# RELEVANCE IN AGRICULTURE EDUCATION: THE ALTERNATIVE APPROACH TO LEARNING AND TEACHING AGRICULTURE

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Practitioners among the different professions have often criticized the colleges and universities for turning out graduates who are not ready, if not capable, to cope with the demands of the profession in the world outside of the academe. The non-relevance of subjects offered in the world curriculum and the apparent inability of graduates to relate and apply theory to practice are common criticisms. One frequent comment is that traditional lecture-based teaching practiced in tertiary education gives little emphasis to the development of skills for problem-solving and managing key issues encountered in the real world. These comments and criticisms about the traditional approach to education for the professions highlight the need to develop an approach to learning and teaching that enhances learning for capability — meaning, the development of competencies and skills needed for life-long learning and problem-solving in the context of the practice of the profession.

In 1984, the Silliman University College of Agriculture (SUCA) began to develop an innovative approach in its offering of the Bachelor of Science in Agriculture (BSA) degree program. This innovation in the curricular offering is named *An Alternative Approach to Learning and Teaching Agriculture (AA)*. AA is more of an approach to learning than a teaching technique. It is an approach which is experiential, competency-based, and problem-based. SUCA's curricular innovation also adopts *systems thinking* in the approach to learning about agriculture.

## Concepts and Theories Underpinning AA

**Experiential Learning**. Traditional classroom-based teaching emphasizes learning as the act of acquiring knowledge or skill but stops short of extending it beyond the confines of a given, usually hypothetical, situation. Knowing as a form of learning is important, but making meaning out of it in real-life situations is of far greater importance. By letting the students learn in the context of actual situations, they do not only acquire knowledge or skills but they also learn how to confront real-life situations using the knowledge or skills that they have acquired.

Experiential learning is learning from experience. Experiencing, though, does not guarantee automatic learning (Boud, Keogh, and Walker, 1985). In AA, learners are taught

how to reflect upon their experiences, enabling them to learn how to actively and conscious turn experience into learning. Through reflection, learners are expected to come to grips wi what is to be learned in its real setting and in the midst of all the forces that affect i occurrence.

There have been questions about how learning takes place in experiential educati which are yet to be answered (Kolb and Fry, 1975; Keeton et al., 1976). But one thing evident: that if learning is to be taken as the act of gaining sufficient knowledge, skill ability, and attitude towards a given subject, the experiential approach presents a mo appropriate environment for a very exciting, much deeper, and more lasting learni outcome than the lecture-based, traditional approach. As a Chinese proverb says, "I he and I forget; I see and I remember; I do and I understand."

One outstanding characteristic of experiential learning is that it provides the learn the opportunity to learn how to learn. Knowledge of facts may be a solution to speci short-term, or "here-and-now", problems but one has to know how to gather facts and app them in a new perspective in order to learn how to cope with the complex and high unpredictable real-life situations that he/she will be in.

The best way to learn about learning is to learn about learning (Fordyce, 198 Learning — particularly meaningful learning — is a highly complex human activi As shown in Figure 1, learning involves the whole person and helps to develop t whole person. It is a thinking-and-doing process through which a learner develops a bet understanding of, a positive attitude to, and a proper behavior towards future real-li situations. These conceptions about learning have guided the College faculty to look in our current strategy and see how we can make learning agriculture much richer and mo meaningful.

**Systems Agriculture, Systems Thinking**. Agriculture as a relatively you science traces its roots among the different sciences. The evolution of agriculture a science has led to the development of the different specific disciplines in agricu ture (*i.e.*, agricultural economics, agricultural chemistry, animal physiology, etc.). T study of agriculture as a science became directed towards knowing and learning abo the different disciplines of agricultural science. These disciplines became the bases the different subjects in the BSA curriculum. Traditionally, of the different disciplin are presented and fragmentally learned as layer after layer of subjects following sequential order as manifested by one subject being a pre-requisite to anothe However, the problems and problematic situations encountered by practitioners agriculture come in the form of complex issues and situations which require t

