Quality assurance in agricultural education and training

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Overview

- DESD and agriculture
- Quality assurance in agriculture
- Developing a good quality training course
- Quality assurance in education
- Revisiting the good quality training course
- Making quality assurance work
- Quality assurance models in education
- The CGIAR and quality assurance in AET
- DESD and quality assurance

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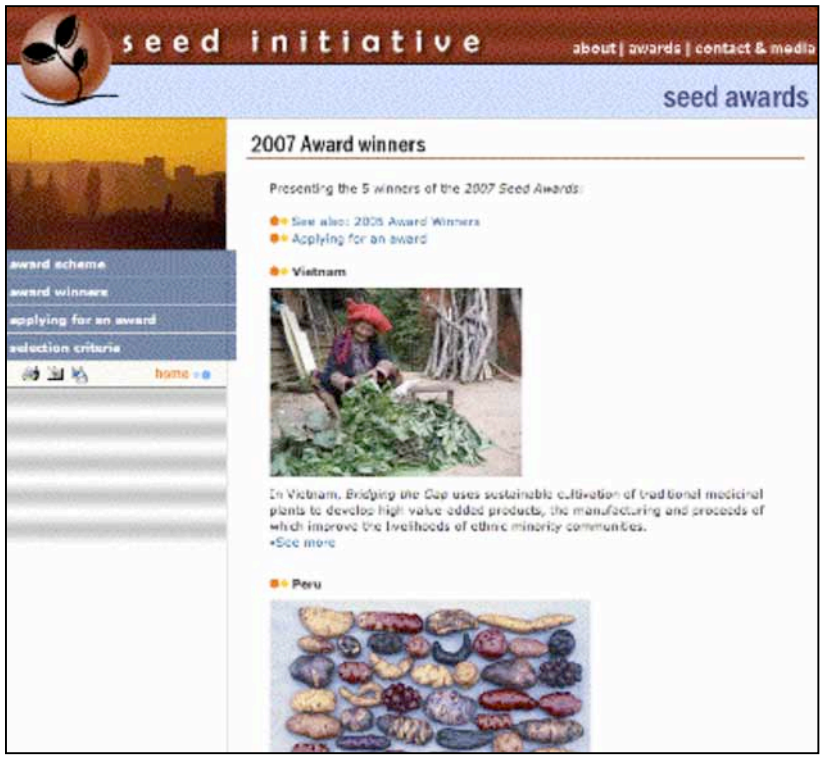
The T'ikapapa initiative

The T'ikapapa initiative

Linking small scale farmers from the Andean highlands in Peru to new urban markets, taking advantage of potato biodiversity and tap into new market opportunities



Key issues/problems/challenges (1)

- Lack of international policy or academic consensus on what counts as “quality” in (ecologically sustainable) agricultural research, education, training and capacity-building.
- Lack of clear policy or high level academic dialogue forums on ecological or agricultural sustainability issues in quality education debates or agreements to date.
- Questions/concerns about current subjectivity (political, corporate) with lack of scientific certainty and unclear objectivity (scientific or pedagogical contents/processes) in empirically defining or measuring quality.
- Debates with some preliminary policy, corporate or academic documents pointing to sustainability goals standards and action. (But policy incoherence, and lack of shared/uniform implementation).
- Sustainable agriculture education (academic courses, degrees, etc.) including agro-ecology, food systems, etc. is an emerging and growing academic field.

Key issues/problems/challenges (2)

- However, there is a decline in the integrity and independence (including threats to academic freedom and human rights violations) of public sector higher education.
- Globalization across the education sector is increasing pressures toward privatization while private/industrial training backed by private interests, money, and foundations guiding research goals.
- No clear political mandate or shared academic vision to support quality public research or education in sustainable agriculture (either in curriculum content, through scientific peer-review processes, institutional accreditation mechanisms, or program evaluations).
- Continued tensions/conflicts between
  - industrial, chemical, biotech, GMO and export-led agriculture models (with associated corporate business training and research needs/demands) and
  - local, organic, small farmer, subsistence approaches to academic studies/educational content (with different perspectives on quality learning needs, ethics, human rights, farmers' rights, indigenous rights, labour quality, agro-ecology, and environmental/social sustainability).

UN DESD (2005-2014)-UNESCO lead agency

Quality dimensions

- “The goal…is to integrate the principles, values, and practices of sustainable development into all aspects of education and learning. This educational effort will encourage changes in behaviour that will create a more sustainable future in terms of environmental integrity, economic viability, and a just society for present and future generations.” (http://www.unesco.org/education/desd/)
- As UNESCO notes

  “EFA and the MDGs introduced the concept of quality education into their goals and international development targets. Providing any education, regardless of quality, is not the goal. A myth exists that access must come before quality. Both can occur simultaneously. A large debate continues about what a quality education is.”

UN DESD (2005-2014)-UNESCO lead agency

UNESCO Quality perspectives (1)

- “At this point in time, quality education has essential characteristics that can be implemented in many culturally appropriate forms. Quality education:
- supports a rights-based approach to all educational endeavours. Education is a human right, and therefore quality education supports all of the human rights;
- is based on the four pillars of Education for All – learning to know, learning to do, learning to live together and with others, and learning to be (Delors et al., 1996);
- views the learner as an individual, a family member, community member, and a global citizen and educates to create individual competency in all four roles;
- upholds and conveys the ideals of a sustainable world – a world that is just, equitable, and peaceable, in which individuals care for the environment to contribute to intergenerational equity;

UNESCO Quality perspectives (2)

- takes into consideration the social, economic, and environmental contexts of a particular place and shapes the curriculum or programme to reflect these unique conditions. Quality education is locally relevant and culturally appropriate;
- is informed by the past (e.g. indigenous and traditional knowledge), is relevant to the present, and prepares individuals for the future;
- builds knowledge, life skills, perspectives, attitudes and values;
- provides the tools to transform current societies to more sustainable societies;
- is measurable."

- (from: United Nations Decade of Education for Sustainable Development 2005-2014: International Implementation Scheme, ED/DESD/2005/PI/01, p. 27)

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Dimensions of food quality

AGRICULTURE

Instruments Measure The Quality of Food

➤ MACHINES are now displacing humans in another field—that of quality measurement of foods. Scientists in the Agricultural Marketing Service of the U. S. Department of Agriculture are using machines to find out the redness of a tomato, the amount of fat in commercial beef, and how much mold there is in corn.

Other instruments judge the maturity of apples by measuring the light transmitted by the sample. A still unnamed mechanism detects various quality defects in foods.

All these developments, which measure objectively food quality without destroying the sample, will help assure the consumer of better products in the market.

• Science News Letter, 80:350 November 25, 1961

Quality

ability of a set of inherent characteristics of a product, system or process to fulfill requirements of customers and other interested parties (ISO 9000:2000)

Dimensions of food quality

Public / corporate certification → Quality attributes

Quality attributes → Process attributes → Extrinsic indicators

Quality attributes → Product attributes → Extrinsic indicators

Quality attributes → Product attributes → Intrinsic indicators

Codex Alimentarius (FAO & WHO)

A collection of food standards, codes of practice, guidelines and other recommendations

Codex Alimentarius (FAO & WHO)

CODEX STANDARD FOR RICE

CODEX STAN 198-1995

The Annex to this standard contains provisions which are not intended to be applied within the meaning of the acceptance provisions of Section 4.A (I)(b) of the General Principles of the Codex Alimentarius.

1. **SCOPE**

This standard applies to husked rice, milled rice, and parboiled rice, all for direct human consumption; i.e., ready for its intended use as human food, presented in packaged form or sold loose from the package directly to the consumer. It does not apply to other products derived from rice or to glutinous rice.

