A LEARNER-CENTRED APPROACH TO IMPROVE TEACHING AND LEARNING IN AN AGRICULTURAL POLYTECHNIC IN INDONESIA

by
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A thesis submitted in partial fulfilment of the requirements of the Degree of Master of Science (Honours)

School of Agriculture and Rural Development
University of Western Sydney - Hawkesbury
Richmond - NSW
December, 1996
PLEASE NOTE

The greatest amount of care has been taken while scanning this thesis,

and the best possible result has been obtained.
DECLARATION

I, SITI AMANAH, hereby certify that the material consisted in this thesis, and the research from which it is derived has not been submitted for a Higher Degree, at any other institution. I also certify that this thesis contains the work of others, only where that work has been referenced as such. The research from which this thesis is produced, was conducted by the use of resources provided by facilitators at the University Western Sydney-Hawkesbury and my colleagues at the Polytechnic of Agriculture, University of Jember, East Java. This thesis, however, remains my original work.

SITI AMANAH
For
my dearest
Akbar and Deka
ACKNOWLEDGMENTS

This thesis could not have been written without the encouragement, inspiration and unfailing support of friends and colleagues. On this occasion, I would like to thank those who deserve a special mention and to whom I am greatly indebted: to Dale E. Williams and Robert D. Macadam for their supervision of the study and their patient assistance during the preparation and editing of the thesis. I am also thankful to Joe Zarb, Robert Fisher, and Roger Roberts who contributed important view points of the contexts of the study.

I would like to express my gratitude to Valerie Newton who has assisted and supported me during the difficult times of my study. I would also thank Jane Malfroy for her contribution as the Academic Advisor for international students.

Many others too numerous to mention have contributed at one time or another and I am grateful for their insights. I also give credit to my colleagues, and students at the Agricultural Polytechnic, University of Jember, East Java; those involved in the Extension subject for their support, enthusiasms, participation, and cooperation for the project, particularly to Suwardi, Zayin, Cholyubi and Bagus.

I must gratefully acknowledge the valuable understanding and forbearance of my husband, Akbar and my lovely daughter, Deka; my parents who took care of my daughter during the study; and my sisters and brothers.

Special thanks are due to the Australian Agency for International Development (AusAID) for the scholarship awarded to me in the undertaking of this Masters Program. Appreciation is also extended to the Government of Indonesia for giving me the privilege of study in Australia.

Finally, the views and ideas expressed in this thesis, together with any errors or omissions, are naturally my own responsibility.
ABSTRACT

This thesis was generated from an action research project. The project aim was to improve the learning process at the Polytechnic of Agriculture, University of Jember, East Java. The proposition argued in this thesis is that:

The implementation of learner-centred approaches in a formal tertiary education will assist educators and learners to meet their needs. Further, the approaches will motivate participants in the learning process to be both self-responsible and self-directed learners.

The initial need for this research was a feeling of unease by staff teaching the Extension subject. There was also unease about our practices, student satisfaction and contribution to learning by the outside community. Participatory approaches were utilised to induce improvement. A research team was formed, consisting of six Extension subject staff. Participants were the students enrolled in the subject, the Director, the Associate Director for Academic and Head of School. Outsiders also contributed much information supporting the study. They were two government extensionists in Jember, farmers who lived near the Polytechnic and the Former Director of the Agricultural Polytechnic Education Project.

The Lewin spiral of action research and the Kolb learning cycle were used as guides for the team to learn from the project. The use of action research in the study created an understanding that the team should work shoulder to shoulder to achieve the desired changes. Conflicts during the project had trained the members of the team to learn to tolerate other person views. The research team also developed a strong ownership of the study, because the subject coordinators could manage the study independently.

The outcomes from this project were:
- students were responsible for their own learning,
- staff were able to act as professional facilitators,
- contents of curriculum for the Extension subject were-constructed following the agricultural development.

However, there were still unresolved issues such as:
- assessment of the “new” learning approach, and
- involving outsider community to contribute any ideas for learning improvement.

Possibilities offered in facing the unresolved issues were:
- involve students in choosing the assessment method,
- negotiate between staff and students in setting criteria of assessment, and
- building mutual relationships with the outsiders.

It was also recommended that further research of effectiveness of learning approaches in formal tertiary education needs to be carried out.
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ERRATA

The following Master of Science (Honours) Thesis errata should be noted:

* Abstract, paragraph 3, line 4 should read: Working through conflicts during the project helped members.
* Abstract, paragraph 4, line 4: delete hyphen.
* Page 1, paragraph 1, line 7-10 (1.1.7-10) should read: ... for developing this tertiary institution, especially its learning climate. Expected aspects to improve that climate included: accommodating more diverse learning styles; reviewing content of subjects; and improving communication between all participants in the learning process.
* 1.3.3 delete comma.
* 2.2.5 applied should read: implied.
* 2.2.6 should read: to the learning process.
* Page 3, Table 1 should read: negotiating.
* 4.1.6 should read: devised.
* 4.4.3 should read: and processes.
* 5.3.5 Start new sentence: Meanwhile ...
* 5.3.6 should read: In teacher-centred approaches, teaching a package of set information is time effective.
* 5.3.9 should read: approach or blend of approaches.
* 7.2.2 should read: Hawkesbury sees action research as one important way for situation improvement.
* 8.1.1 delete: professional.
* 8.2.2 should read: equip learners.
* 9.3.3 should read: workplace.
* 11.1.5 should read: student independence.
* 11.3.5 should read: were to be well.
* 12.4.7 should read: was more than three times.
* 12.4.8 should read: arrange.
* 14.2.6 should read: demonstration plot.
* 18.3.1 should read: in their input.
* 19.2.3 should read: and I as.
* 20.1.5 delete: will end the thesis.
* 23.3.2 should read: modelled.
* 30.2.1 should read: than passive process.
* 42.1.2 should read: in a study of its methodology.
* Page 43 is found between pages 45 & 46.
* 45.1.3 should read: to apply to
* 49.2.1 should read: as experts.
* 56.2.3-6 should read: Other participants in the project included: Soetrisno Widjaja, the Politechnic Director (whom I consulted in the field) and Djenal, Gita Pawana and colleagues in my program and socio-economic laboratory.
* 74.1.5 delete: team.
* 79.2.1 should read: The next step involved the.
* 79.4.1 should read: subject’s.
* 87.3.2 should read: with such a class.
* 114.3.1 should read: team’s.
* 115.4.1 should read: a significant.
* 116.1.7 should read: are included.
* 121.5.1 should read: Chapter Four provided a story of the project experience.
* 140.1.2 should be read as the Chapters opening line: The action research process consists of four phases: planning, acting, observing and reflecting.
* 149.2.1 should read: monitoring.
* 154.2.1 should read: The experiential learning issue that was most important to the research team was the assessment process.


Thankyou for your attention and patience.

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CHAPTER ONE
CONTEXT AND BACKGROUND OF THE STUDY

INTRODUCTION

Research context

This thesis is about an action research project, carried out at the Polytechnic of Agriculture, University of Jember, East Java. The Polytechnic runs its academic activities mainly by teacher-centred approaches. Informal discussions amongst students and staff about their experience of learning approaches prior to this study led to a general view that there was a need for positive change to occur in learning approaches. Indeed, many changes have been anticipated for the development of this tertiary institution, specifically in the improvement of its learning climate. Examples include: modification to the learning styles, reviewing the contents of the subject, and developing better communication among participants of the learning process.

The proposition I argue in this study is that:

*Implementation of learner-centred approaches in tertiary formal education will enhance educators and learners to meet their needs. Further, the approaches will stimulate participants in the learning process to be active and independent learners.*

This chapter introduces the reader to the research context. Assumptions underlying the study, background and purposes of the study are presented here. The last, section on the organisation of this thesis expresses a rationale for the report structure.

The study from which this thesis was generated could be viewed as a complex project, considering the various activities and the number of people involved in the
research. Two essential aims in action research activities, situation improvement and involvement had encouraged both colleagues and I to employ an action research paradigm in facing such complex issues.

To start the research, contact with Extension subject teaching staff in East Java was developed to set up a research team. The Polytechnic Board had given support to the research team and myself to collaboratively promote change in the subject\(^1\) Extension. Initial discussion on the research project began in April 1995. Colleagues suggested that evaluation on teaching practices was required. This applied not only evaluation of the contents of the subject or course, but also the learning process, students' expectations and contributions from the community.

The action phase of the project ran from the middle of July 1995 to the end of February 1996. A review of the project was conducted at the end of August 1996. The early phase of the study was commenced as stage one; the following second and third stages presenting action implementation of the project. The research team ran about 12 meetings in the action phase of the project. Meetings were used as mediums to discuss issues arising during the project, to make action plans and to exchange experiences among the research team. Activities between the meetings were parts of action implementation of the intended changes. The fourth and last stage was reflection and evaluation of the project. Table 1 outlines the sequence of events occurring during the study. The more complete story of how this study was carried out will be presented in Chapter Three.

---

\(^1\) The term the Extension subject refers to the course offered in the Polytechnic, also called Agricultural Extension. A core extension subject is compulsory for all students. Another extension subject for advanced students is optional, except for those enrolled in the School of Foodcrops Cultivation.
Table 1. Sequence of events in the study