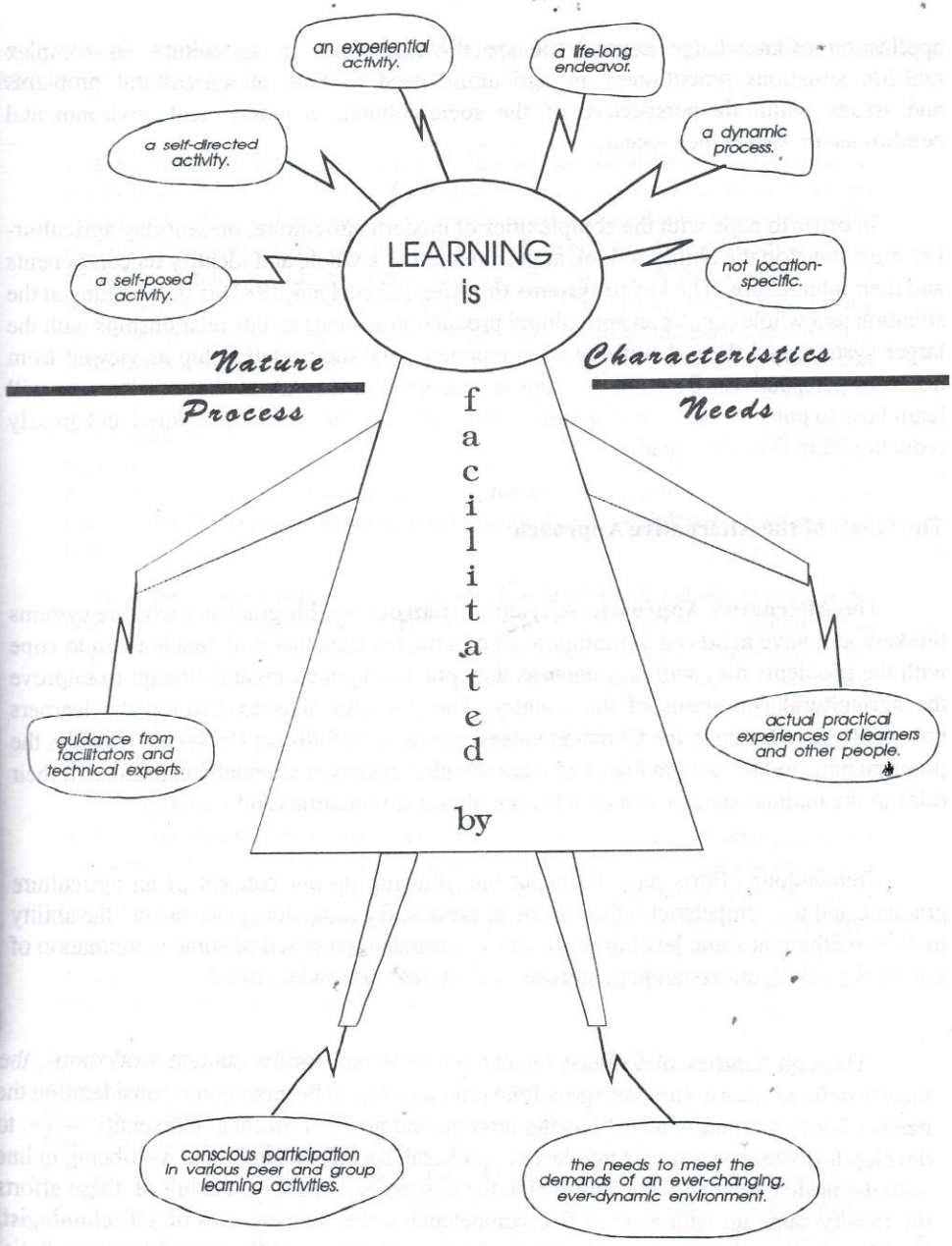


Figure 1: Beliefs about the Nature of Learning (Jurlano and Ablan, 1988).

application of knowledge beyond the specific disciplines in agriculture. In complex real-life situations, practitioners in agriculture need to look at agricultural problems and issues within the perspective of the socio-cultural, economic and environmental conditions in which they occur.