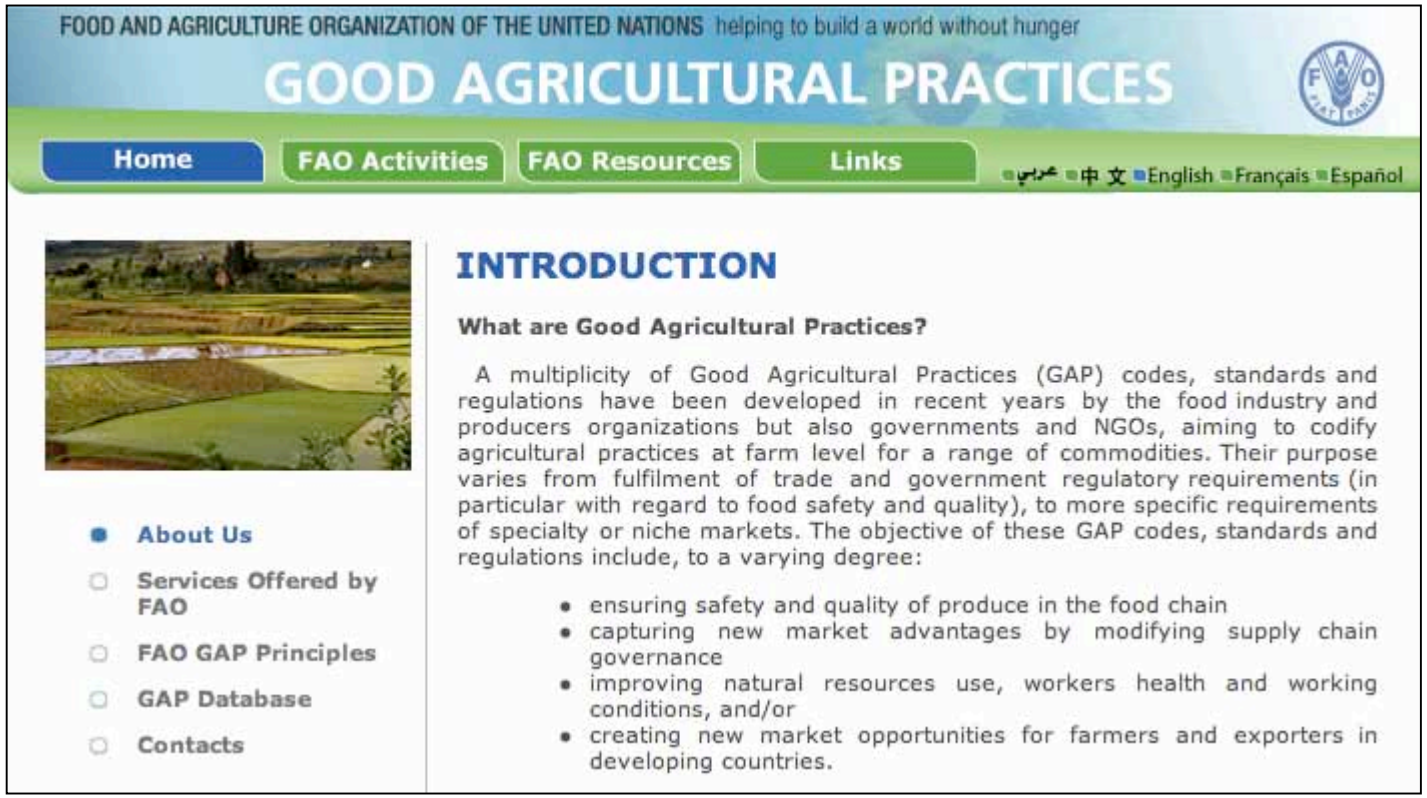
2. **DESCRIPTION**

2.1 **Definitions**

2.1.1 **Rice** is whole and broken kernels obtained from the species *Oryza sativa* L.

Good Agricultural Practices (FAO)

An international regulatory framework and associated codes of practice to minimize or prevent the contamination of food



Related ISO standards

- ISO/IEC 17025:1999 Standard or Principles of Good Laboratory Practice
- ISO 22000: 2005 Food safety management systems -- Requirements for any organization in the food chain
- ISO 9001:2000 Quality management systems -- Requirements

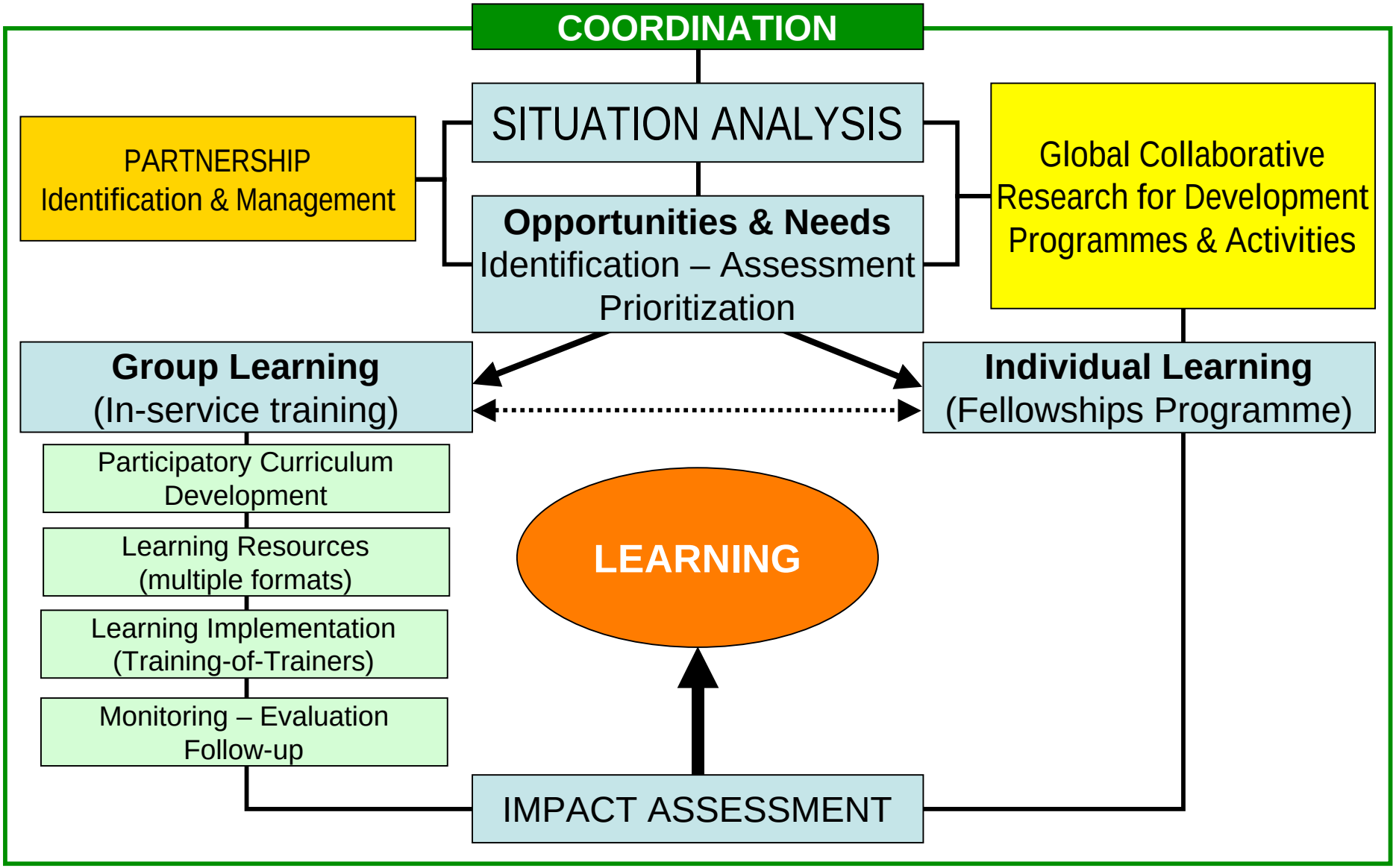
Conducting quality agroforestry research

Conducting quality agroforestry research

- Context and justification
- Priority setting
- Hypothesis formulation
- Methods and tools
- Results
- Upscaling

