

**ASSURING QUALITY  
IN FARM ANIMAL WELFARE CURRICULA:  
THE CASE OF WELFOOD CURRICULA**

**ASIGURAREA CALITĂȚII  
CURRICULEI BUNĂSTĂRII ANIMALELOR DE FERMĂ:  
CAZUL CURRICULEI WELFOOD**

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*The aim of the present study is to analyze virtual learning environments and to provide a framework for assuring quality in farm animal welfare curricula. The framework is constructed according to the experimental learning for a case study developed in the context of the Leonardo da Vinci Community Vocational Training Action Pilot Project entitled “WELFOOD-Promoting quality assurance in animal welfare-environment-food quality interaction studies through upgraded e-Learning”. WELFOOD addressed objectives such as improvement and competencies of the skills in vocational training to promote employability and facilitate integration and reintegration in terms of capabilities and knowledge, needed for improved technologies in animal husbandry and food industry.*

**Keywords:** farm animal welfare, food quality, environment, curricula, quality

### **Introduction**

WELFOOD is a Leonardo Da Vinci Community Vocational Training Action Project. Its complete title out of which the acronym is form is “Promoting quality assurance in animal WELfare – environment – FOOD quality interaction studies through upgraded e-Learning”. WELFOOD addressed objectives such as improvement and competencies of the skills in vocational training to promote employability and facilitate integration and reintegration in terms of capabilities and knowledge, needed for improved technologies in animal husbandry and food industry. Emphasis was laid on skills in food quality assurance issues related to animal welfare, environment and food quality interactions required by public perception due to their role in food safety and security as well as ethical considerations.

Animal production is faced with an increasing need of experts on the above topics. Scientists, farmers, retailers, consumers, decision-makers working in all stages of the animal production chain have to be well trained to assess the current risks for animal welfare, their interaction with the environment and their effect on food quality. The WELFOOD project addressed these issues by carefully designing the training procedures which were based on the following (Szücs et al., 2005):

- The balance among international core curricula vs. local specialities of teaching organisations on animal welfare, environment and food quality issues;
- A European dimension in the specific curricula in response to challenges;
- The promotion of human networks of European students and teaching staff interested in the specific area;
- The facilitation of mobility among similar study programs with different teaching/learning approaches;
- The need to foster comparability, compatibility, competitiveness and overall attractiveness of EU higher education in the disciplines in question.

In order to achieve the above, in the context of the project, it was suggested that e-learning offers an efficient method to support the continued need for training in animal welfare studies. It is pointed out in the Welfood project proposal (Welfood, 2005):

*“In comparison to existing teaching methods the Web-based learning provides novel, innovative and state-of-the-art measure covering new aspects in animal welfare - environment - food quality interactions. Switching over from traditional procedures to information and communication technologies in virtual teaching environment provides access to advanced training at all levels in higher education. Rapid and continuous changes in research, technology and quality assurance in the specific areas of animal and food sciences as well as teaching involve application of computer technology offering opportunity for efficiency, high speed of information transfer and transparency in QA schemes. European dimension of the proposal means international co-operation among counterparts and countries as well as networking in animal welfare - environment - food quality interactions. Thus, European knowledge society will be supported by structured and Web-based learning ties”.*

Based on the above analysis of needs the project consortium proceeded with the design and implementation of an e-Learning Web-based training system for WELFOOD. The purpose of this paper is to report on the quality assurance system applied for the evaluation of the WELFOOD e-Training system.

### **The WELFOOD e-Training System**

In the domain of animal welfare, the use of networked learning techniques is in its infancy, but a number of basic level e-learning courses are on offer. The e-Training Welfood system, developed in the context of the project is the first

systematically developed collaborative Networked Learning system in the interdisciplinary domain, which combines quality assurance in animal welfare, environment issues and food quality interaction studies.

The e-Training Welfood system aims to train students scientifically and technically to enable them to understand and resolve problems relating to welfare production, public health, food protection, quality and technology, environmental protection. It focuses on farm animal welfare principles and aims to promote quality assurance in animal welfare, environment and food quality interaction studies through courses offered via the Internet/Web. The programme module has the following key objectives for 'students' (Sossidou et al., 2007):

- to stimulate critical thinking on animal welfare issues which can be developed throughout the courses;
- to provide theoretical tuition/training resources on animal welfare principles;
- to illustrate with practical examples and case studies animal welfare concepts, ethical considerations, legal implications and cultural realities.

