

STANDARD QUALITY OF UNDERGRADUATE EDUCATION IN AGRICULTURAL SCIENCES AND RELATED FIELDS

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ABSTRACT

This paper proposes to define of a set standards quality of higher education (undergraduate) in agricultural sciences and related fields. It contains nine areas with a total of thirty-eight criteria. Standards are specified for each criterion, using two levels of attainment. The first set defines the base line or minimal or essential requirements to agricultural education and related fields. The second set deals with the dimension of quality development and the educational programmes. The set of standards might best be used in quality assessment studies of agricultural undergraduate education based on a combination of institutional self-evaluation and peer review.

Key words: standard quality of undergraduate education, agricultural sciences, minimal requirement and quality development

I. Introduction

Quality is a slippery concept. The relative concept of quality contains two aspects: measuring up to specification, and meeting customer requirements. Quality is also demonstrated by a producer having a system, known as a Quality Assurance System (QAS), which enable the consistent production of the good or service to a particular standard or specification.¹

Standards must be describable, meaningful, appropriate, relevant, measurable and accepted by the users. They must have implications for practice, recognise diversity, and foster adequate development. Assessment based on generally accepted standards is an important incentive for improvement and for raising the quality of agricultural sciences education and related fields, both when reorientation and reform are pursued.

The scientific basis of agricultural sciences is generally the same. In this paper, a core of standards for agricultural sciences education and related fields of undergraduate has been proposed, especially for school of agriculture in Indonesia. The standard was inspired and modified from The World Federation for Medical Education (WFME).² This core of standards is defined due to differences in teaching tradition, culture, socio-economic potential, and the agricultural sciences development spectrum.

II. The standard quality

The following set of standards, which are structured according to a number of areas and criteria is proposed. **AREAS** are defined as broad components in the, structure and process of agricultural sciences education. **CRITERIA** are defined as specific aspects of an area, corresponding to performance indicators. **STANDARDS** are specified for each criterion, using two levels of attainment:

Basic Standard (BS). This means that the standard must be met by every agricultural sciences education from the outset and fulfilment demonstrated during assessment of the school.

Quality Development (QD). This means that the standard is in accordance with best practice

¹ Sallis, E. (1993). Total Quality Management in Education. Kogan Page Education Management Series, pp21-33.

² World Federation for Medical Education(WFME), 1999. Defining International Standards in Basic Medical Education. Report of the Working Party, Copenhagen, 14-16 October 1999

for agricultural sciences education. The education should be able to demonstrate fulfilment of some or all of these or that initiatives to do so have or will be taken. Fulfilment of these standards will vary with the stage of development of the agricultural sciences education, their resources, and national educational policy.

Area 1. Mission and Objectives

Criterion A: Statements of Mission and Objectives

BS: The school of agriculture must define its mission and objectives directed to describe an educational process to produce agricultural specialist competent at a basic level, with an appropriate foundation for further education in any branch of agriculture.

QD: The mission and objectives should encompass social responsibility, research attachment, community involvement, and the relation to postgraduate agricultural education.

Criterion B: Participation in Formulation of Mission and Objectives

BS: The mission statement and objective must be defined by its major stakeholders (e.g. the dean and faculty member, the government and the profession).

QD: Formulation of mission statements and objectives should be based on input from a wider range of representatives of academic staff, students, community and professional organisations.

Criterion C: Policy on Academic Independence

BS: The policy applied by the administration and faculty of the school of agriculture are responsible for and are free to design the curriculum and allocate the resources necessary for its implementation.

QD: The contributions of the academic staff should address the curriculum designed by the school of agriculture, and the educational resources should be distributed in relation to the educational needs.

Criterion D: Definition of Educational Outcomes

BS: The school of agriculture must define what competencies its students should exhibit on graduation, including the relationship of such competencies to the diverse needs of society.

QD: Over time the school of agriculture should measure and use information about competencies of their graduates as feedback to programme development.

Area 2. Educational Programme and Principles

Criterion A: Curriculum Models and Instructional Methods

BS: The school of agriculture must define the curriculum model and instructional methods employed (discipline-, system, problem based etc.) on the basis of sound learning principles.

QD: The curriculum and instructional methods should ensure the students have active responsibility for their learning process and should prepare the students for lifelong, self-directed learning.

Criterion B: Scientific Foundation

BS: The school of agriculture must teach the principles of scientific and evidence-based agriculture, and analytical and critical thinking throughout the curriculum.

QD: The curriculum should include elements for educating students in scientific thinking and research methods, e.g. the use elective research projects to be conducted by students.