Conducting quality agroforestry research

Conducting quality agroforestry training



Conducting quality agroforestry training

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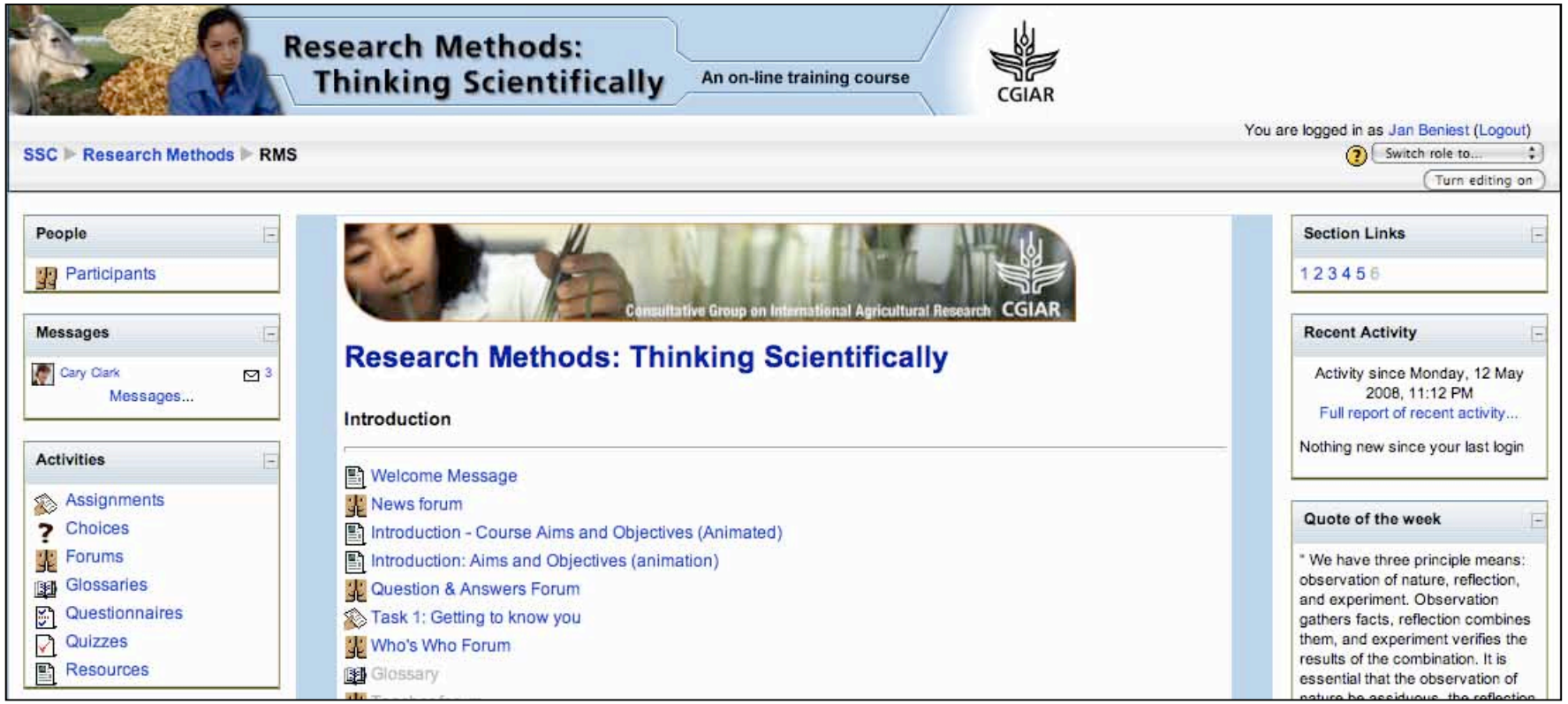
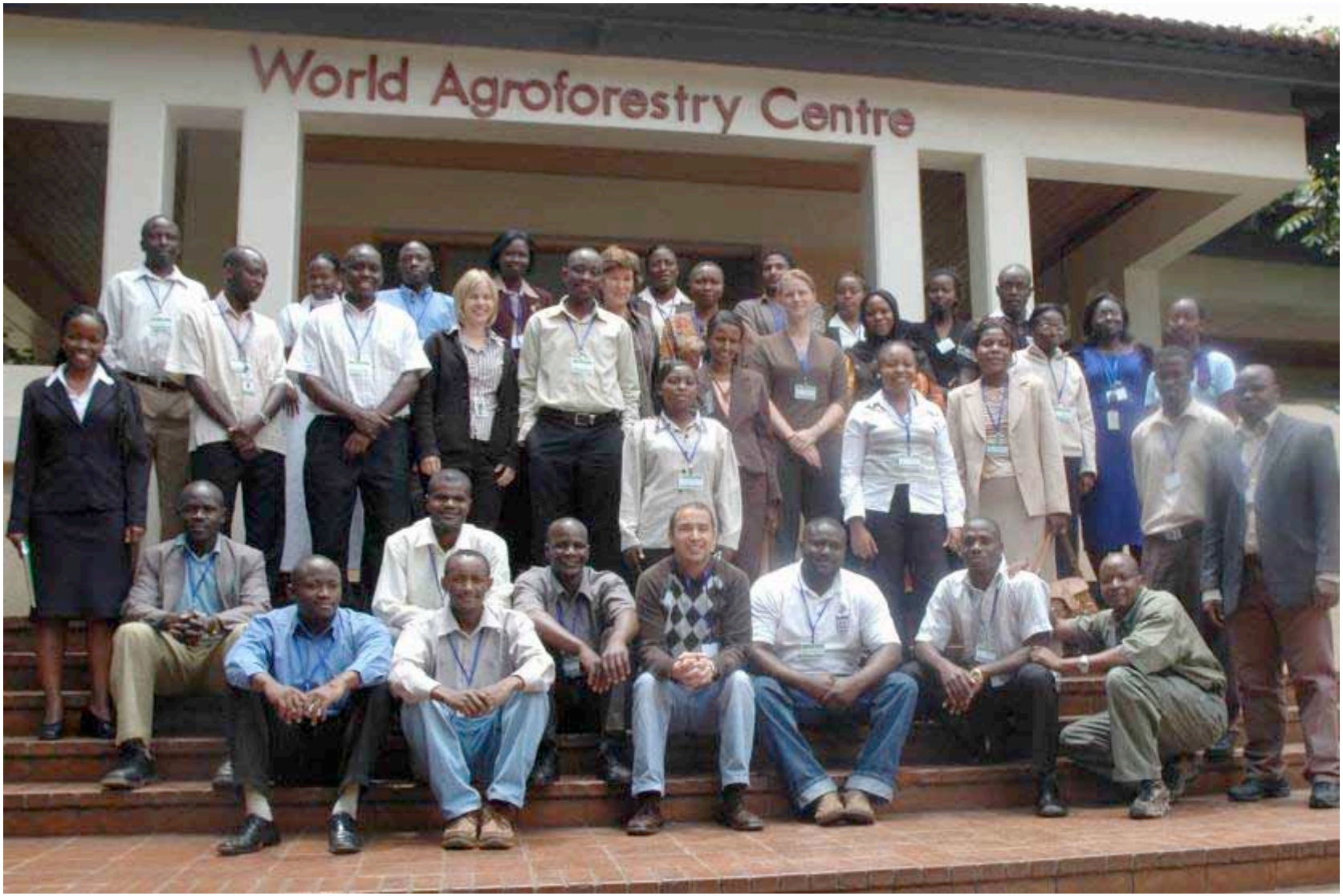
Teaching research methods on-line



Managing a blended learning event

Developing a good quality training course

Views from participants & facilitators



Conclusions

- Select small and homogeneous target groups
- Provide an introduction course on the LMS used
- Intensive facilitation is necessary (retention)
- Requires adapted instructional design
- Provide SMART learning objectives / instructions
- Selected resources/references on a DVD / CD
- Detailed impact assessment/cost efficiency analysis needed
- Think of the potential to develop “Open Educational Resources”

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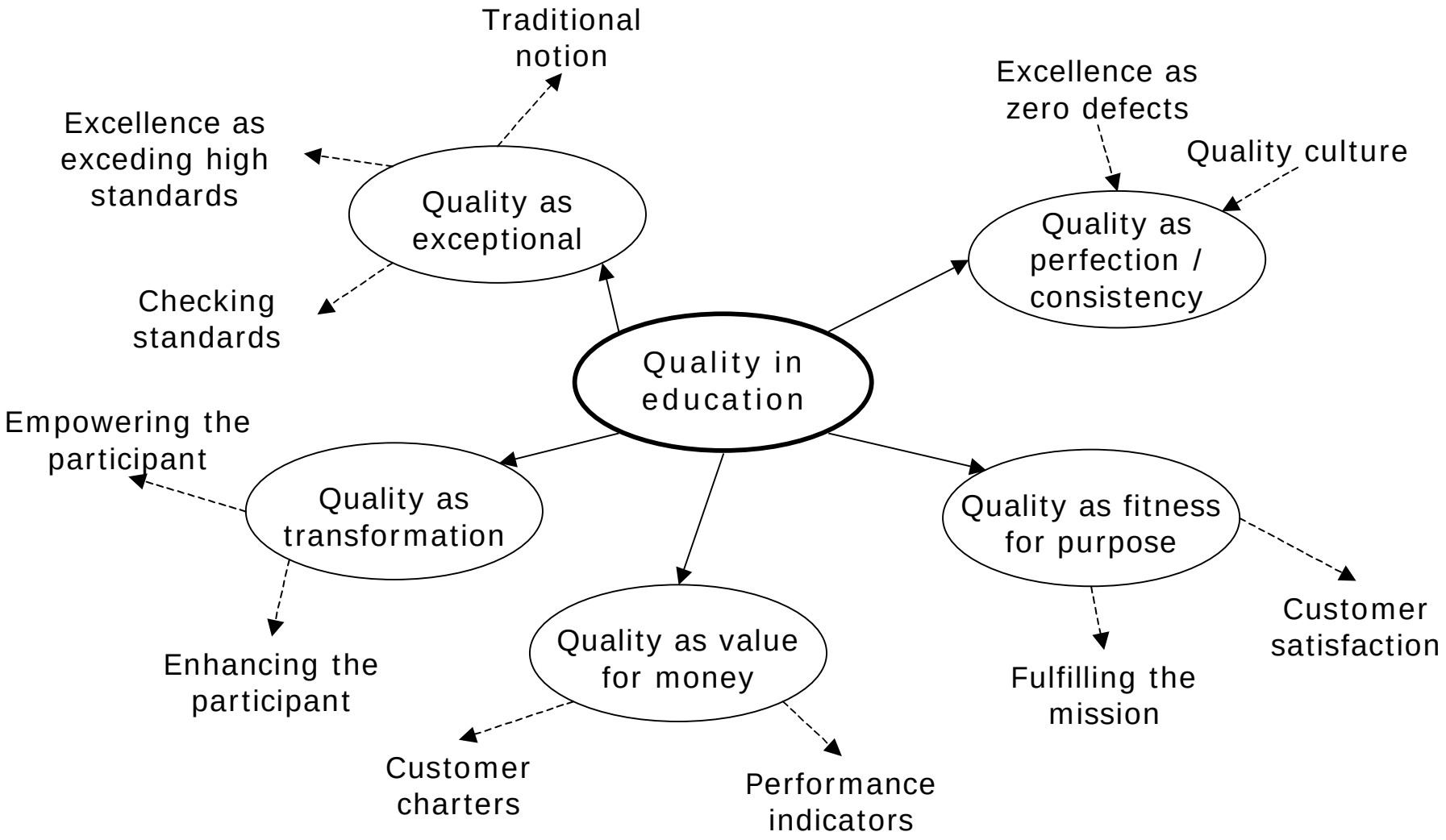
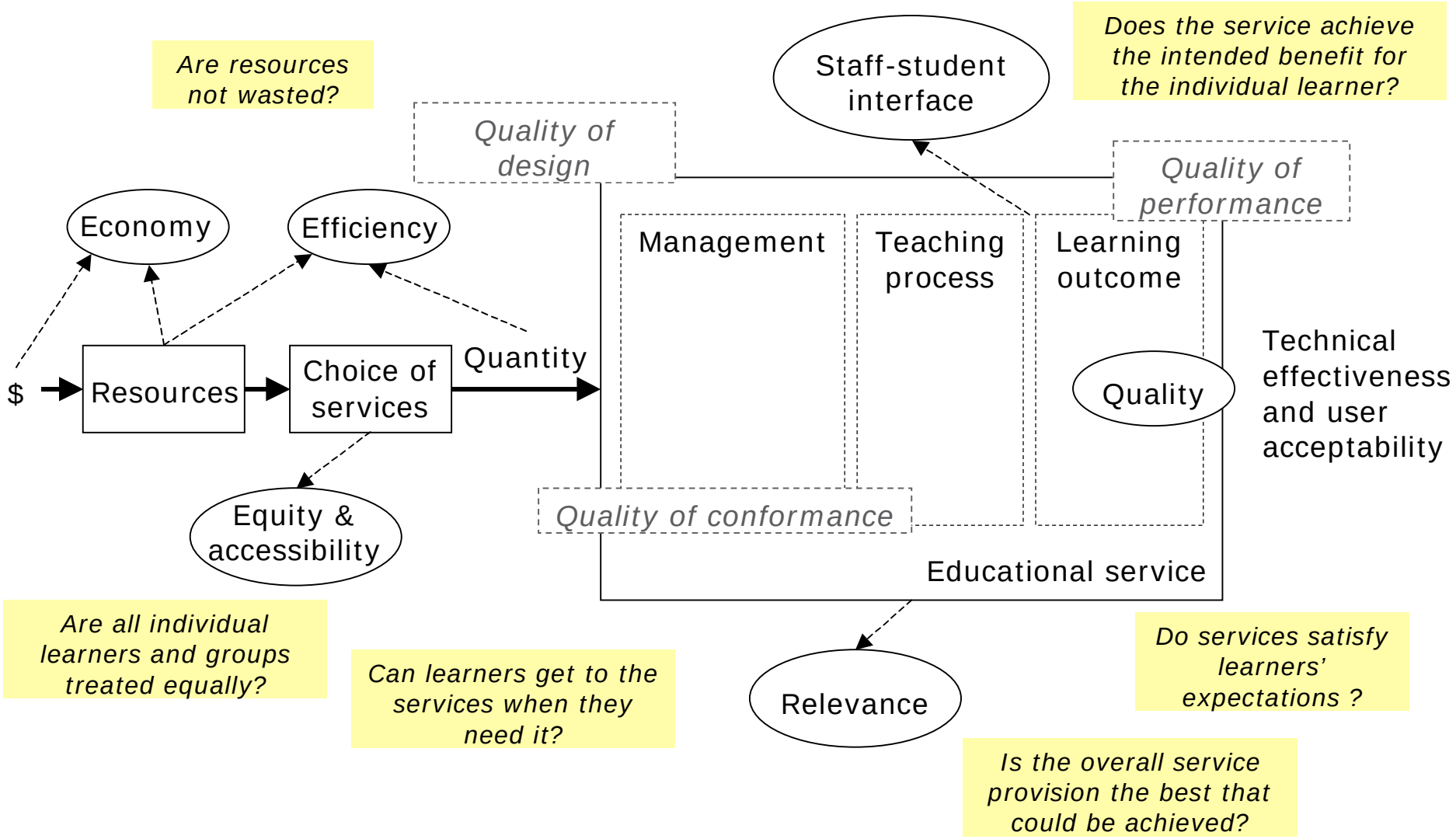
Concepts of quality in education



