10. Breeding Lab: a successful industry-academia collaboration to provide MSc consultancy training

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Abstract

A new course Breeding Lab was developed and introduced, to better prepare students for the diverse job market. The course was set-up by Wageningen University in collaboration with industrial partner Hendrix Genetics. Both organisations played a key role in the course. The academic partner focused on the development and application of skills and competences necessary for solving real life issues in animal breeding and genetics. The industrial partner was responsible for formulating the real-life issue to be addressed, technical supervision of the students and evaluation. The two partners involved in the course and the students found the course as a valuable addition to the curriculum.

Introduction

An important task and challenge of academia is to prepare students for the future job market. Results of the yearly Dutch National Student Questionnaire consistently show students' wish for better preparation for the diverse job market. To respond to this, we recently developed and introduced the course 'Breeding Lab' in close collaboration between industry and academia. This course was offered for first time in 2019-2020 to students of the European Master in Animal Breeding and Genetics (EMABG). The enrolled MSc students worked on a group assignment in an industry setting, allowing them to learn and apply competences relevant for solving real life issues that were difficult to develop on campus.

In this paper, we will explain the set-up and learning outcomes of the breeding lab, and the different educational formats used to achieve the learning outcomes. Subsequently, we will focus on the experiences at both sides: the industry partner, Research & Development team of Hendrix Genetics, and the academic partner, the Animal Breeding and Genomics group of Wageningen University. In the discussion we focus on the experiences of students and give an outlook on expanding the course to accommodate larger numbers of students.

Materials & methods

Breeding Lab: set-up and learning outcomes. The idea of the Breeding Lab was developed over time, following consultation of several R&D directors who expressed the need to have students better prepared for their professional careers in industry, in terms of professional skills and competences. At the same time, results of the Dutch National Student Questionnaire (NSE) showed that students also felt the need to be better prepared for the diversity in the future job market. Combining the two, led to the development of the pilot project 'Breeding Lab' by the Animal Breeding and Genomics group of Wageningen University in 2018. This course was included as an academic consultancy course in the curriculum for the EMABG. Wageningen University is one of the six partners in the EMABG consortium, and one of the two to provide education to first-year students within that master program.

The aim of Breeding Lab is to prepare students for a professional career in industry or (non)governmental organizations. This is achieved by letting students work on an assignment, provided by the industrial partner. The emphasis in the assignment lies on solving a problem in teams and experiencing, learning, and acquiring the professional competences that are needed to successfully operate in an (inter)national,

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multidisciplinary team. An important part of the course is devoted to understanding, describing, and reflecting on the competences that are needed to successfully operate in a professional environment:

- sensitive to management structures, politics and governance;
- personal communication skills;
- collaboration and personal effectiveness when working in groups;
- dealing with setbacks, disappointments, and feedback.

The course is scheduled as a combination of a 'group internship' at Hendrix Genetics, and training and exercises related to professional skills. In a period of 4 weeks, groups of students work full-time on an animal genetics-related assignment. This assignment fulfills the following criteria: it should be a commissioned multidisciplinary assignment, concern an authentic case, offer a certain level of complexity, reflect various interests and stakeholders, and it should require an academic (master) level to address the issue.

The learning outcomes: after successful completion of the course students will be able to:

1. Contribute at an academic level to the execution of a multidisciplinary project, both in terms of process and content, related to the discipline of Animal breeding, by gathering, selecting, and analysing information and integrating this into a proposed solution to the assignment given by the commissioner.
2. Report, discuss and defend viewpoints and conclusions in a professional, academic and a collaborative manner before representatives of the commissioner and other stakeholders involved (demonstrate the ability to engage in perspective-taking).
3. Reflect on their personal functioning in and contribution to a professional team.
4. Demonstrate academic competences to execute the team assignment, within the complex (inter) national environment of a professional organisation.
5. Reflect on the work culture of the organisation and its decision-making process.
6. Further analyse the competences that are needed to be successful in a professional environment, as encountered during the assignment, and reflect on these in a self-evaluation.

From an educational point of view, the Breeding Lab can be seen as a 'pressure cooker', due to its short time frame of 4 weeks. It requires students to apply the 'learning by doing' mentality and to have their hands on the assignment from the very first moment. It also requires collaboration and assignment of specific tasks within the teams, and knowing about and respecting each other's strengths and weaknesses.

Professional skills training modules are part of the course, and are given by professionals from the 'Education and Learning Studies' chair group of Wageningen University. The first of the three skills training modules, mostly focusing on intercultural awareness, is planned before the students start the 4-week period. The other two skills training modules are given along the way, and focus on team roles (training 2) and conflict resolution skills (training 3).

Intercultural and collaboration skills are an important part of the course. The target group for the Breeding Lab in its current form, are the first-year MSc students of the European Master in Animal Breeding and Genetics. Given the nature of that programme, this is a highly diverse group of students, representing many different nationalities (Table 1). Hence, intercultural skills, as well as communication and collaboration skills, are an important aspect of the competences to be developed and applied in the course.