Criterion C: Role of Basic Sciences

BS: The school of agriculture must identify and incorporate the contributions of basic biological and earth sciences to create understanding of the scientific knowledge, concepts and methods fundamental to acquiring and applying agricultural science.

QD: The school of agriculture should adapt the contributions of sciences basic to agriculture to scientific, technological and agricultural development and to the needs of society.

Criterion D: Role of Behavioural and Social Sciences

BS: The school of agriculture must identify and incorporate in the curriculum the contributions of engineering and social sciences that provide the knowledge, concepts, methods, skills and attitudes necessary for effective communication.

QD: The school of agriculture should adapt the contributions of the behavioural and social sciences to scientific development and to changing demographic and cultural context and needs of society.

Criterion E: Role of Skills

BS: The school of agriculture must ensure that students acquire knowledge of the agricultural sciences and skills necessary to assume profession responsibility upon graduation.

QD: The school of agriculture ensure that every student should structure the different components of education and involvement in scientific community, including teamwork with other professionals.

Criterion F: Curriculum Structure, Composition and Duration

BS: The school of agriculture must describe the content, extent and sequencing of courses and other curriculum elements, including the balance between the core and optional content.

QD: The school of agriculture should assure both horizontal (concurrent) and vertical (sequential) integration of the curricular components.

Criterion G: Programme Management

BS: The curriculum committee of the school of agriculture must be given the authority for planning and implementing the comprehensive curriculum, which goes beyond specific discipline interests, and the ability to exhibit sufficient control over the curriculum to secure its objectives being achieved within the existing regulations.

QD: The curriculum committee should be provided with resources for creation and conduction of experiments with new curriculum models and innovations in methods of learning and evaluation in agricultural education.

Criterion H: Linkage with Agricultural Practice

BS: Operational linkage must be assured between the educational programme and the next stage of training or practice that the student will enter upon graduation.

QD: The curriculum committee should seek input from the environment in which graduates will be expected to work, and over time undertake programme modification in response to feedback from the community and society.

Area 3. Assessment of Educational Outcomes

Criterion A: Assessment Methodology

BS: The agricultural school must define and describe the methods used for assessment of their student's, i.e. the balance between formative and summative assessment methods, clearly state the criteria for passing level at examinations.

QD: The agricultural school should document and evaluate their liability and validity of their assessment methods and develop new assessment methods.

Criterion B: Relation between Assessment and Learning

BS: Educational objectives and learning methods must be clearly compatible with the assessment principles, methods and practices.

QD: The number of examination should be adjusted by integrating assessment of various curricular elements in order to prevent curriculum overload and to encourage integrated learning.

Area 4. Students

Criterion A: Recruitment and Admission Policy

BS: The agricultural school must have a recruitment and admission policy document.

QD: The agricultural school should refine the policy document to improve its selection criteria, to reflect the capability of students to become an agricultural specialist and to comply with the social responsibilities of the institution and needs of society.

Criterion B: Methods of Selection

BS: Methods and rationale of selection of students must be clearly stated.

QD: There should be a statement describing the relationship between selection, the educational programme, and the desired qualities of graduates.

Criterion C: Student Intake

BS: The size of student intake must be defined and related to the capacity of the agricultural school at all stages of education and practices.

QD: The student intake should be reviewed in consultation with relevant stakeholders and regulation periodically in line with the needs of community and society.

Criterion D: Student Support and Counselling

BS: A programme of student support and counselling must be offered by the agricultural school.

QD: The agricultural school should assure counselling is based on monitoring of students progress, and addressed to social and personal needs, financial matter, academic support and career guidance.

Criterion E: Student Representation

BS: The agricultural school must have a policy on student representational and appropriate participation in the design, management and evaluation of the curriculum.

QD: The agricultural school should encourage and facilitate student organisations, including student self-government and social activities, and ensure student representation on educational committee and other relevant bodies.

Area 5. Academic Staff/Faculty

Criterion A: Recruitment Policy

BS: The agricultural school must have a staff recruitment policy. The recruitment policy shall as a minimum outline the adequate, balance of skills required to deliver the curriculum, and non-agricultural academic staff.

QD: The agricultural school should develop a policy for definition of staff selection criteria, including scientific and educational merits.

Criterion B: Staffing Policy

BS: The agricultural school must have a staffing policy which is addressed a balance of teaching, research and service capacity and functions, and rewards for academic activities.

QD: the staffing policy of the agricultural school should include teacher training and development, teacher appraisal, teacher-student ratio relevant to various curricular components and teacher representation on relevant bodies.