Source: Adapted from Harvey & Green (1993)

Dimensions of quality in education



Source: Adapted from Maxwell (1992); Srikanthan & Dalrymple (2002); Mergen et al. (2000)

Converging quality assurance approaches

- Purpose
- Philosophy & incentives
- Audience
- Administration & authority
- Financing - costs & resources
- Level of analysis
- Scope & focus
- Mechanisms & methodology
- Product

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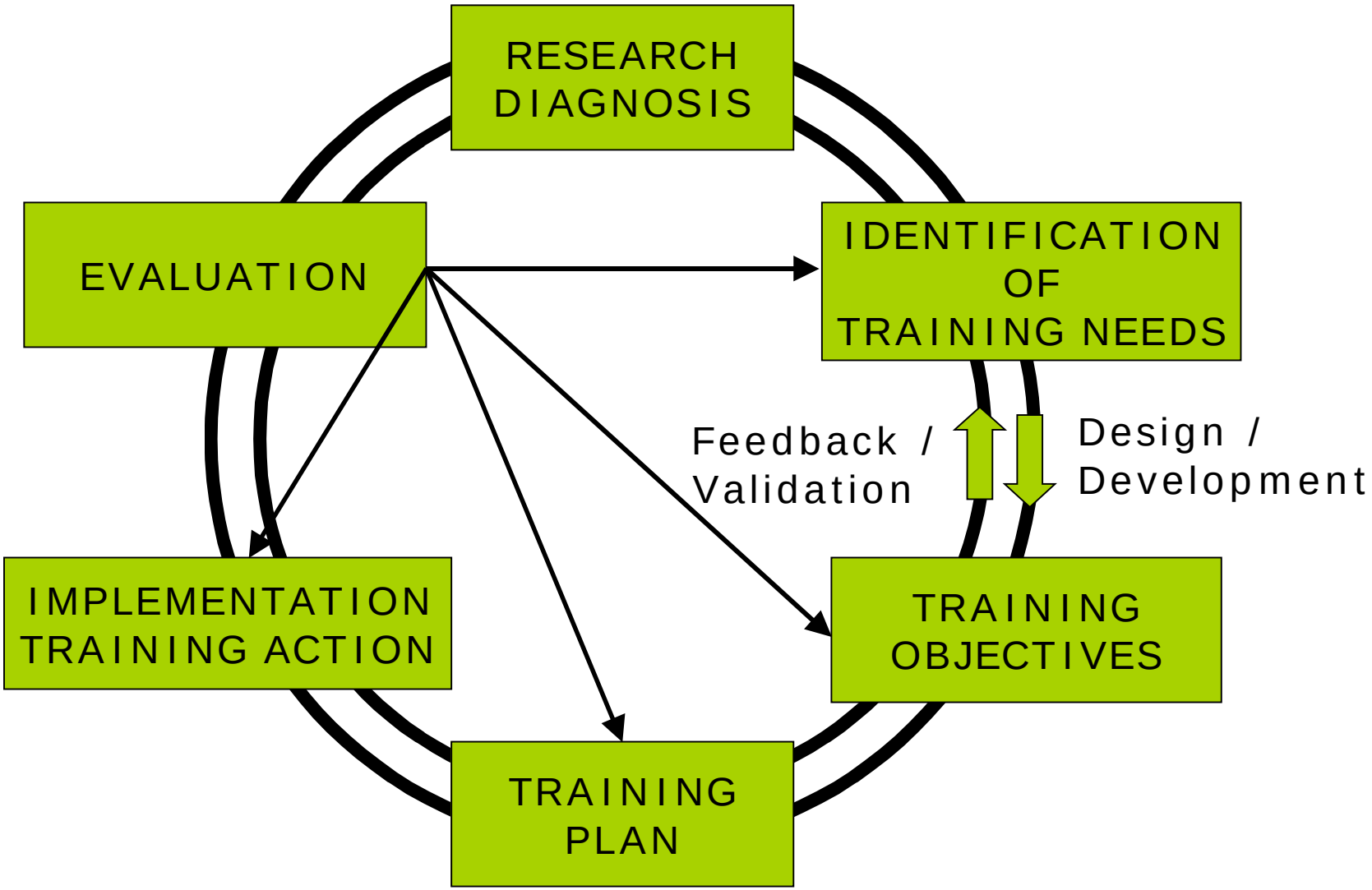
The ICRAF training process



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Discussion questions

- Question # 1 - How should we define and measure “quality” for Sustainable Agricultural Research and Education? And how can this contribute to international public goods knowledge products?
- Question # 2 – If we wish to strengthen partners’ capacities for doing quality Agriculture research and education what are the best processes, methods and content? What values, development mandates and pedagogies should inform us?
- Question # 3 - Can Agenda 21, complementary instruments and other consensus agreements provide international guideposts in developing quality standards for (sustainable) agricultural research and education?

  (Return to later)
- Question # 4 - How can we strengthen (and improve or measure the quality of) education or research for agriculture sector “sustainable livelihoods” amid different/conflicting views?

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Basic concepts of ISO 9000:2000 & EFQM