The programme module consists of three (3) learning units called courses:

- Animal Welfare;
- Environmental impacts on and of animals;
- Food quality and safety.

Each course consists of a number of smaller units called topics and each topic is divided into lessons. Lesson material consists of a number of related documents: html texts published as web pages highlighting the important points, downloadable Powerpoint presentations, Word and pdf documents. A list of references and useful web links is also provided for each lesson. The course environment is complemented by:

- a glossary of terms;
- a news information system and a calendar of events;
- a chat tool for synchronous communication between tutors and students;
- a discussion forum/ bulletin board facility for asynchronous communication;
- quizzes related to the topics of the course.

The learning units are delivered asynchronously through the Web server on a weekly basis. Lessons are published every week on the web server with relevant case studies and questions on the topic for students to download. Teaching Methods include tutoring and online discussions for further definition of terms and meanings and mentoring towards collaborative project work among groups of students. A list of discussions on different topics is maintained through the bulletin board and collaborative project work activities and discussions are organised through the discussion forum. Students contact tutors and facilitators through e-mail for tutorials and other academic advice. In several occasions synchronized meeting sessions are organised via Net-meeting.

## The importance of quality assurance

The objective of a Quality Assurance System (QAS) of training and learning is to bring about improvements through feedback and accountability. It has to be designed to focus on key aspects that influence quality in the study process and the support processes.

In joined Networked Learning programmes, as is the case of Welfood e-Training System, from the one hand, quality is usually assured by the qualifications of the academic staff involved in the development of the courses. On the other hand it is very important to apply a more systematic evaluation procedure, specially adapted to e-Learning/Networked Learning systems, in order to warrantee quality. The following principles form the basis for the development of the quality assurance system (Committee for Quality Assurance at NTNU, 2003):

- The primary objective of the quality assurance is not control, but improvement;
- Reporting is to take place in a way that fulfils this objective;
- The quality system is to be simple, robust and unbureaucratic;
- Routines for quality assurance, quality enhancement and evaluation are to be a natural and integrated part of training activities;
- The quality system is to ensure the quality of the processes that are important in and for the study programmes;
- Every time a programme is completed or a course is taught, it is regarded as an independent project with four phases: planning, implementation, assessment of the achievement of objectives and quality, and improvement/adjustment.

Moreover, a Quality Assurance System (QAS) for learning consists of the policies, attitudes, actions and procedures necessary to evaluate the system and ensure that quality is being maintained and enhanced. The purpose of such an evaluation (Lockee et. al., 2002) is to:

- Help e-learning developers and lecturers to improve upon the planning and design of future e-learning courses;
- Encourage potential e-learning students to enroll on future e-learning courses;
- Help to justify the funding for the course and future e-learning courses.

The main obstacles in using a QAS for the development and delivery of e-learning courses and programmes include (Kefalas et al., 2003):

- the incompatibility of assessment and QASs between institutions and countries in Europe: currently there is no agreement on a generally accepted QAS in Europe even for traditional modes of delivery;
- the absence of a generally accepted QAS for the Networked Learning mode of delivery and for joint study programmes, i.e. programmes developed by more than one institution and offered through the use of ICT platforms.

In order for collaboration between partner institutions to take place, it is necessary to develop a joint approach to the description, development and delivery of Networked Learning courses so as to create a common working framework. Such a framework, although semi-formal, provides a solution for course partners to face the above issues in a uniform way. In developing such a framework a number of quality indicators were considered. These quality indicators on the one hand play the role of design requirements and on the other hand may be used as evaluation criteria in order to apply quality assurance procedures for the Welfood e-Training system in question. They are categorised as follows:

**Essential elements:** A group of academics collaborating towards the development of a common course should agree on a number of essential elements before they proceed further to develop the course. These elements include:

- Learning outcomes
- Content / material
- Delivery methods
- Coursework/exercises
- Assessment scheme
- Examinations

Learning outcomes among them is the most crucial element for the joint development of the course since all of the other above elements should be directly linked to them. At least formally, the learning outcomes of a course (and also of a whole programme) form the core of investigation of a quality assurance check. First of all, learning outcomes should match with level of the programme (e.g. undergraduate, postgraduate, training etc.) and be subset of the learning outcomes of the programme stated in the programme specification. Apart from the above, if academics collaborating come from different institutions (and from different countries as in the case of Welfood partners) the following should be taken into consideration (Sossidou et al., 2005):

