FLIPPED CLASS EXPERIMENTATION WITH ITS STUDENTS WITHIN FOOD4GROWTH PROJECT

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Abstract

Food4Growth Erasmus+ project aims to improve the productivity and competitiveness of small and medium-sized enterprises in the agro-food industry marked by the limited use of "Food Innovation" systems, reinforcing the cross-sectoral professional profiles of the sector to improve the social acceptability of product innovation and agro-food processes.

The project delivered a full set of communication material targeted to the communication of food innovation. The content is divided into four modules: basic skills, strategic communication, negotiation and communication plan.

The flipped class format is provided for both trainers and students. The resource made within the project was used by students participating in the Ecotrophelia 2017 International event to make the communication plan for their innovative food products.

The format and the content were tested with 23 students of the fifth and 26 Students of the sixth cycle ITS Tech&Food based in CISITA (Parma, IT) and were provided by people from food industry associations, communication offices, Universities and training centres. Data about performance and satisfaction of students and teachers are being collected and analysed in the paper.

Keywords: food4growth, flipped classroom, communication, Erasmus+

1 INTRODUCTION

A recent study regarding engaging consumers in production, process, product and packaging knowledge carried out by Campden Bri [1] exposed that companies are focusing on assessing the risk of innovation through:

- Provide consumers of evidence-based information on food and drink sector and the main technologies concerning their primary production, manufacturing, distribution, as well as environmental impact – to obtain a more rational and 'risk-informed' discussion.

- Clarification of the role of the different actors involved in the food and drink sector, specifically: government, industry and other groups (e.g. media, single interest groups) active in promoting a more rational and 'risk-informed' debate.

- A better understanding of consumer distrust relative to new and emerging technologies in food production and provision to consumers of relevant evidence-based information.

- Better approaches to improve 'food literacy' (concerning for example cooking, food safety, healthy eating) in general and through education and healthcare.

- Understanding the role and impact of social media to the extensive debate on food

- Assessment of the implications of this aspect on the supply chain performance.

- Working with consumers on phenomena such as the 'sharing economy' and 'ambient intelligence' (Internet of things) to deliver products and processes that meet consumer needs and will.

In this context Food4Growth Erasmus+ project aims to improve the productivity and competitiveness of small and medium-sized enterprises in the agro-food industry marked by the marginal use of "Food Innovation" systems, reinforcing the cross-sectoral technical profiles of the sector to improve the social acceptability of product innovation and agro-food processes. Furthermore, Food4Growth offers an educational opportunity touching the skills of social mediation concerning controversial issues in the agro-food sector. Frequently new and innovative food products face criticism from the consumers, mostly concerning possible aspects of nutritional contents which may result in a threat to human health.

One of the project objectives was the implementation of innovative learning systems based on the "Flipped Classroom" method.

Nowadays online delivery is conventional in strategic plans correlated to teaching and learning in higher education. This is frequently associated with improving learning outcomes, decreasing the costs of instruction and innovation in teaching/learning [2].

The delivery of online learning is even more frequent in higher education institutions as an opportunity to modernise their work and create new channels for the improvement of creative, entrepreneurial, and critical thinking skills. Furthermore, online learning expands spatial limits, thereby improving access and convenience[3].

This approach is a significant opportunity to develop activities for active learning[4], cooperative learning [5], peer-assisted learning [6], and problem-based learning [7].

A recent study of Busato et al. [8], based on graduate students in a food chain logistics agricultural engineering course, show that students performed better and more uniformly when learning by the flipped classroom over the traditional face-to-face mode of instruction. Besides students appeared to exhibit a strong preference for the flipped classroom over the conventional face-to-face mode of instruction.

Regarding the industrial sector, a recent study of Acharya & Schilling [9] illustrates the potential benefits originating from the implementation of flipped classroom method for workers training. The focus of the study is the creation of Active Learning Tools (ALTs) to be provided with flipped classroom model, and specific exercises have been developed using an iterative development methodology. Once developed the ALTs will be made publicly available through a website so that the workers will access them everywhere and every time they want.

This work aims to illustrate the experience of making the Food4Growth training course, using the Flipped Classroom innovative learning method for food technicians and students to improve their overall innovative interaction and communication capacity. At last show performance and satisfaction of students and teachers involved in the Food4Growth project.

2 METHODOLOGY

The flipped class format is provided for both trainers and students.

In the Flipped classroom method the learning activities that are not requiring human interaction take place outside the classroom (online learning platform) and learning activities requiring human interaction take place in the classroom (face-to-face mode). The first mentioned activities allows to understand and apply basic concepts related to the subject matter. These activities are in preparation for the tasks that require human interaction and focus on higher levels of learning as described in Bloom's taxonomy [10].

The main tools used in the online learning platform were video, closed-problem solving, and quizzes. Early studies show that quality video lectures outperform traditional lectures [11]. Furthermore, a study of Bonham et al. [12] demonstrates that online homework is equally useful as paper and pencil. These, provide a solid base for the student to engage in activities requiring human interaction to improve their overall innovative interaction and communication capacity.

In this experimentation to make the online learning platform we have used Moodle®, a framework designed to provide educators, administrators and learners with a single robust, secure and integrated system to create personalised learning environments.

The format and the content were tested with 23 students of the fifth and 26 Students of the sixth cycle ITS course in food production and manufacturing based in ITS and CISITA (Parma, IT) and were

provided by people from food industry associations, communication offices, Universities and training centres.

2.1 Food4Growth training course

For the students, the content is divided into four modules: basic skills, strategic communication, negotiation and communication plan. According to background and competencies, students can decide to study across all the modules or just to focus on some of them.

2.1.1 Basic skills module

This module focus on the ability to know the organisational features of the company and the actors involved in the decision process making, and own basic corporate team building, communication techniques and styles.