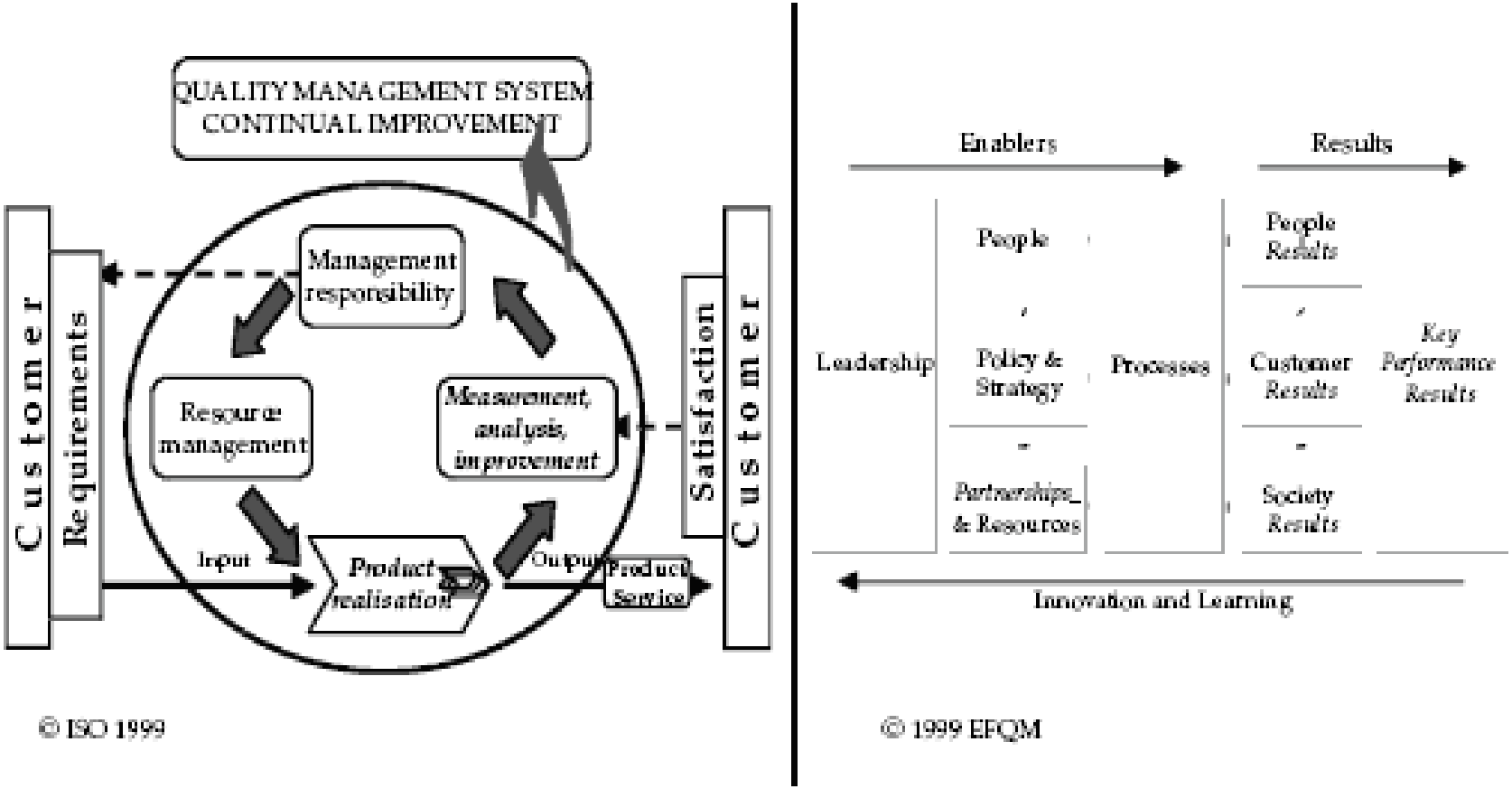
The 8 Principles of ISO9000:2000

- Customer focus
- Leadership
- Involvement of people
- Process approach
- System approach to management
- Continual improvement
- Factual approach to decision making
- Mutually beneficial supplier relationships

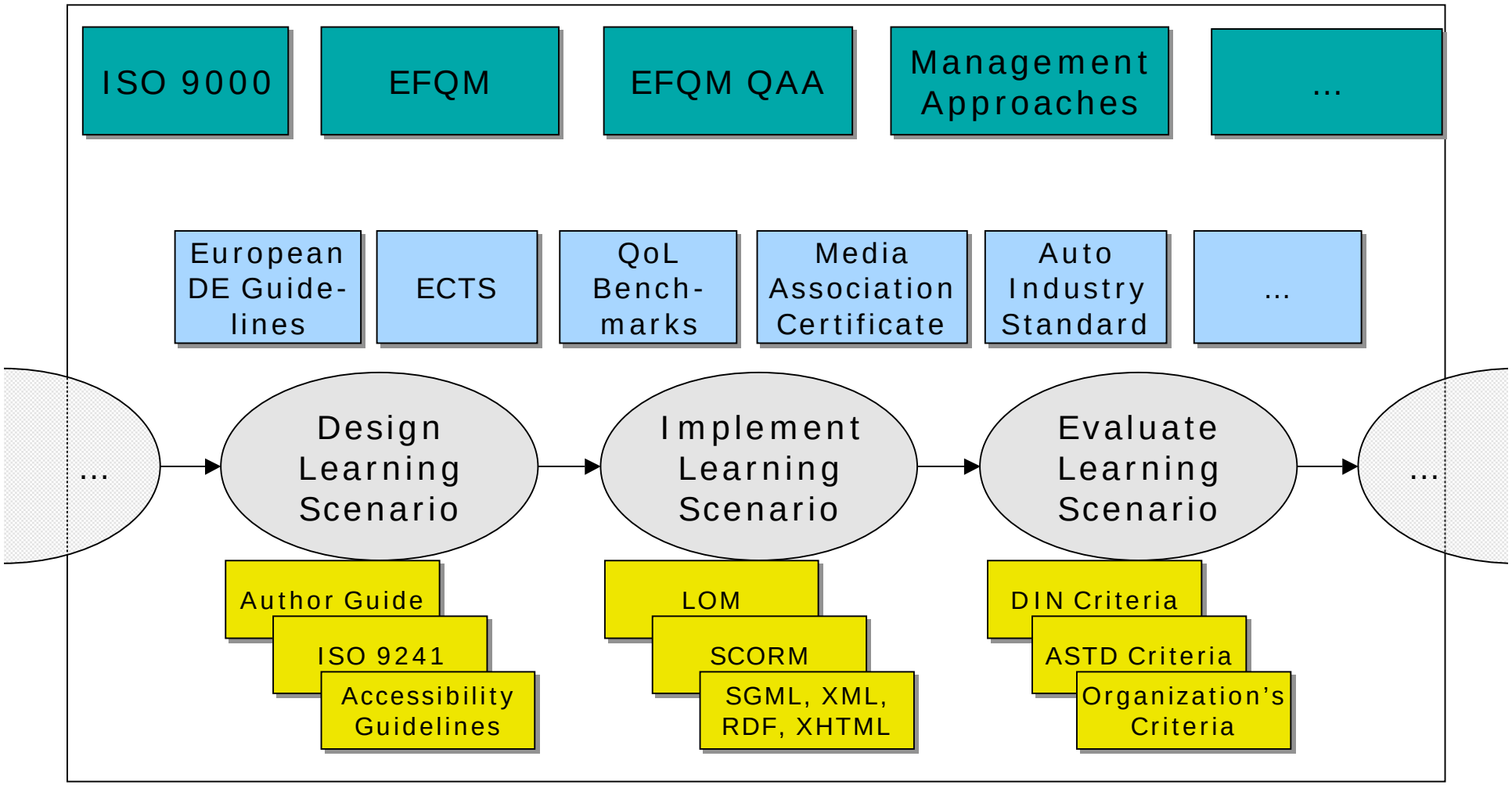
Fundamental Concepts of the EFQM Excellence Model

- Customer focus
- Partnership development
- People development and involvement
- Management by processes and facts
- Continuous learning, innovation and improvement
- Leadership and constancy of purpose
- Public responsibility
- Results orientation