In order to cope with the complexities of modern agriculture, present-day agriculturists must develop the ability to look at the situation as a whole and identify its components and their interactions. The key to **systems thinking** (Checkland, 1981) is first looking at the situation as a whole (*i.e.*, as an agricultural production system) and its relationships with the larger system, and then identifying its components and their relationship as viewed from different perspectives. Systems thinking was adopted in the AA so that our learners will learn how to put some kind of structure or order into an otherwise unstructured and grossly reductionist real-world situation.

## The Goals of the Alternative Approach

The **Alternative Approach** (AA) aims to turn out capable graduates who are systems thinkers and have achieved a minimum set of competencies that will enable them to cope with the problems they will encounter as they practice agriculture and attempt to improve the agricultural conditions of the country. The AA also aims to develop the learners holistically, according to the Christian values espoused by Silliman University. Finally, the program aims to turn out graduates who are socially and environmentally conscious of their roles in the maintenance of sustainable agricultural communities and societies.

Tremendous efforts have been put into drawing up our concept of an agriculture graduate and the competencies that he/she possesses. By competency, we mean "the ability to do something at some level of proficiency ... usually composed of some combination of knowledge, skill, understanding, attitude, and values" (Knowles, 1986).

Through a series of College faculty seminars and faculty-student workshops, the faculty defined what a Silliman agriculture graduate should be, taking into consideration the needs of our community as well as the mission and goals of Silliman University — *i.e.* to develop the whole person, his intellectual, physical, social and emotional well-being in line with the basic Christian values for which the university stands. As a result of these efforts the faculty came up with a set of five competencies, the competencies of a **Technologist, Problem Solver, Independent Learner, Communicator,** and **Systems Manager**. Satisfactory evidence of development of these competencies will merit progression to the next curricular level. Figure 2 summarizes our definition of these competencies.

Figure 2. The Competencies of an Ideal Silliman Agriculture Graduate and What They Mean (Jurlano and Ablan, 1988).

1. **A Technologist**. He has shown proof of knowledge and understanding of concepts and skills about specific scientific, technological, management, and economic concepts of crop and/or livestock production. He is able to demonstrate the development of skills and abilities about specific and general practices involved in crop production and/or animal husbandry and their operations as a business enterprise, as well as about scientific research methodologies in agriculture. He has shown evidence of having developed positive attitudes and interests regarding agriculture and innovations relating to his major field. He has manifested action patterns during the learning experience that show that he is, or will ultimately become, a capable agricultural scientist/technologist.

2. **A Problem-Solver**. He is one who is able to identify a problem or problem situation in the experiential situation that he is in. He has properly confronted the problem, preferably following Kolb and Fry's (1975) problem-solving model. He is able to view the problem and its perceived solution in the context of the overall real-life situation he is in.

3. **An Independent Learner**. He is one who has developed the ability to manage his time and energy effectively and efficiently. He shows personal commitment and responsibility in the conduct of his own learning experience. He is able to reflect and conceptualize his learning experiences. He has demonstrated the ability to search out information and utilize it to meet his learning needs. He has shown the ability to do a self-assessment and make meaning out of it. He views the results of formative evaluation positively and has, on his own, made moves to improve the situation on the basis of this evaluation.

4. **A Communicator**. He is one who is able to clearly articulate his thinking about his experiences. He is able to accurately verbalize his goals and purposes, his strategies and methodologies, the outcomes and perceptions of his learning experiences. He shows sensitivity for and respect towards other people (co-learners, facilitator, resource persons, the rural people). He shows evidence to support his understanding of group dynamics: he can lead, or be led in, a group; he can be of help in resolving conflicts within the group; he has shown the willingness and ability to help others learn.

5. **A Systems Manager.** He is one who is able to design and conduct a sound learning experience based on a sound understanding of the environment in which the farm operates. He shows evidence of looking at his individual learning projects/activities in relation to each other and to the overall farm situation. He has shown the ability to manage farm activities by properly innovating, allocating, and operating farm resources. He shows understanding for and a positive attitude towards agriculture as a human activity system. He manifests an optimistic outlook towards agriculture and its contribution to the maintenance of sustainable communities and societies.