Each student team of 4-5 students is assigned to an experienced R&D member from Hendrix Genetics. These experts are indispensable in supervising the content of the assignment. This entails clarifying the content of the assignment, getting the right (company) information at hand, and making sure the students keep heading in the right direction leading to a recommendation or outcome that is useful for the company.

At the same time, the teams get coaching from experienced teachers from Wageningen University, focusing on the group process, personal development of team members and reflection on roles and tasks within the teams.

Results

The course started in academic year 2019-2020 and has run two times, in two consecutive years. The third offering is taking place at the time of writing (January 2022). The composition of the groups in terms of nationalities is given in Table 1.

Experiences from the viewpoint of industry-partner Hendrix Genetics. As Hendrix Genetics, we recognize the importance of introducing students during their training to practices in the industry. That is why we, like colleagues from other breeding organisations, provide guest lectures in course at the university and do offer internships for students. We are very pleased with this new course which gives us the opportunity to introduce a larger group of students to the way of working in a company. The interaction with the students and the results of the assignment help us in finding new or better solutions. Not only the students but also the geneticists involved in the supervision benefit from the interactions during the Breeding Lab.

Experiences from the perspective of Wageningen University. We started the course in 2019-2020 from scratch, with two groups of motivated and very diverse students and in good collaboration with Hendrix Genetics. The course has taught us once again how important students' personal skills are, for a student team to be successful. One of our tasks as coaches is to make students aware of the difference between knowledge-based skills and the personal skills required to be successful in a team. Coaching students on this type of behaviour is sometimes challenging but is also very rewarding. Our goal is to establish an open atmosphere in which students can share their successes as well as their doubts. An important aspect of the Breeding Lab is its international composition. Students are generally unaware of the cultural differences that can lead to different attitudes and types of behaviour (indirect vs direct communication, time management, etc.) during teamwork. At worst, they can lead to counterproductive conflicts and group failure (Meyer, 2010). The first skills training course is therefore fully dedicated to cultural differences and creating understanding. The students, (especially Dutch students), experience this training in many cases as an 'eye opener'.

Table 1. International classroom in Breeding Lab, academic years 2020-2021, 2021-2022, and 2022-2023. Table shows an overview of students' nationalities per edition.

	Year		
Continent	**2019-2020**	**2020-2021**	**2021-2022**
Europe	Dutch (3)	Dutch (1)	Dutch (4)
	Austrian (1)	Irish (1)	German (1)
		Hungarian (1)	
Africa	Nigerian (1)	Ethiopian (1)	Ethiopian (1)
		Ghanaian (1)	
Asia	Bhutanese (1)	Chinese (1)	Mongolian (1)
	Bangladeshi (1)		Indian (1)
			Bhutanese (1)
Latin America	Bolivian (1)	Paraguayan (1)	
		Brazilian (1)	
Total number of students	8	8	9

Due to the pressure cooker nature of the course, we observe quite steep learning curves with our students. We therefore believe that the course is a valuable addition to the MSc programme.

Discussion

We asked for extensive feedback from students of both completed editions 2019-2020 and 2020-2021. Students indicated that they enjoyed a lot working on an assignment with a real company and taking a look into the corporate life of animal breeding. They particularly liked the skills training sessions. The intercultural fingerprint as well as conflict management skills training were equally preferred to each other by the students. This was due to simply interest and experiencing conflicts within the team, respectively. The students generally did experience good group feeling and considered the group size of 4-5 students as adequate in relation to the project. However, some students felt tension within the group and were convinced the skills training, especially regarding conflict management, could have helped them more with such issues.

Quotes from students: 'Great to have complete freedom to determine your own schedule and work on the assignment as a team. A lot of responsibility, a steep learning curve.' and 'I liked the set-up of the course where we had to solve a problem for a company. This was unlike my previous courses, which consisted of lectures and exams.'

One of the objectives of the Breeding Lab was to prepare students better for the job market, e.g. working in a breeding company. The assignments of the Breeding Lab appear to do just that: students work on real life problems, and meet and talk with R&D employees on how they perceive working in a breeding company. Students are generally surprised to find that working in an R&D environment can be equally challenging intellectually, as working in academia (e.g. as PhD student). Many EMABG students continue by doing an internship with Hendrix-Genetics.

As an outlook on future, the Breeding Lab is a clear success as non-EMABG students are also increasingly registering for this course. Students are attracted by the learning-by-doing approach and the high level of independence. The fact that the problems are real life problems that need a solution, rather than pre-cooked exercises makes all the difference for them. The set-up of the course can easily accommodate larger numbers of students. A potential bottleneck is the time that industrial partners can devote to assist/support the students. The current period of 4 weeks might be too short for the partner to get value out of the project.

References

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