Basic concepts of ISO 9000:2000 & EFQM



ISO 19796-1

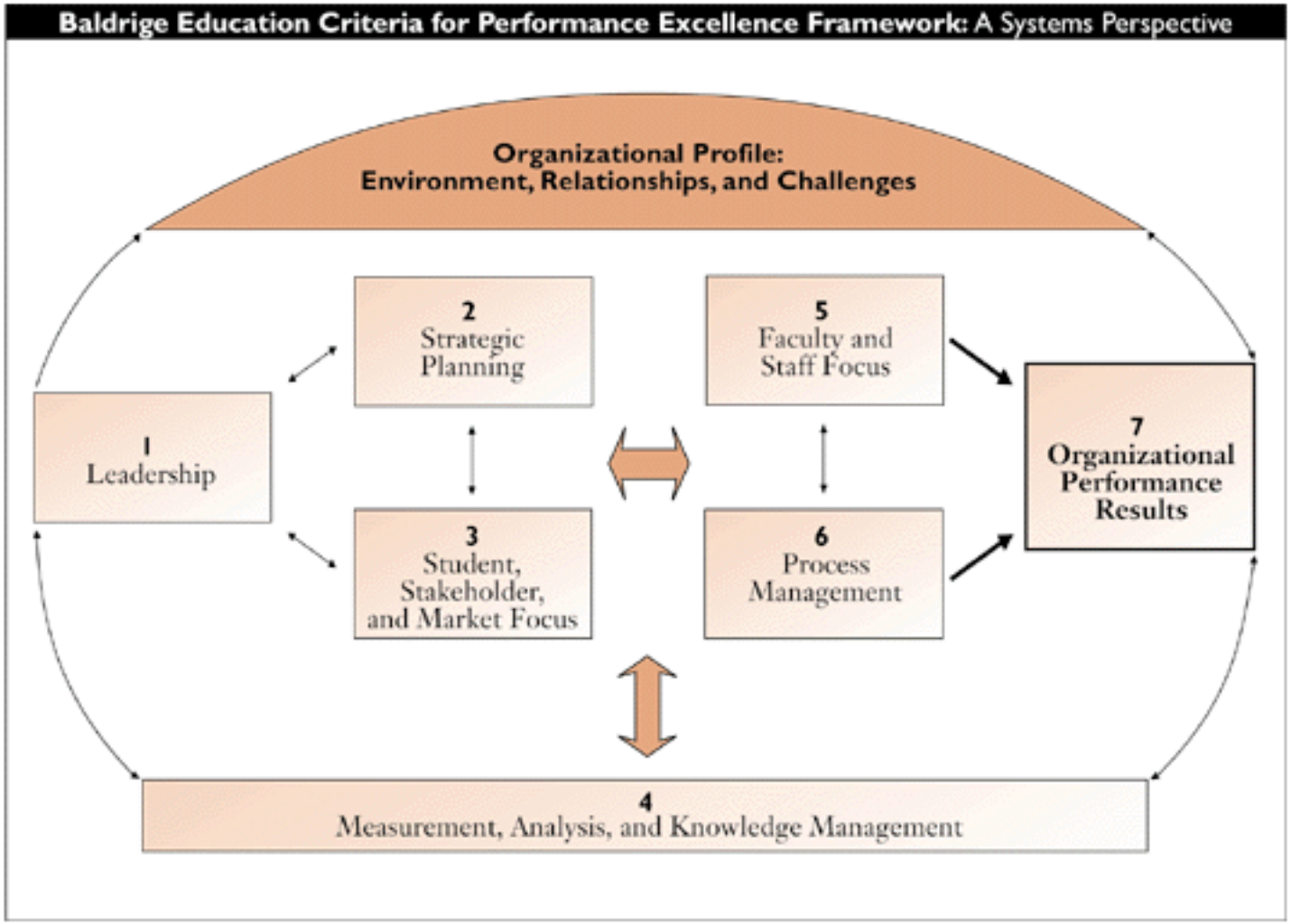

ISO 9000
EFQM
EFQM QAA
Management Approaches
...
European DE Guide-lines
ECTS
QoL Bench-marks
Media Association Certificate
Auto Industry Standard
...
...
Design Learning Scenario
Implement Learning Scenario
Evaluate Learning Scenario
...
Author Guide
ISO 9241
Accessibility Guidelines
LOM
SCORM
SGML, XML, RDF, XHTML
DIN Criteria
ASTD Criteria
Organization's Criteria

ISO 19796-1

ID	Category	Process Name	Description	Relations
3.2	Conception / Design	Concept of the contents	Concept of learning and teaching contents	1.1 Demand analysis 2.2 Qualifications

Sub process(es)	Content selection Content Design
Objective	1. Learner Demand: The goal is to provide contents adapted to the needs and demand of the learner. 2. Adaptation: Each course shall provide different content presentation formats and entry points based on the user experience.
Method	1. A prototype of the content shall be provided to a group of learners' representatives. In a consensus process, the contents shall be prioritized and agreed on. 2. For each course, classify groups of learners according to their learning type. Adapt presentation format and methods according to these learning types.
Result	1. Documentation of planned and agreed contents 2. Periodically, evaluate learning performance of different learners (test groups).
Actors	Curriculum designer, didactic experts, institution accreditation authority, teacher, learners' representatives
Metrics / Criteria	The content are measured based on their relevance, importance, exemplaricity, …
Standards	Higher Education Standards

Baldridge education criteria



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Training challenges in the CGIAR

- CGIAR “training” is in high demand by national partners and clients
- Limited human and financial resources for capacity strengthening
- Centers work mostly in isolation often leading to duplication of efforts
- Learning materials are dispersed and in many different formats
- Focus remained on more traditional learning approaches

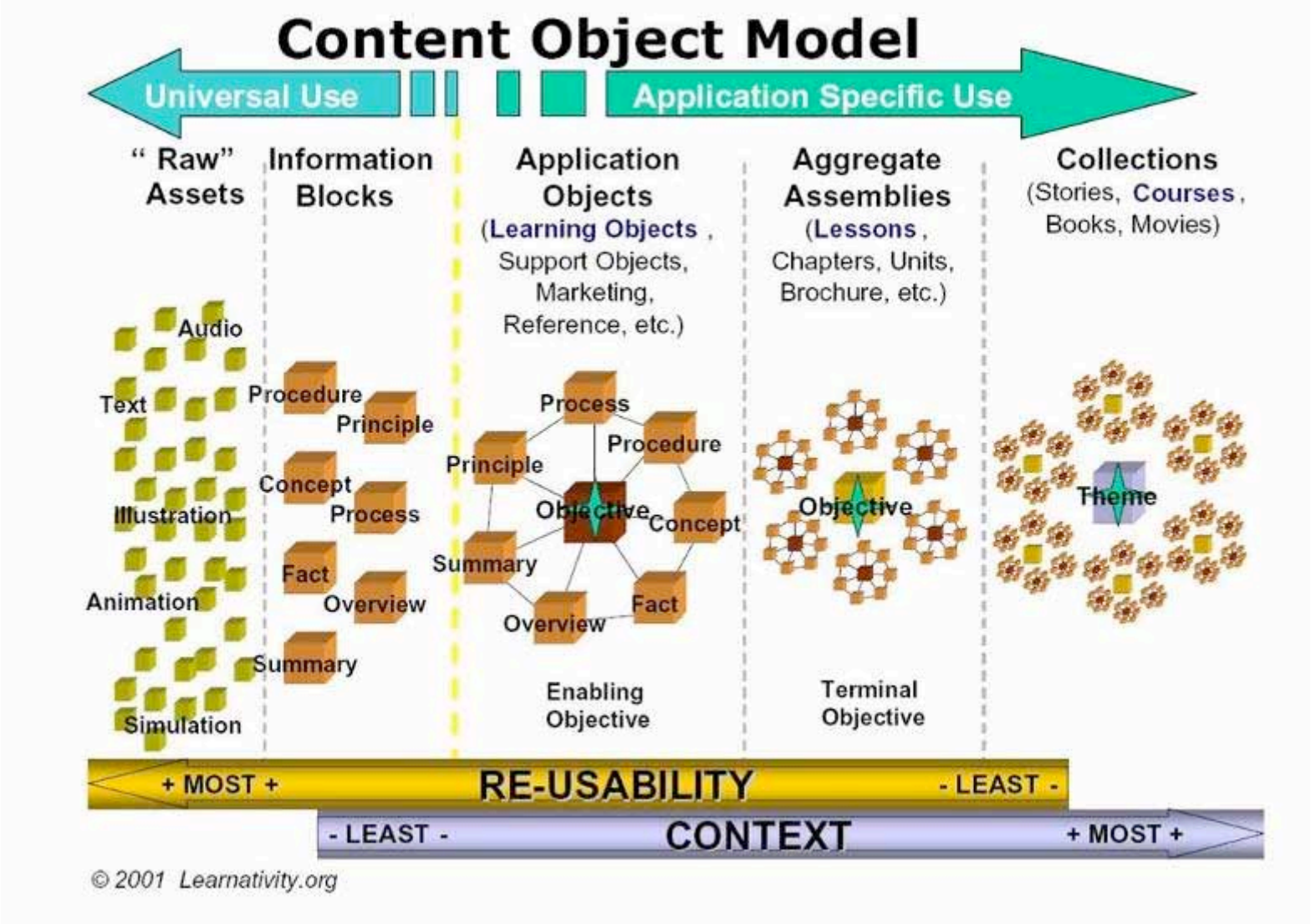
Improving training in the CGIAR

- Develop appropriate quality assurance protocols
- Ensure better coordination within and among Centers
- Exploit the advantages of ICT such as e-learning

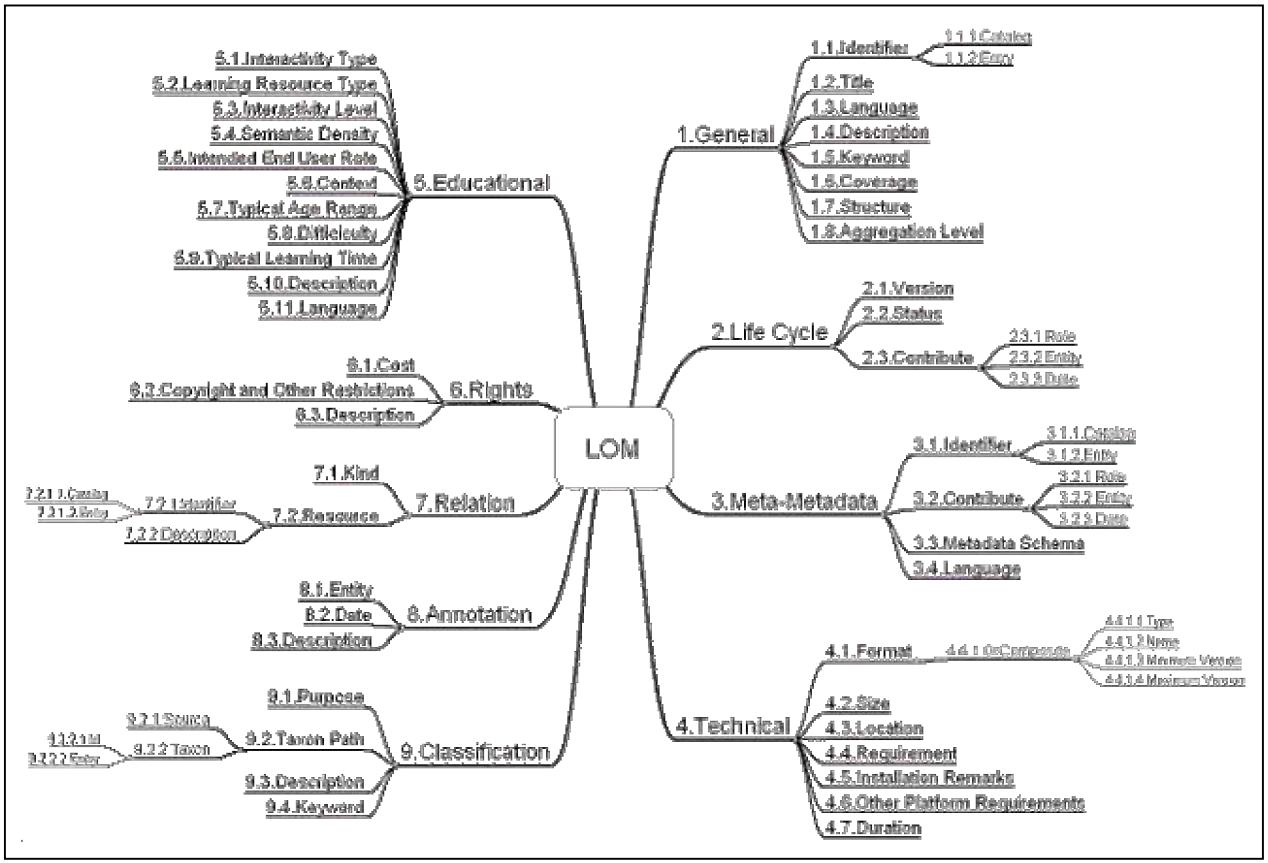
Opportunities for training in the CGIAR

- Create a CGIAR training community of practice that works together to address the learning needs of our partners in research, development, training and education
- Make use of recent advances in ICT to avail CGIAR learning resources in agriculture and natural resources management to an international learning community