**Mechanics of the Alternative Approach**

In order to operationalize the goals of the **Alternative Approach**, a number of norms and conventions were adopted. Foremost among these is a radical change in the traditional notions of the student-teacher relationship. The program does not uphold the usual concept of teachers as "givers" of knowledge and of students as passive "receivers" of knowledge. In AA, knowledge is not transferred to passive receivers; it is sought by active learners. Teachers facilitate the process of learning. It is proper, therefore, that we refer to our enrollees as **learners** rather than students and to our faculty members as **facilitators of learning** rather than teachers.

In the **Alternative Approach,** learners go through four progressive levels of development and agricultural learning. Level I and II learners focus their learning on general issues about agriculture and its various scientific disciplines as a way of enhancing their awareness of and interest in agriculture. At Level III the learners confront specific issues relating to scientific agriculture; this is done through immersion at the College Farms. The immersion period continues on to Level IV, with learning more directed towards the application of production technologies and the development of the learners' management skills in innovating, allocating, and operating farm resources.

The core of learning in the **Alternative Approach** is the provision of opportunities for learners to be exposed to the actual experience in a real-life situation in agriculture. The College Farms, with all the internal and external forces incumbent upon them as commercially-operated enterprises, serve as the locus for the experiencing process. Following the experiential learning model proposed by Kolb and Fry (1975), the learners process their experiences. Learners are encouraged by their facilitators to reflect upon their experiences, thus enabling them to make meaning out of their experiences and proceed to develop plans of action leading to the creation of new experiences. This process results in a two-pronged learning — *i.e.* 1) learning about facts, techniques and processes in agriculture and 2) learning about how to deal with problem situations in agriculture, ultimately leading to the design and implementation of situation-improving courses of action.

**Learning Activities.** The **Alternative Approach** puts emphasis on self-directed learning. It recognizes the need to allow learners to design their own learning experiences according to their needs, interests, abilities, and pace of learning to enable them to make sense of what they are doing. However, there is a need for some kind of structure that will guide the learners as they pursue their experiential learning.

In the **Alternative Approach**, this structure comes in the form of various kinds of learning projects. A learning contract is one of the components of the structured learning in AA. Learning contracts are a way for learners to take control of the learning situation (Knowles, 1956). The projects vary according to the progressive levels of cognitive learning

as espoused in the Taxonomy of Educational Objectives (Bloom, 1956). For example, learning projects conducted during Levels I and II concern general knowledge and comprehension issues that enable the learners to gain relevant information and understanding about agriculture as a scientific field of endeavor, an occupation, a profession, and above all, as a human activity system.

At Level III, learning contracts are entered into by learners for the conduct of hands-on "production system" projects that serve to acquaint the learners with the production of their chosen commodity. Applied research experimentations are also undertaken to provide learners practical experience in the conduct of actual field experiments. Moreover, Level III learners undertake a Farm Production Analysis (FPA) in which they conduct a case study of an existing commercial farm other than the College Farms. The case study focuses on an analysis of the farm and all its internal and external forces from a systems perspective.

Level IV learners undertake a Farm Management Internship (FMI). The FMI is an holistic learning experience, where the learners take active roles in the short- and medium-term planning and management of the College Farms. As farm management participants, they hone their managerial skills in innovating, allocating, and operating farm resources in the context of the College Farms. More than that, the farm experience serves as springboard for the conduct of other learning projects that guide them in the choice of specific learning activities. For example, FMI learners undertake situation-improving activities where they, guided by the problem-solving model, observe problems or problematic situations either at the College Farms or outside, reflect and analyze the conditions upon which these problems or situations occur, define the concepts that they relate to, and draw up plans of action which they implement as a way of improving the situation.

In countries such as the Philippines where agriculture is practically rural-based, graduates in agriculture need to be prepared for the task of serving as technology transfer agents in the rural areas. The **Alternative Approach** meets such need by facilitating the Level IV learners' exposure to the rural communities through a Rural Outreach Project (ROP). By observing the rural conditions first-hand and by doing actual extension work therein, the learners gain an appreciation of and a positive attitude towards the rural community and towards extension work.