23 Students of the fifth cycle ITS course in food production and manufacturing based in CISITA (Parma, IT) attending the basic skills learning module.

2.1.2 Strategic influencing and negotiation module

The Strategic Influencing and negotiation learning module of the Food4Growth provides a comprehensive learning content to train food technicians in managing reputational issues in the field of debated innovation in the food sector. Given an innovative product, this module focus on the ability to understand the market and identify and mapping relevant stakeholders in term of their position, level of influence, relevance, interest and position.

A full short course (6 weeks duration with a flipped learning time and 2 class meetings) with 26 students of the sixth cycle ITS Food & Tech course based in CISITA (Parma, IT) attending the Strategic Influencing and Negotiation learning module developed in a flipped modality.

2.1.3 Communication module

This module focus on the ability to rightly communicate innovation through the development of a consistent communication strategy to build up a consensus about the innovation proposed. Some students participating in the Ecotrophelia competition followed this module.

2.1.4 Negotiation: the Art of dealing module

This module focus on the ability to influence relevant stakeholders when appropriate through negotiation skills. Maintain an awareness of goals and objectives and navigates solutions towards desired ends, while maintaining relationships and supporting the consensus.

3 RESULTS

The Food4Growth training course was made available through an online learning platform. The course content consists of four modules detailed in Chapter 3.1.

Chapter 3.2 presents data about performance and satisfaction of students.

3.1 Training course content

The detail of the training course contents is shown in Table 1.

Table 1 - Training course content detail

Modules	Learning objectives	Material
Basic skills	Objective 1: Knowledge of organisational features	3 Documents 3 Videos 3 Assessments

	Objective 2: Knowledge of team building tools	3 Documents 3 Videos 1 Assessment
	Objective 3: Knowledge of main communication concepts	2 Documents 3 Videos
	Objective 4: Knowledge of effective communication strategies	1 Document 2 Videos
	Objective 5: Knowledge of write clear reports	1 Document 1 Video 1 Assessment
	Objective 6: Knowledge of innovation	4 Documents 4 Videos 4 Assessments 7 Additional material activities
	Objective 7: Knowledge of identifying dis/advantages of innovation	2 Documents 2 Videos 2 Assessments 9 Additional material activities
Strategic influencing and negotiation	Objective 1: Formulating a strategic approach	3 Documents 3 Videos 3 Assessments
	Objective 2: Managing techniques to evaluate stakeholder's actions	2 Documents 5 Videos 4 Assessments
	Objective 3: Building up simulated influence session	1 Document 8 Videos 3 Assessments 8 Additional material activities
Communication plan	Objective 1: Create a communication strategy	6 Documents 6 Videos 1 Assessment 2 Additional material activities

		6 Documents
	Objective 2: Create a communication plan	6 Videos
		1 Assessment
		6 Additional material activities
Negotiation: the Art of dealing	Objective 1: Distributive and integrative negotiation	3 Documents
		3 Videos
		1 Assessment
	Objective 2: Principles and elements of integrative negotiation	4 Documents
		4 Videos
		1 Assessment
	Objective 3: Cognitive biases	3 Documents
		3 Videos
		2 Assessments
	Objective 4: The preparation and the errors to avoid	3 Documents
		3 Videos
		1 Assessment
	Objective 5: Negotiation with yourself. Negotiation as a social skill	2 Documents
		2 Videos
		1 Assessment

As illustrated in the table above, the course has been articulated in 4 Modules, and 17 total Objectives which contains notes, videos, closed-problem solving, and quizzes. This material is meant to learn basic concepts related to improving innovative interaction and communication capacity referring the agro-food sector.

3.2 Basic skills module results

The students completed the module, with very high percentages:

22 out of 23 students followed the module and completed the test with 95,6% passing the module. The average was 91/100, much higher than in the previous year, where the average was 82/100. The students learned more and were very satisfied with the methodology. They indicate during the interview they learned more but the commitment was high.

3.3 Strategic Influencing and Negotiation module results

The activities, coordinated by "Osservatorio Permanente sui Giovani e l'Alcool" and "Sistemi Formativi Confindustria", were carried out on December 2017-January 208. Students were invited to follow the Strategic Influencing and Negotiation modules on the F4G platform for four weeks. A launching initiative presented the web-based resources before on line training while an end of the course in class discussion allowed learners to present their developed solutions to a simulation game of negotiation focussed on a Radler type beer (low alcohol content) combined with caffeine and taurine.

Student work has been both individual and group based. Each student had to develop a product strategy finalised to identify the wanted product in the market along materials provided on the F4G platform. Later four different groups of students had to develop and write a Social Acceptability Plan detailing actions to be adopted to minimise criticism from the consumers, the scientific community and the health authorities.

All students in the class, participating in the group activities, pass the module. As a result, the project work carried out by the four groups has been completed successfully by all teams and final grades are all above 80 out of a maximum of 100.

4   CONCLUSIONS

During the Flipped Classroom experimentation, the approach has proved to be highly successful in motivating learners' performance. Average outcomes are:

- personal work has been stimulating by all students that followed the course;

- Students that participate in the basic skills module have an attendance of the class of 96% while the average score was 91/100 compared to 82/100 for the previous year.

- The final grades of the students which deliver the assessments and participate in the class activity (co-working lab) were all above 80 out of a maximum of 100.

- The students attending both Flipped Classroom modules showed better knowledge uptake and, where available, better score in the test.

Students and teachers successfully participated in the Food4Growth innovative course and exhibited a preference for the flipped classroom method over the conventional mode of instruction.

The resources of all four modules available through the Food4Growth training course were successfully used by students participating in Ecotrophelia 2017 International event on food innovation to elaborate their communication plan.

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