of hours. With regard to the question concerning to the size of the collaborating students' work teams, when the respondents in their reply regarded a different size than three to be the most suitable, they were asked to indicate what they believed the correct size to be.

Statistical analyses: The statistical analyses were performed using student's t-tests and Pearson's correlations using the SPSS 15.0 program (SPSS Inc., Chicago, IL, USA).

RESULTS AND DISCUSSION

The summary of the answers to the survey given by the collaborating students working in the maintenance of the teaching farm is shown in Table 1. Fifty percent of the collaborating students opined that there was a lack of some type of material, activity or information that impeded them from performing their tasks as collaborating students better (Table 2). Table 3 shows suggestions, opinions and criticisms expressed, through open answers, by the collaborating students.

The analysis of the survey's results leads us to deduce that the maintenance of the teaching rabbit farm by the collaborating students was an activity that required little time (Table 1). In part this was due to the low degree of difficulty of the tasks involved (Table 1), which were mainly cleaning the cages and facilities, the replenishing of feed in the hoppers and the supervision of the animals' general condition and welfare.

The more specialised tasks, such as reproductive and productive handling and the technical monitoring of the farm were reserved for the students taking the Poultry and Rabbit Science course since these activities formed a large part of the course's practical content. In fact, several collaborating students demanded more species in the teaching farm and felt that there were too few animals and that merely performing farm cleaning and maintenance tasks was insufficient (Table 2 and 3). These demands might not have arisen if the time that they spent on the tasks or the difficulty involved have been greater. We can deduce from these results that increasing the number of tasks and the collaborating students' degree of

Table 1: Questions and the answers given by the collaborating students with regard to their maintenance tasks on the practice farm (n = 34 students)

Questions	Values
1. Average time spent per week working in the farm (in hours)	1.55±1.04
2. Difficulty of the tasks undertaken in maintaining the farm (10 = extremely difficult) (1 = very easy)	2.44±2.50
3. Compatibility of this activity with class time and other academic activities (10 = totally compatible) (1 = totally incompatible)	9.19±1.10
4. Coordination with the rest of the collaborating students in your work team (10 = totally coordinated) (1 = totally uncoordinated)	8.53±2.14
5. Independence from the teachers in the organisation and performance of your weekly tasks (10 = totally independent) (1 = totally dependent)	7.82±2.14
6. Usefulness of the activity for acquiring skills in animal production (10 = highly useful) (1 = completely useless)	7.57±2.20
7. Qualify the suitability of having three students per work team for carrying out the daily tasks	
• Insufficient, there should be more than three members	0.0%
• Three members per team is the correct size	85.3%
• Three people is too many, there should be only two	14.7%
8. Overall satisfaction with being a collaborating student in the activity (10 = completely satisfactory) (1 = totally unsatisfactory)	9,18±1,71
9. Would you recommend this activity to other students? (answer yes or no)	97,1%
10. What do you think was lacking in order to perform your tasks as a collaborating student better?	*
11. Your suggestions, opinions and criticisms	**

[1]Values are expressed as mean±SD and percentage. *Individual responses are shown in Table 2. **Individual responses are shown in Table 3

Table 2: Materials, activities or information that the students felt were lacking in order to perform maintenance tasks on the practice farm better (n = 17 students)

Demand	Demanded by n (%)
More cleaning materials (gloves, scrapers, buckets, etc.)	5 (29.4)
A drain in order to clean the floor with water	1 (5.9)
Improvements to the existing facilities	2 (11.8)
More rabbits	1 (5.9)
Written instructions on how to perform the tasks	1 (5.9)
Other tasks to gain more experience in other types of handling	1 (5.9)
Student collaboration in more important tasks. The quality of the work would improve if we did not perform exclusively cleaning duties	2 (11.8)
Greater emphasis given in the production process or a more exhaustive monitoring. The performance of reproductive and growth parameter studies (as done by the students taking the Poultry and Rabbit Science course)	3 (17.6)
A greater offer of activities as a collaborating student in the area of animal sciences	1 (5.9)

Table 3: Suggestions, opinions and criticisms expressed, through open answers, by the collaborating students

Question No.	Reply
1	I regard it as a very complete activity and important for my academic training
2	It has been a highly satisfactory activity with regard to my academic training and I recommend all students to do it
3	I think that it has been an activity that as we were dealing with real animals has brought us into closer contact with the world of work
4	I think that all of the work was very well organised
5	I suggest that things stay the same as they have been up to now. Students are able to perform their tasks without pressure from the teachers and this contributes greatly to the performance of the tasks
6	It is an attractive type of research because it enables us to get hands-on experience of a farm. The relationship with the teachers has been very good
7	There was a great team spirit
8	I am grateful to the teacher and the laboratory technician (an opinion expressed by two students)
9	The attendance of the work team members should be more strictly monitored since on many occasions only one or two of us have had to carry out the research
10	The farm is located too far away from the faculty building (a criticism made by three students)
11	It might be a good idea to form the groups in such a way that one member has a car to get to the farm
12	It would be highly useful if a key to the farm were kept in the faculty porter's office since sometimes we have had difficulties in locating it
13	I suggest that other species of animals be introduced onto the farm (a suggestion made by five students)
14	It would be interesting to monitor the animals
15	The activity is interesting but it should have a more intense development
16	The faculty should lend more support to the farm

responsibility would be a viable proposition. However, as Reiling *et al.* (2003) stated, it is also possible that if the number of animals and species to be handled by the collaborating students were increased, coordination and time management problems might arise. For this reason, the primary responsibility of each group of students must be limited to a single species.

