

The Public's Expectations Regarding the Green Sector and Responsive Practices in Higher Agricultural Education

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Learning in the green sector is red hot

World population

- 2004 6 billion people
- 2020 8 billion people (estimated)



Pressure

- **Secure food production**
- **Food safety**
- **Environment**
- **Competing claims**

Scandals and conflicts

- **Abuses in cattle markets in the Netherlands**
- **Foundation of Animal Rights**

Competent human resources are needed ...

- **Basic education for all**
- **Vocational qualifications**
- **Professional education**
- **Academic education**
- **Learning in the workplace**

who can cope with the challenges ahead ...

- Quality
- Cheap food
- New delivery methods
- Novel food
- Dashboard dining (15% in the US!)
- Diets
- Lifestyle
- Health and nutrition
- Safety concerns
- Ethical concerns
- Migration and ethnic food



and with complexity in innovation ...

- **Product improvement**
- **Process improvement**
- **Systems innovation**

and within the reality of social games.

- **The number of players is growing**
- **Stakes and prizes are getting higher**
- **Transformation of roles of players**
- **More rules which permanently change**
- **Ambiguous information**
- **More interactions**
- **More conflicts of interest**
- **The necessity to play different games simultaneously**
- **Cheating and manipulations**
- **Absence of a neutral umpire**



Expectations and responses by HAE

Natalia Ernstman

- Literature review
- Site visits and interviews
- Analysis of documents
- Telephone and email follow-up
- Universities:
 - Austria – Universität für Bodenkultur Wien (BOKU)
 - Czech Republic – Czech university of Agriculture (CUA)
 - Denmark – Royal Veterinary and Agricultural University (KVL)
 - France – Institut Supérieur D'Agriculture Rhone-Alpes
 - Germany – Hohenheim University and Technische Universität München (TUM)
 - Hungary – Corvenus
 - Ireland – University College Dublin
 - Poland – Warsaw Agricultural University (SGGW) and Agricultural University of Poznań
 - Romania – Agricultural Science University Bucharest
 - Spain – la Politécnica de Madrid
 - United Kingdom - Newcastle University

Expectations of the public identified by HAE

- Dealing with the complexity of the contemporary society
- Decreasing the gap between science and society
- Preparing students for the increased competition
- Responding to internationalization
- Towards a bio-based economy
- Human resources development (extension - consultancy)
- Responding to the wishes of the capricious consumer
- Decreasing the gap between the consumer and the agricultural sector
- Dealing with the consumer paradox
- Sustainable production/quality orientation
- Considerations about GMOs
- Animal welfare
- Food security



Pertaining competencies 1

- understand different sides to an issue and deal with conflicting views
- get scientific information across to society
- explain complex problems in 'layman's language'
- use a holistic view when analyzing issues and problems
- effectively use communication skills
- communicate in foreign languages
- establish contacts abroad
- communicate with people from different cultures
- participate in discussions on natural resource management in a global context
- use an innovative/creative approach in problem solving
- combine activities
- use practical and theoretical knowledge and experience
- speak on farmer's level
- align information to specific target group

Pertaining competencies 2

- use an analytical approach in judging situations
- seeing and understanding connections between phenomena
- be flexible/agile to effectively act upon trends
- communicate agriculture in a positive way to the public
- transfer information to the consumers
- talk to different target groups (farmers, consumers etc)
- understand motives of stakeholders
- decide which economic model they want to support
- see opportunities and make consistent decisions
- apply the concept of quality
- apply environmental, health and social issues
- formulate an informed opinion about GMO
- think critically



Pertaining educational practices 1

- Language courses
- Subjects on intercultural education
- Student-exchanges programs
- Strategic networks with leading international universities
- Interdisciplinary education
- Trial stations
- Merging universities and with more practical schools
- Joint lectures
- Joint courses
- Joint master programs
- Integrating practical and theoretical knowledge

Pertaining educational practices 2

- External students providing practical education
- External organizations providing practical education
- Thematic courses
- Project-education
- Problem-based learning
- Communication skills courses
- Opportunities for student presentations
- Real-life multi-stakeholder projects
- Education-industry collaboration
- Venture cup and yearly industry convention