Learning objects for training

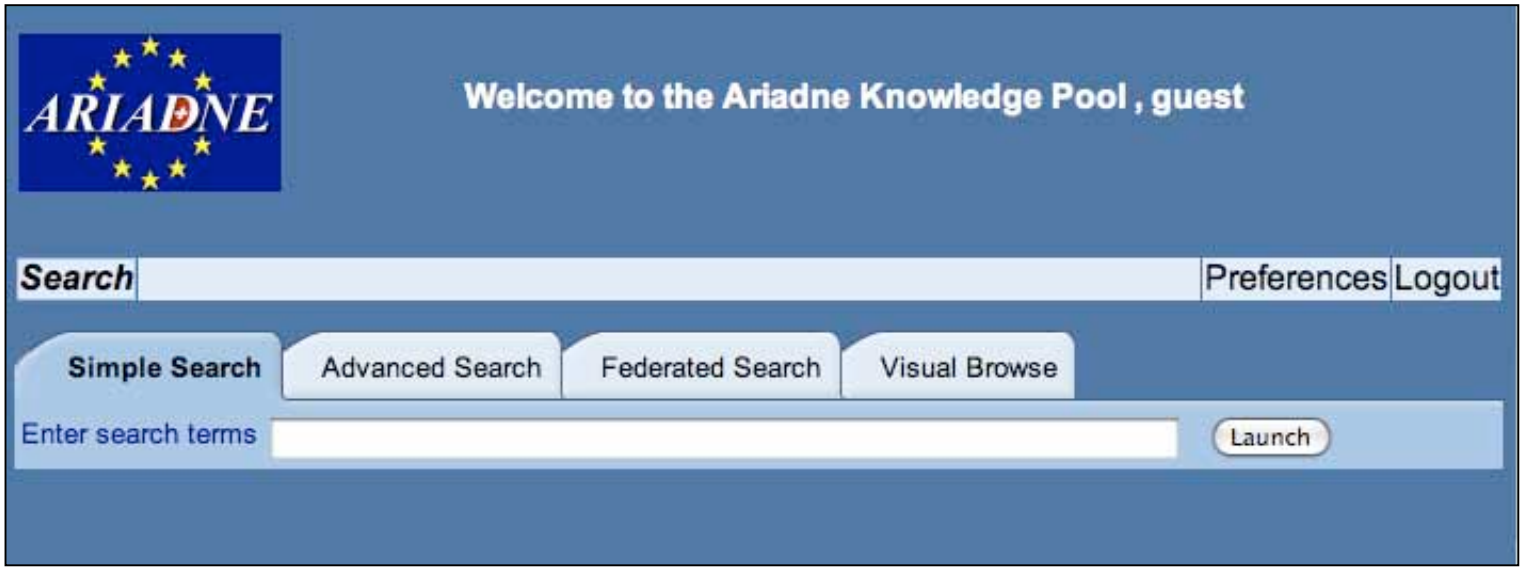


Learning object metadata

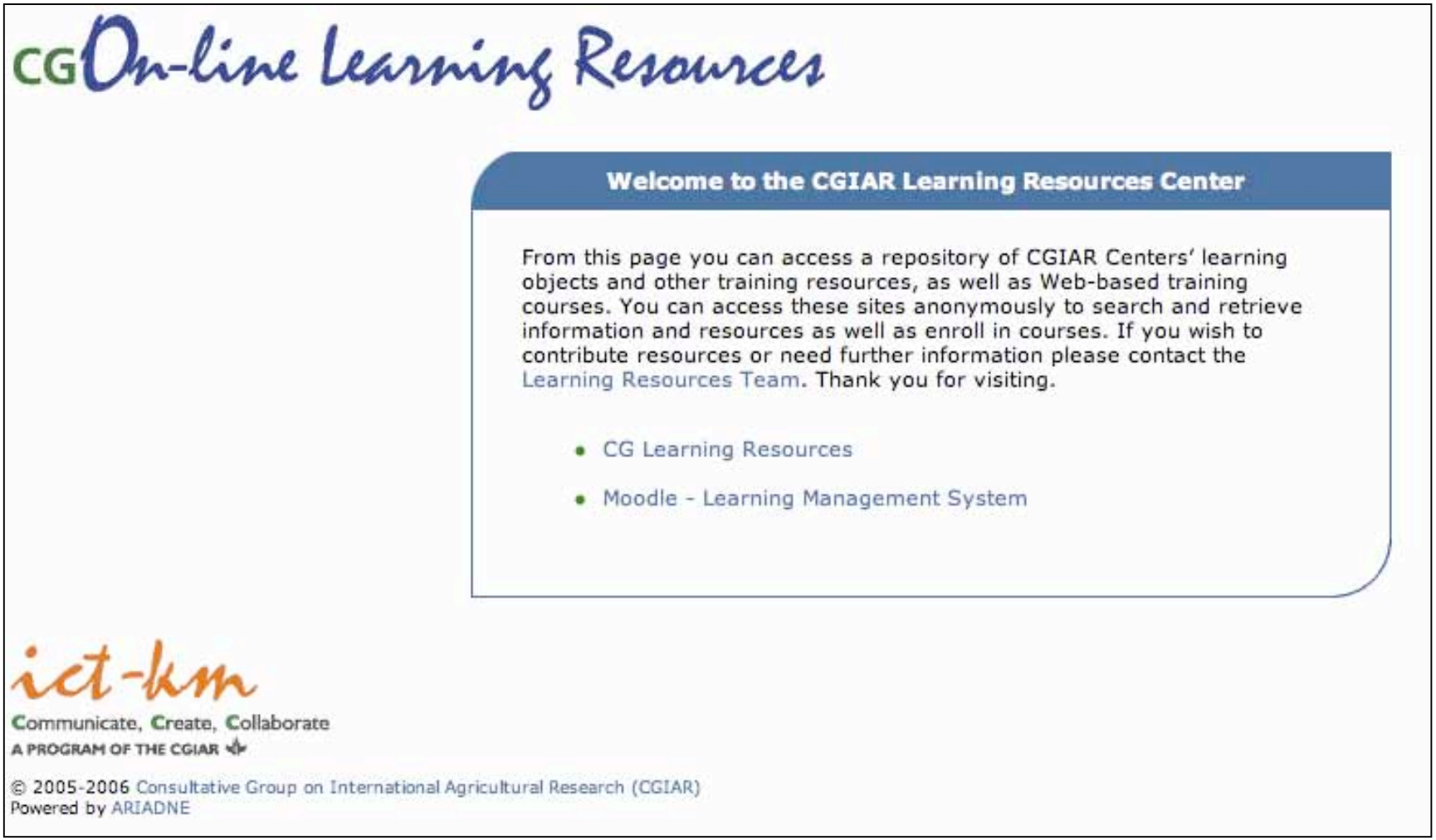


Source: IMS Meta-data Best Practice Guide for IEEE 1484.12.1-2002 Standard for Learning Object Metadata V. 1.3

Repositories and referatories



CGIAR Learning Resources Center



CGIAR Learning Resources Repository

CGIAR Learning Management System

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Policy and legal frameworks / approaches

UNESCO/UN (and other) Perspectives on International "Standard Setting Instruments" (for Education & Research) Views / Agreements / Laws on Education & Research implicating quality imperatives (and debates) for agriculture / sustainable development sectors:

- Resolutions, Declarations and Recommendations (soft law, but authoritative and symbolic intentions of governments and other signatories or executing agencies).
- Conventions (hard law, authoritative and binding intentions of governments and other signatories, supported/upheld in mandates of executing agencies.
- Guidelines (for legal or process interpretation or implementation / actions / outcomes) prepared by UN Secretariats, committees, international commissions, monitoring bodies, etc.
- Action plans (esp for UN/International System) indicating timed, goal oriented intentions or steps to achieve certain standards/objectives (e.g. education, agriculture, environment, etc.).