Area 6. Educational Resources

Criterion A: Physical facilities

BS: The agricultural school must ensure that it has sufficient educational resources for the student population and for the delivery of the curriculum including libraries, lecture halls/classes, tutorial rooms, laboratories, computers etc.

QD: The agricultural school should endeavour to improve the learning environment for the students by updating and extending its facilities.

Criterion B: Facilities for agricultural experiment station

BS: The agricultural school must ensure sufficient facilities for agricultural experiment station.

QD: The facilities, for agricultural experiment station should be adjusted to ensure agricultural experiment which adequate to the needs of agricultural sciences development.

Criterion C: Information Technology and Networking

BS: The agricultural school must have a policy, which address to the use of information and communication technology in the educational programme.

QS: The agricultural school should integrated the use of computers in the medical curriculum and provide access to computer and o internal and external networks for student and teachers.

Criterion D: Research Attainment

BS: The agricultural must describe the research facilities at the institution.

QS: The interaction between research and education activities should be fostered and research attainment as well as educational contributions clearly rewarded in appointment of academic-staff

Criterion E: Agricultural Education Expertise

BS: The agricultural school must have a policy on teaching and learning methodology and the use of educational expertise in agricultural education.

QD: The agricultural school should have access to experts in teacher development or from an agricultural education until and demonstrate evidence, of use of such expertise for development of staff.

Criterion F: Exchange with Other Educational Institutions

BS: The agricultural school must have a policy for collaboration with other educational institutions and for the transfer of educational credit.

QD: Over time the agricultural school should encourage provision of resources to facilitate regional and international exchange of academic staff and students.

Area 7. Monitoring and Evaluation of Programmes and Courses

Criterion A: Mechanisms for Programme Evaluation

BS: The agricultural school must establish a mechanism for programme evaluation, and ensure that basic data about the programme is available through monitoring of the *curriculum* and of student progress, and ensure that programme evaluation addresses identified concerns.

QD: Over time, the programme evaluation should address all components (input, process, output, outcomes) and context as well as the totality of the agricultural educational system.

Criterion B: Student and Teacher Opinion

BS: In the programme evaluation the opinion of both teachers and student must be systematically.

QD: Over time, students and teachers should be actively involved in the programme evaluation process.

Criterion C: Student Performance

BS: Student performance (average study duration, scores, pass and failure rates, success and drop out rates) must be analysed in relation to the curriculum.

QD: Student performance should be analysed in relation to student background and to entrance qualifications, and should be used to provide feedback to the curriculum planners.

Criterion D: Feedback of Evaluation Information

BS: There must be mechanism to convey and process information from programme evaluation for purposes of a dynamic curriculum development and continuous improvement.

QD: Over time, involvement of experts in agricultural education, its problems, processes and practises, and conduct of research in agricultural educational should further broaden the base of evidence for quality agricultural education at the institution.

Criterion E: Involvement of Stakeholders

BS: Programme evaluation, must involve the governance and administration of the agricultural school, the academic staff and the students.

QD: All relevant stakeholders (e.g. governmental authorities, private agencies, professional associations, postgraduate educators etc.) should have access to result programme evaluation and either views on the relevance and development of the curriculum should be considered

Area 8. Governance and Administration

Criterion A: Organisational Structure

BS: At the outset a group of faculty members must as a curriculum committee is given the authority, to design and manage the agricultural curriculum.

QD: There should be representation in the curriculum committee of the academic staff, the students and other participants in the educational process and over time consideration for including external representation on the governing bodies.

Criterion B: Educational Budget and Resource Allocation

BS: The agricultural school must have sufficient autonomy to direct resources in an appropriate manner in order to achieve the overall objectives of the school.

QD: There should be a clear line of responsibility and decision-making concerning the curriculum and its resourcing.

Criterion C: Academic Leadership

BS: The responsibility of the academic leadership at the institution for the agricultural educational programme must be clearly stated.

QD: The academic leadership of the agricultural school should be evaluated at defined intervals with respect to achievement of the mission and objectives of the school.

Criterion D: Administrative Staff and Management

BS: The administrative staff of the agricultural school must be appropriate to support the implementation of the school's educational programme and to ensure good management and deployment of the educational resources.

QD: The management of the agricultural school should include a programme of quality assurance, and the management should submit itself to regular auditing.

Criterion E: Interaction with agricultural sector

BS: The agricultural school must have a constructive interaction with the agriculture related sectors of society and government.

QD: The agricultural school should over time institutionalise such collaboration.

Area 9. Continuous improvement and development

BS: The agricultural school must as a dynamic institution initiate a programme and procedures for regular reviewing and updating of fundamentals of the institutions, its structure and activities.

QD: The process of renewal should address to issues in the nine areas as described above.