**Use of standard course credit scheme.** For example, the adoption of ECTS-NL (Kargidis et al., 2003), that is an extension of the European Credit Transfer System (ECTS) for Networked Learning environments, can provide the necessary structure for creating transparency to networked study courses and programmes;

**Development of flexible study plans** (Bacon et.al. 2004). The development of study plans in a generic and flexible way is consider crucial and addresses all stakeholders of e-Learning such as developers, quality assurance bodies, delivery teams and students;

**Development strategy.** The strategy for developing the course should be domain sensitive and is based on a thoughtful identification of the distributed target group. In this sense it is accepted that no global strategy for developing e-Learning courses exists;

**Distributed Development of Course Material.** The joint development of the course is extremely useful when it is accomplished in a collaborative manner

and not simply in a cooperative one. This means that inputs come from members of the group that share expertise which is not readily available to other members;

**Distributed Delivery of the course.** Members of the group develop course material bearing in mind that it will be delivered in a distributed manner, thus providing the necessary flexibility and creating an added-valued course.

### **Evaluation of the WELFOOD e-Learning courses**

In the context of Work Package 4 (Recommendations for inclusion and test products in curricula of courses) the members of the project partners have followed a procedure for the assessment and evaluation of the Networked Learning courses, which were developed and then offered at a pilot phase.

The aim of this activity was: a) to determine if training needs are covered through the various topics of the modules/courses developed, and b) to ensure quality of the new curricula and teaching technologies. Test results were collected regarding the quality by running the courses at a pilot level and following a summative evaluation procedure through the use of questionnaires. The summative evaluation was carried out upon the completion of courses and it helped to determine if the Networked Learning courses were successful. The information from summative evaluation was then used for amendments and transformations in order to finalise the courses.

Three (3) categories of quality were identified for the evaluation procedure, namely:

1. Quality of Content
2. Quality of Didactics
3. Quality of ICT/E-Learning Methods Quality.

Based on these categories a questionnaire was designed to be addressed to students of the courses. The questionnaire was divided in three sections:

- the first section to collect some important personal data of the student, such as student's occupation, previous knowledge on the topic, etc.;
- the second section to evaluate e-Learning course content and quality of didactics (8 questions);
- the third section (12 questions) to evaluate the functionality of the e-Learning course environment.

At the end of the questions, an open question has been added to ask students about their general comments and remarks on the e-Training System as a whole and the Networked Learning courses in particular. Additionally a review form, based on the items of the questionnaire, was designed to be used by Welfood partners, who had to contact domain experts in the field for their opinion on the quality of the e-Training System and the courses. Each one of the three Networked Learning courses available through the Welfood e-Training System was evaluated by the use of separate questionnaires given to participant students from the partner countries.

The results of these questionnaires together with the qualitative evaluation of domain experts reported in the review forms of the partners are summarised in

Tables 1 (Networked Learning Course Content evaluation) and 2 (Networked Learning course environment evaluation) (Stamatis, 2007).

With regards to the evaluation results of the three courses it has to be noted that there were no serious differences from course to course which means that the Welfood e-Training system was developed in a uniform way. This applies both course content evaluation and course environment evaluation. In general having completed the courses, the students feel that they have gained a very good knowledge on the topics and that the educational material covered many aspects of theory concerning the Welfood project and science.

Table 1.

**Networked Learning Course Content Evaluation**

<b>A/A</b>	<b>Question</b>	<b>General Opinion</b>
<b>1</b>	Q4: Are the aims and objectives of the course well specified?	It is satisfactory but could be more clear
<b>2</b>	Q5: In terms of the domain knowledge content the degree of details provided by the lessons, covers student needs?	Covers their needs
<b>3</b>	Q6: The length of the Power Point presentations was:	Appropriate
<b>4</b>	Q7: Was the length of the full material in PDF format	Disagreement! Appropriate vs too long
<b>5</b>	Q8: How important do you consider the inclusion of multimedia by means of relevant static pictures at different points of the lessons presentation	Very important on the average
<b>6</b>	Q9: How important do you consider the inclusion of multimedia material by means of relevant videos and sound inserted at different points of the lessons presentation	Very important on the average
<b>7</b>	Q10: How important do you consider the inclusion of the glossary?	More or less important
<b>8</b>	Q11: How important do you consider the inclusion of self-assessment quizzes?	Very important in most of the cases

Furthermore, throughout the educational process, students were constantly stimulated for further reading by proposed internet links etc. Some minor problems were reported in that there is an overlapping between lessons (which sometimes

confuses the students). Also it is pointed out that there is a need for more video multimedia presentations which could be integrate in a video-on demand service.