The compatibility of the activities undertaken by the collaborating students with their class timetables and well as with the rest of their academic activities was extremely high (Table 1). If the responsibility of the maintenance tasks had fallen to the students studying the Poultry and Rabbit Science course on a rota basis, as occurs in other cases (Reiling *et al.*, 2003), there is the possibility that the compatibility level would have been lower. In many cases, the students enrolled on a certain course cannot dedicate time outside class time to activities related to the said course since they are usually enrolled on numerous other courses at the same time. In fact, Reiling *et al.* (2003) find that sometimes students studying an animal sciences course and simultaneously working on the teaching farm's maintenance find it difficult to follow the course. In

tha case the compatibility of farm maintenance tasks with the other activities of the collaborating students was high due to the fact that those who enrolled on the activity did so voluntarily. This compatibility might also be due to the fact that the tasks to be performed required so little time.

However, the high degree of coordination among the collaborating students forming each work team might also be a determining factor (Table 1). We found that the compatibility between maintenance tasks on the teaching farm and the collaborating students' class timetable and other activities had a positive correlation ($r = 0.484$, $p = 0.004$) with the degree of coordination among the members of each work team. This is logical since the collaborating students in each group had to meet every day that it was their turn to work, ask the teachers for the key to the farm they and then go to the farm, returning the key once they had finished their tasks, activities on which they spent more time together than was strictly necessary to perform the farm maintenance tasks.

The collaborating students' independence with regard to the teachers when organising and performing their weekly tasks was also noteworthy (Table 1). Some students evaluated this independence highly, as can be deduced from the opinions expressed in the survey's open questions, since it enabled them to perform their tasks in a more relaxed manner (Table 2). This independence however, required a high degree of responsibility with regard to the tasks that the students performed regularly. Marshall *et al.* (1998) also find that this skill is developed among students that look after university farms. One student suggested that there should be a stricter monitoring of attendance since in his or her work team one or two of the members were absent on several occasions (Table 2), probably due to the fact that they became more lax because of the low level of monitoring by teachers. On the other hand, this independence in the performance of their tasks and the fact that the work teams were formed by three people generally encouraged a good team spirit (Table 2) and the development of the skills required by team work, an effect also confirmed on similar university farms (Marshall *et al*., 1998; Reiling *et al*., 2003).

The team size of three members was generally evaluated as being the most suitable (85.3%; Table 1) for the performance of the daily tasks and only 14.7% of the respondents stated that it should be reduced to two members per team. No differences were found in the average daily time spent on farm maintenance tasks ($t = 1.006$, $p = 0.322$) among those students who were of the opinion that the work teams should have three members and those who believed that they should have two. Therefore those who believed that the work teams should comprise two members probably held this opinion due to the absence or withdrawal of one of the team members or to the simple nature of the tasks caused by the low number of animals on the teaching farm. However, for successive courses we have believed that we should keep the number of collaborating students in a work team at the level of three since if one member is absent, a frequent occurrence due to examinations as well as other unforeseen circumstances there are still two students who will mutually support and motivate each other in their work. If the opposite were true and the teams comprised two members one of whom were absent, the other would have to work alone, something that might reduce motivation and interpersonal contact. In fact one student mentioned this activity's positive value in terms of the team spirit that it generated (Table 3).

The activity's degree of usefulness as perceived by the students with regard to the acquisition of animal sciences skills was noteworthy (Table 1). This positive perception occurred in spite of the simple nature of the tasks performed, something also indicated by the students (Table 1) and which prompted them to demand a greater number of tasks and tasks of a more complex nature (Table 2 and 3). However, as several students indicated, in spite of the simplicity of the tasks, they regarded them as a complete activity that prepared them for the working world as it enabled them to gain hands-on farm experience and to deal with animals (Table 3). The perception is that in spite of the fact that the tasks of reproductive handling and zootechnical monitoring tasks of the farm animals were reserved for the students taking the Poultry and Rabbit Science course, simply maintaining the teaching farm provided the collaborating students with sufficient practical experience and contact with the animals to enable them to acquire noteworthy animal sciences skills. In fact, university farms for student practice gives students noteworthy livestock handling skills (Harrison, 1983; Marshall *et al*., 1998; Reiling *et al*., 2003). Students perceive this as a most valuable experience, indeed, gaining practical experience in animal handling is the main reason why students enrol on animal sciences courses and activities, where livestock is handled (Marshall *et al*., 1998). In fact graduates in animal sciences consider that the most important activities that they undertook during their degree courses were those aimed at acquiring practical experience in working with animals (Meyer, 1990). A similar positive benefits have been found by science teachers when science enrichment programmes housed outside traditional school settings are implemented, due to the fact that offer valuable opportunities to access and use authentic scientific tools and practices, thus gaining first-hand experience

(Hamilton-Ekeke, 2007; Luehmann and Markovitz, 2007). This is particularly useful especially for urban students (Luehmann and Markovitz, 2007) often lacking rural knowledge, as was the case with students of the research.