**Facilitation of Learning**. It is the intention of the College faculty to provide the learners with the best possible atmosphere so that their experience can be made personally meaningful, thus offering the most suitable environment for learning. Individual or group **facilitation meetings** between learners and their nominated faculty facilitator are held both regularly and on a needs-basis to serve as forum for the discussion of concerns, actions, and the overall progress of the learning experience. Learners may also arrange for **project support meetings** with any faculty member whose expertise they need to help them deal

with the technical and technological aspects of the experience. Structured lectures provide the necessary support to the learners in all levels of the program.

**Assessment in the Alternative Approach**. One of the most difficult aspects in the implementation of an experiential learning strategy is how to assess the learners' performance. Assessment of learning from experience is not as easy as in the traditional method, where evaluation is based largely on highly objective indicators such test scores. Of course, it must be pointed out that ability to recall sets of information obtained from the lectures during examinations is not enough basis for judging one's learning. This is one malady that people and institutions shifting from traditional to the experiential-based learning have to bear with (Heron, 1981).

As we strive hard to make the learners' experiences more meaningful, we are also doing our best to make the assessment procedures a fair and adequate tool for determining whether or not the learners have attained the goals of AA. We bear in mind that there are always the dangers of evaluating the learners in terms of the experience *per se* rather than in terms of learning outcomes. Admittedly, at times we fall into this trap. Apparently, the reason for this is that aside from factors intrinsic to the assessors, articulating learning outcomes has often been a problem for experiential learners. This is a well-documented observation (Keeton et al., 1976).

Assessment under the **Alternative Approach** is both formative and summative in nature. Formative evaluation emphasizes the methodological aspects of the learning experience and is done to give feedback on the learners' experience. It does not bear directly on the final decision regarding progression to the next level of the academic program. Formative evaluation starts with self-assessment; that is, the learner looks at where he is and how he is going in relation to the goals that he has set in his learning projects. In projects where there was group action, assessment from co-learners is also solicited. Facilitators also give formative evaluation on a regular basis.

The summative assessment is done at the end of every semester. It looks at the totality of the learners' experiences during the term and the level of competency development that the learners have attained. The summative assessment centers around a detailed examination of portfolios presented by the learners. A portfolio, as Keeton et al. (1976) put it, is "a file or folder of accumulated information about a student's experiences and accomplishments that can be the vehicle for organizing and distilling raw experiences into a manageable form for assessment." Documents in the portfolio essentially include a narrative document that contains the learner's reasons why he should be considered for progression, attempting to put into writing his claim to learning; the learning contracts entered into between the learner and the College faculty, through his facilitator, for the conduct of individual learning projects; a comprehensive report of the results of learning projects and the areas of

competency development attained; and letters and other documents of validation from people in authority within and outside of the university which provide evidence that the experiences presented have indeed been done, and done satisfactorily.

At the end of every semester, the learners present their portfolios to the College faculty, through their respective facilitators, in preparation for the summative assessment. For certain levels (*i.e.,* Levels III and IV), copies of the learners' portfolios are given to readers chosen from among the faculty who then assess the learners' development based on the submissions presented. Facilitators also conduct summative assessment on their assigned learners. In addition, Level IV learners present themselves for an interview before a panel of assessors made up of three members of the College faculty. During the panel interview, the learners must be able to show that their collective learning experiences during the year have generated the development of competencies which define our concept of an ideal Silliman agriculture graduate. Finally the entire College faculty, sitting *en banc*, determines whether or not the learners are worthy of progression to the next level.

## Summary

*Ce n'est que le premier pas qui coûte.*— it is only the first step which is difficult. At the initial stage of program implementation, we thought that this was so. It proved itself wrong. It seemed that every step of the way is a first step. The challenge to make the program more relevant is simply so great that we have to grapple with the Herculean task of continuously realigning our strategy with the needs of our learners and the realities of the present situation. Nevertheless, we at the Silliman University College Agriculture can hold our heads high and say that we have lived up to the goal of every university to be not merely an institution of teaching, but, indeed, an institution of learning.

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