Table 2.

**Networked Learning Course Environment Evaluation**

<b>A/A</b>	<b>Question</b>	<b>General Opinion</b>
<b>1</b>	Q12: The web site of the course is attractive?	Very attractive or somewhat attractive
<b>2</b>	Q13: Directions for using the site are provided if necessary?	Disagreement! YES vs NO
<b>3</b>	Q14: If YES in Q13, do you find those directions:	Disagreement! Very helpful vs somewhat helpful
<b>4</b>	Q15: The homepage downloads efficiently?	From “somewhat efficiently” to “very efficiently”
<b>5</b>	Q16: Do you have difficulty finding information?	No difficulty in most cases but some had difficulties
<b>6</b>	Q17: Is the web site of the course easy to navigate in general?	From “somewhat easy” in most of the cases to “very easy”
<b>7</b>	Q18: The course was organised as a hierarchy of topics and lessons. Was this course structure well implemented and easy to navigate?	Answers vary: from “very easy” or “somewhat easy” to “sometimes confusing”
<b>8</b>	Q19: Navigation buttons “Show all topics” “Show only one topic” where used as means for contents navigation. Their use was:	General disagreement! From “very easy” to “not easy at all”
<b>9</b>	Q20: Each lesson was organised as a collection of files (a power point presentation, a document including full material, pictures and videos). Switching between these files while following the lessons was:	Very easy in most cases
<b>10</b>	Q21: During course delivery communication between teachers and/or students was implemented through Chat rooms, Forums and News. Did you find communication support?	Disagreement! “very helpful” or “somewhat helpful” vs “neither helpful nor unhelpful”

A/A	Question	General Opinion
11	Q22: Which of the above communication means was most appropriate for you?	Asynchronous communication mostly (Exception in course 3 where answers are 50-50% synchronous-asynchronous)
12	Q23: Did you find off-site links provided through course material that open in new windows appropriate?	Appropriate

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### References

1. Bacon, A., Kargidis, T., Petridis, M., Stamatis, D., Windall, G., 2004, A Generic Framework for Describing Study Plans for Networked Universities using Meta-Data, *Journal of Information Technology Impact*, **Vol. 4**, Issue 1
2. Committee of Quality Assurance, 2003, Quality assurance of teaching and learning at the Norwegian University of Science and Technology
3. Kargidis, T., Kefalas, S., Stamatis, D., Tsadiras, A., 2003, Towards a European Credit Transfer System for Networked Learning (ECTS-NL), In Proceedings of the *International Conference on Networked Universities and e-Learning*, Valencia, Spain, May, 2003, ISBN 84-9705-369-9
4. Kefalas, P., Retalis, S., Stamatis, D., Kargidis, T., 2003, Quality Assurance Procedures and e-ODL, In Proceedings of the *International Conference on Networked Universities and e-Learning*, Valencia, Spain, May, 2003, ISBN 84-9705- 369-9
5. Lockee, B., Moore, M., Burton, J., (2002), Measuring SuccessQ Evaluation Strategies for Distance Education, *Educause Quarterly*, **no.1**, pp. 20-26
6. Sossidou, E.N., Stamatis, D., Szücs, 2005, Development of Quality Indicators for e-Learning in the Domain of Farm Animal Welfare, In Proceedings of the *56th Annual Meeting European Association for Animal Production*, Uppsala, Sweden, 5th-8th June, 2005
7. Sossidou, E.N., Stamatis, D., Szücs, E., Geers, R., 2007, Developmental research on Quality Indicators for e-Learning in the field of Poultry Welfare, *World's Poultry Science Journal*, **Volume 63**, September 2007, number 3, pp 413-420

8. Stamatis, D., 2007, Welfood e-Training System : External Evaluation Report
9. Szücs, E., Geers, R., Praks, J., Poikalainen, V., Sossidou, E., Jezierski, T., 2005, Improving skills on food quality and safety issues in the Leonardo da Vinci Vocational Training Project WELFOOD in virtual environment., In Proceedings of the *56th Annual Meeting European Association for Animal Production*, Uppsala, Sweden, 5th-8th June, Session MNLPSC1.12, 2005
10. Welfood, 2005, Welfood: Promoting quality assurance in animal Welfare – environment – Food quality interaction studies through upgraded e-Learning project proposal, Leonardo Da Vinci Community Vocational Training Action Project no 04/B/F/PP-170001