Although, half of the students stated that they were satisfied with the materials available and the activities undertaken, the rest opined that there was a lack of some materials or information (Table 2). A third of the demands were concerned with the improvement of the materials necessary to perform the activity's main task, the removal of the rabbits' faeces and the cleaning of the cages and facilities. As a result of this demand, the decision has been taken to acquire more cleaning kits.

In addition, one student mentioned the lack of written instructions concerning the tasks to be performed. This shortfall has also been detected in similar cases (Reiling *et al*., 2003). Although, the students received instructions from the teachers concerning the tasks to be performed, it is likely that the high degree of independence that the students enjoyed in the performance of their tasks has on occasions given rise to situations, where the students did not know how to undertake certain activities. As a result of this student's suggestion, the decision was taken that each student will be provided with a leaflet giving instructions of the tasks to be performed as well as rules for basic hygiene in order to minimise the risk of them catching zoonosis and some basic guidelines to ensure the rabbits' welfare. These guidelines are important because the most effective tool to ensure respect in the treatment of institutional animals is correct training in how to look after and treat them (Granstrom, 2003). Providing this leaflet is also a more efficient manner of helping the students to assimilate certain areas of knowledge related to animal sciences, thus contributing to the activity's educational usefulness.

The rest of the elements and activities that the students said were lacking were not due to deficiencies that made their tasks more difficult but were related to the demand for more activities (more rabbits, more species, more tasks, etc.; Table 2). The reason for this demand might spring from the simplicity of the tasks performed and the short amount of time spent on them. However, it is probably mainly due to the fact that the activity provided the students with experience in the handling of animals and that they thought that a greater number of animals and greater involvement in their handling would enable them to learn more and acquire more animal sciences skills. Reiling *et al*. (2003) has also found the same demand on an animal sciences course, which included practical experience on a university farm, observing that if the students handled only one species they got bored and demanded more species. Similarly, Kesler (1997) states that on an introduction course to animal sciences, where animals were not handled, the students suggested that practical animal handling sessions should be organised. Graduates in animal sciences suggest that the degree course should give priority to the offer of practical activities and courses that give experience in animal handling (Meyer, 1990). Nevertheless in the case, we decided not to increase the number of rabbits of the teaching farm because they are sufficient to fulfil the educational objectives (Caravaca *et al*., 2010) and because the norms on the protection of the vertebrate animals used for experimental and other scientific purposes demand that the number of involved animals is reduced to the essential minimum (Council of Europe, 1986).

The collaborating students level of overall satisfaction with the activity was high (Table 1) and was found to be related positively ($r = 0.633$, $p<0.001$) with the collaborating students' perceived usefulness of the activity in terms of animal sciences skills acquisition. No differences were found ($t = 0.779$, $p = 0.479$) in the overall degree of satisfaction among those students who believed that the ideal size for a work team was three members and those who opined that it should be two. No differences were found ($t = 0.395$; $p = 0.695$) in the overall degree of satisfaction among those students who felt that nothing was lacking and among those who thought that more material would be useful to perform their tasks. As a result of the activity's dynamics and the positive evaluation of all of the items discussed, all of the students (97.1%) but one would recommend the activity to others.

It was also observed that the performance of the maintenance tasks by the collaborating students encouraged those who had not already taken the course or who still needed credits to finish their degrees enrolled on successive courses in Poultry and Rabbit Science in which the animals were used. This increase in interest and motivation in selecting more animal sciences courses has also been observed in such courses, where livestock is handled (Marshall *et al*., 1998; Reiling *et al*., 2003) as well as in similar animal sciences introductory courses (Kesler, 1997). It has been observed that the handling of animals increases student motivation, a key element in the teaching-learning process (Ames and Archer, 1988). Furthermore it was also observed that the collaborating students gained more confidence in the relationships with their teachers (Table 2) due to the fact that they were performing their tasks in a context removed from the rigid formality of the classroom. This might also have contributed to the increase in interest among some students to enrol on the course in comming academic years. These positive effects have also been observed by

Kesler (1997) among students doing an introductory course on animal sciences and in which there was a high level of student-teacher interaction. The students' image of the department was better, the course providing them with more information on the workings of the university, something that they did not enjoy in any other subject and furthermore it enabled them to get to know their teachers.

CONCLUSION

The recruitment of teams of collaborating students specifically dedicated to the maintenance of the teaching farm is a good solution when the university has no staff to perform this task. Such a solution is positive due to the fact that the collaborating students perform their tasks efficiently and with a high degree of motivation and they regard the activity as being useful for acquiring animal sciences skills and knowledge.

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