Educational innovations in NL 1

- Project education (college of Larenstein in Velp)
 - social learning in self-directed student teams
- Problem-oriented education (School of Medicine of the University of Maastricht)
 - integrated problem analysis
 - information finding and processing
 - team learning
 - realistic problem solving
- Academic Master Cluster (Wageningen University)
 - multi-disciplinary design and problem solving
 - real assignments

Educational innovations in NL 2

- Computer simulations (Wageningen University - FNSG)
 - safety
 - less pollution
 - corrections of misconceptions
 - heuristics development
- Computer-based collaborative learning (University of Utrecht)
 - a-synchronous network-based knowledge construction
 - virtual discussions in ill-defined knowledge areas

Educational innovations in NL 3

- Video-based case study and problem solving techniques (College of Larenstein Wageningen)
 - learning to handle new and emotional situations
 - negotiation, and conflict resolution
- Competence development (widely used)
 - portfolio
 - competence assessment
 - personal development plans
 - coaching
 - feedback
 - reflection
- Entrepreneurial learning (College of Goes)
 - models of small business education
 - business simulations
 - inspiring learning environments of entrepreneurs

Lessons from bèta-gamma integration (BGI) in education in Environmental Education

- Necessity of BGI
- Needed bèta and gamma knowledge
- Language and way of thinking
- Continuous learning lines
- Mutual interest of students
- Mixed teachers groups
- Knowledge of teachers
- Exams

Learning with future – multi-agent learning

- Knowledge circulation
 - Research
 - Practice
 - Education
- Knowledge co-creating agents
 - Student teams
 - Entrepreneurs
 - Teachers
 - Researchers

Learning activities in innovation processes of entrepreneurs

Entrepreneurial learning activity	n	%
Reflection	21	19.8
Obervation	16	15.1
Experiment	12	11.3
Performing occupational tasks	11	10.4
Checking information	9	8.5
Discussion	9	8.5
Conversation	6	5.7
Receiving feedback	6	5.7
Asking a specific question	5	4.7
Holding on to a personal vision	4	3.8
Replication	4	3.8
Acquiring knowledge through training	3	2.8
	106	100.0

Inspiring learning arrangements 1

- Master class
 - Workshops, cases, court game
- Clinic
 - Demonstrations, audits, benchmarks
- Workshop
 - Brainstorms, mindmapping, creative sessions, scenario-development
- Laboratory
 - Model development, practice simulation, research, concept development
- Academy
 - Classes, lectures, seminars, symposia
- General rehearsal
 - Training, conducting, development of cooperation and routines, presentation

Inspiring learning arrangements 2

- Entrepreneurs café
 - Lectures, discussion, teamquiz, socio drama
- Boxing ring
 - Debate, panel discussion, game, training and coaching, competition
- Kitchen table
 - Dialogue, group conversation, coaching conversation, reflection conversation, consultancy session
- Utopia
 - Discussion, negotiation, presentation to the public
- Study club
 - Story-telling, company visit, company audit, systems analysis, presentation
- Expedition
 - Excursion, blind date, study tour, survival, journey report

Inspiring learning arrangements by results

Arrangements

- Master class
- Clinic
- Workshop
- Laboratory
- Academy
- General rehearsal
- Entrepreneurs café
- Boxing ring
- Kitchen table
- Utopia
- Study club
- Expedition

Results

- Insight and experiential knowledge
- Skill
- New perspective
- Viability of solutions
- Multidisciplinary knowledge
- Collective routine
- New networks
- Improved performance
- Deepening network
- Innovation
- Mirroring company results
- Self-knowledge and new values



Conclusions

- New expectations of the public
- New competencies needed to be provided by HAE
- Various expectations reviewed in EU
- Pertaining competencies identified
- Many educational responses identified in EU
- Innovative practices in NL described
- New recent approaches studied/designed
 - Bèta-gamma integration in education
 - Multi-agent education
 - Authentic learning of entrepreneurs
 - Inspiring learning arrangements
- The can be employed in matching HAE with diverse expectations of a multitude of publics