Standard-setting instruments (1)

1992 Rio Declaration on Environment and Development

1992 Agenda 21

1992 Convention on Biological Diversity

1993 Vienna Declaration and Programme of Action (World Conference on Human Rights)

1996 Rome Declaration on World Food Security

1997 Recommendation concerning the Status of Higher-Education Teaching Personnel

1998 World Declaration on Higher Education for the Twenty-first Century: Vision and Action and Framework for Priority Action for Change and Development in Higher Education

Standard-setting instruments (2)

1999 Declaration on Science and the Use of Scientific Knowledge,

1999 Science Agenda - Framework for Action

2000 United Nations Millennium Declaration, 55/2. (setting MDGs)

2001 “Lüneburg Declaration on Higher Education for Sustainability”

2001 Revised Recommendation concerning Technical and Vocational Education

2001 International Treaty on Plant Genetic Resources for Food and Agriculture

2005 Universal Declaration on Bioethics and Human Rights

Examples of quality education and research implications

Rio Declaration

1992 Rio Declaration on Environment and Development

- Quality issues (for education/capacity-building) are not well articulated, but some key debates and goals are implied.
- Principle 15 - “PRECAUTIONARY PRINCIPLE” -:
- “In order to protect the environment, the precautionary approach shall be widely applied by States according to their capabilities. Where there are threats of serious or irreversible damage, lack of full scientific certainty shall not be used as a reason for postponing cost-effective measures to prevent environmental degradation.”
- (MANY IMPLICATIONS - Especially now for defining and operationalizing (ecologically) sustainable agriculture, including more open/multi-stakeholder dialogue, learning partnerships, as well as quality and types of technical/bio-safety training and quality of education for biodiversity conservation. This is of particular concern if capacity strengthening for biotechnology, “crop improvement” training/research support continues, without due regard for the precautionary approach)

Examples of quality education and research implications

1992 Agenda 21

1992 Agenda 21

- Quality issues are not explicit, but goals/standards for defining or doing environmental management, sustainable agriculture, and achieving sustainable development objectives (through education, sciences and capacity building) are.
- SECTION III. STRENGTHENING THE ROLE OF MAJOR GROUPS
  Chapter 31 SCIENTIFIC AND TECHNOLOGICAL COMMUNITY
- Note in particular the suggestion for: “The adoption and implementation of ethical principles and codes of practice for the scientific and technological community that are internationally accepted could enhance professionalism and may improve and hasten recognition of the value of its contributions to environment and development, recognizing the continuing evolution and uncertainty of scientific knowledge.”
- Concerning implementation (through “Capacity-building”) this chapter finally suggests “Codes of practice and guidelines, including on appropriate principles, should be developed for and by the scientific and technological community in the pursuit of its research activities and implementation of programmes aimed at sustainable development.”

Examples of quality education and research implications

Higher Education Teaching Personnel

1997 Recommendation concerning the Status of Higher-Education Teaching Personnel

- Concerning “institutional accountability” a commitment to quality and excellence… with an obligation to protect and ensure the integrity of teaching, scholarship and research against intrusions inconsistent with their academic missions
- Demands that “Higher-education teaching personnel have a right to carry out research work without any interference, or any suppression, in accordance with their professional responsibility and subject to nationally and internationally recognized professional principles of intellectual rigour, scientific inquiry and research ethics.”
- Implication that educational or research quality is/can be affected by non-academic (political, economic, etc.) forces
- Suggests that “higher education institutions, individually or collectively, should design and implement appropriate systems of accountability, including quality assurance mechanisms to achieve the above goals, without harming institutional autonomy or academic freedom.”
- No specific reference to agriculture or sustainable development in any clauses, but (e.g.) this international instrument as a whole could/should be better integrated with development of quality guidelines and tools for capacity strengthening of the CGIAR and NARS partners

Examples of quality education and research implications

World Declaration of Higher Education

1998 World Declaration of Higher Education for the Twenty-first Century: Vision and Action and Framework for Priority Action for Change and Development in Higher Education

- The Declaration (Article 11) makes explicit reference to “Qualitative evaluation” needs with quality in higher education as “a multidimensional concept” embracing “all its functions, and activities: teaching and academic programmes, research and scholarship, staffing, students, buildings, facilities, equipment, services to the community and the academic environment.
- The Declaration suggests internal self-evaluation and external review, conducted openly by independent specialists is “vital for enhancing quality.”
- The Declaration suggests independent national bodies be established and “comparative standards of quality, recognized at international level,” be defined.
- The Framework committed to using higher education “autonomy and high academic standards to contribute to the sustainable development of society” while developing “their capacity to give forewarning through the analysis of emerging social, cultural, economic and political trends, approached in a multidisciplinary and transdisciplinary manner, giving particular attention to high quality,…

Examples of quality education and research implications

Declaration on Science

1999 Declaration on Science and the Use of Scientific Knowledge

- The Declaration suggested all countries “should establish suitable measures to address the ethics of the practice of science and of the use of scientific knowledge and its applications. These should include due process procedures for dealing with dissent and dissenters in a fair and responsive manner.
- The Declaration suggested “All scientists should commit themselves to high ethical standards, and a code of ethics based on relevant norms enshrined in international human rights instruments should be established for scientific professions...The social responsibility of scientists requires that they maintain high standards of scientific integrity and quality control, share their knowledge, communicate with the public and educate the younger generation.
- IMPLICATION - Science quality should be considered in terms of social and political/human rights (as well as pedagogical) dimensions, and ethical standards (including a code of ethics which should be part of quality control systems). Science is not simply an “objective” (or purely empirical undertaking).

Examples of quality education and research implications

Science Agenda

1999 Science Agenda - Framework of Action

- The Framework stressed “Each country should aim at having high-quality scientific institutions capable of providing research and training facilities in areas of specific interest. In those cases where countries are unable to create such institutions, the necessary support should be granted by the international community, through partnership and cooperation.”
- The Framework stressed “Donor countries and agencies of the United Nations system are urged to foster cooperation in order to improve the quality and efficiency of their support to research in developing countries…”
- …and to bring high-quality science education to remote locations.”
- The Framework suggested national, regional and global environmental research programmes should be strengthened or developed…(to) include programmes for capacity-building…(while) the goals of the existing international global environmental research programmes should be vigorously pursued within the framework of Agenda 21 and the action plans of the global conferences…”.
- IMPLICATION - High quality science should be evaluated against Agenda 21 goals and action plans of other global conferences

Examples of quality education and research implications

Treaty on Plant Genetic Resources

2001 International Treaty on Plant Genetic Resources for Food and Agriculture

- Elements of the “PRECAUTIONARY PRINCIPLE” further reinforced,
- Elements of 1992 Biodiversity Convention reinforced more specifically for plant resources and agriculture
- With respect to the particular concerns and needs of farmers Article 9 suggests that national governments should “take measures to protect and promote Farmers’ Rights…
- BROADER IMPLICATIONS (for sustainable agriculture). The quality of research and broader capacity-building, education and its training objectives and outputs) could be better evaluated in terms of in terms of appropriate knowledge, information, legal instruments and technical skills certification (including bio-safety/biotechnology protocols) for plant resources diversity conservation (quality of plant resources).
- But also generally if/how capacity building/education programs reinforce/enable implementation of human/farmer’s rights. More specifically the quality of education/training programs or curricula might also include, for example, learning objectives designed to facilitate/test farmer’s understandings of their particular rights and their knowledge of specific legal instruments pertaining to plant/agricultural biodiversity.

Examples of quality education and research implications

Declaration on Bioethics & Human Rights

2005 Universal Declaration on Bioethics and Human Rights (UNESCO)

- Suggested the need for (Article 23 – Bioethics education, training and information)

1. In order to promote the principles set out in this Declaration and to achieve a better understanding of the ethical implications of scientific and technological developments, in particular for young people, States should endeavour to foster bioethics education and training at all levels as well as to encourage information and knowledge dissemination programmes about bioethics.
2. States should encourage the participation of international and regional intergovernmental organizations and international, regional and national non-governmental organizations in this endeavour.

- IMPLICATION (for sustainable agriculture and education) - The quality of agricultural education, research and capacity building/training objectives could/should be evaluated in terms of adequacy of ethics education and its application, especially for decision-making with respect to scientific research and technical training which may (adversely) undermine or impact traditional knowledge and biodiversity.

Summary comments / questions

- Comments/Observations
- "Quality" is a subjective issue (what is measured depends on beliefs and assumptions about what should be valued and why – There is lack of agreement on this.
- Quality planning or evaluations (education sector) need to differentiate between or among

  1) quality of administrative/process issues or institutions and support structures;

  2) equipment or other resources with necessary logistical or technical support

  3) teaching or facilitation quality; and

  4) quality of academic content in courses, materials, research results/products, etc., while continuing to resolving debates over what should be learned, taught, or researched and why.

More discussion questions (1)

- How or should (public) International Agricultural Research Organizations (IAROs) insure coherence, effectiveness, authentic partnerships, and greater (sustainable development) quality in achievements or impacts?
- What kind of new quality learning is needed for National Agricultural Research Systems (NARS)?
- What resources for what purposes should IAROs or NARS invest in capacity strengthening and learning to insure quality?
- What do IAROs and NARS need to learn more of and better to reflect quality in their research and education institutions ?
- Does content matter for quality? (e.g. linked to UNESCO-DESD objectives and Agenda 21 related conceptual/knowledge and policy frameworks)
- Are more reforms needed for (public) higher education curricula, research institutes, sciences?

More discussion questions (2)

- Is more critical thinking and teaching on controversial issues, alternative development paths, and new research methods, as well as agro-ecology, social science, etc., needed? Are related curriculum reforms and teacher training programmes possible? Could these contribute to better education quality?
- Can we better facilitate more authentic stakeholder dialogues/open learning opportunities on controversial (and interrelated) agriculture, environment and development issues (Education, not just “training”)?
- If so how will/should such study, education processes, learning events and dialogue be supported? Through traditional education systems as well as open/online distance mechanisms?
- Who should pay for quality and content assessments or learning system improvements?
- What else do we need to consider as essential for designing quality education and research programs or testing and measuring quality?