<table>
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<th>Research stage</th>
<th>Activity</th>
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| i Stage one (early phase): April to July 1995 | - Broad literature review at the University of Western Sydney - Hawkesbury  
- Discussion, seminar and workshop about this project at the School of Agriculture and Rural Development, Univ. of Western Sydney-Hawkesbury  
- Action plan for conducting the study | - Myself  
- Myself, fellow students and staff/facilitators at Hawkesbury  
- Colleagues at the Polytechnic and myself |
| | ii Data and information gathering  
- Processing information  
- Negotiation the project with participants | iii The research team and the students  
- The research team  
- The research team, the critical group, the students |
| Stage two (action phase one): July to August 1995 at the Polytechnic of Agriculture, University of Jember, East Java | iv Implementation of the learner-centred approaches  
- The research team meetings  
- Interviewing extensionists  
- Facilitation and consultation  
- Depth interview with the Former Director of the Agricultural Polytechnic project at the Department of Education and Culture, Jakarta  
- Curriculum review | The students, the staff and a technician  
- The research team and the critical group joined the meeting when required  
- Two members of the research team and three extensionists  
- The students with the research team  
- Purwadi, the Former Director; Wiwin, the staff of polytechnic curriculum and myself as interviewer  
- The research team, student representatives, the Head of School, and a technician |
| Stage three (action phase two): August 1995 to January 1996 | v Meeting among the research team for reflection  
- Writing up the thesis, and consultation  
- Evaluation of the project  
- Action plan for further improvement | vi The research team, the Head of School and the critical group  
- Myself, supervisors and staff at Hawkesbury  
- The research team, critical group, program head, the Director and student’s representative  
- The research team |
The research team in this study included the six lecturers of Extension and myself. Participants in the project were the Head of School, a technician, and an administrator who formed as a critiquing group. Other participants were the Director of Polytechnic, Associate Director (academic), staff interested in the learning process and the students who undertook the subject. Action research seemed well suited to the research questions we devise and to the desire we had to create participation in educational change.

Until now, the conventional approach in formal education has been mainly based on teacher-centred approaches. This exists widely throughout Indonesia, including at the Polytechnic. Dewey (1963:17) employed the label “traditional” for the structure of “teacher-centred” procedure and “new” for “learner-centred” procedure. I point out that “traditional” education has the following characteristics:

1. The main purpose is to prepare the young for future responsibilities and for success in life, by means of acquisition of the organised bodies of information and prepared forms of skill which comprehend the material of instruction.
2. Since the subject-matter as well as standards of proper conduct are handed down from the past, the attitude of pupils must, upon the whole, be one of docility, receptivity, and obedience. Books, particularly textbooks, are the chief representatives of the lore and wisdom of the past, while teachers are the organs through which pupils are brought into effective connection with the material.
3. Teachers are the agents through which knowledge and skills are communicated and rules of conduct enforced (Dewey, J 1963:17).

I argue that in traditional education, the standards, content and methods are decided by educators, not by the learners. Thus, the notion of involvement or participation of students in determining the learning purposes processes is very low. The main objective in traditional education tends to ensure learners’ mastering what is in references and in the minds of the educators (Dewey, 1963:22). This is undertaken
mostly through verbal communication. In short, traditional education aims mainly at transferring societal and cultural ideas, values and attitudes to the learner.

On the other hand, learner-centred procedures motivate students to analyse their own experiences; encourage learners to be self-responsible and self-directed. Rather than processing facts from text books and lectures, these approaches intend to encourage learners to learn from processing their direct experiences (Dewey, in Marjoribanks, 1991:90). Skills, therefore, are acquired through activities carried out by the learner. In this process, educators assist learners to master their objectives. Clearly, skills are not the result of drill and rote memorization.

To me, both “traditional and new” procedures or approaches have their strengths as well as their weaknesses. In teacher-centred approaches, there is a very limited opportunity for students to be involved in the learning process. For example, students rarely take part in making decisions on material selected for the subject (lesson); meanwhile in learner-centred approaches, participation from learners is crucial to ensure that the learning process meets the learners’ needs. In the teacher-centred approaches, the target of teaching package of cognitive learning materials could be achieved faster. Learner-centred approaches tend to be time consuming. There is a choice, of course, for both staff and students to decide on an appropriate approach.

I am very interested in Ison’s concept of new ways of learning (in Pretty and Chambers, 1993:3). Ison says that learning does not necessarily result from teaching. This is because “teaching implies the transfer of knowledge from someone who knows to someone who does not know. Teaching is the normal mode in curricula. It underpins the transfer of technology model of research. It is central to many
organisational structures.” Pretty and Chambers (1993:4) says that universities and other agricultural institutions reinforce the teaching paradigm by stressing that they are custodians of knowledge that can be given (usually by lecture) to a recipient (a student).

There is little experience of institutional reform that has placed learning approaches at the center of education. One example of this is the School of Agriculture and Rural Development, University of Western Sydney-Hawkesbury. In the 1980s, according to Bawden (et al., in Pretty and Chambers 1993:4) Hawkesbury Agricultural College operated as a fully residential vocational institution, filling the technological tier of a three-tiered State system of agricultural research. In the late 1970s, it began transformation into a multi-purpose college of agricultural education, and radical reforms respectively followed. Five key approaches dominate the current educational framework. These are adult learning; experiential learning; systemic and contingency approaches to problem solving; action research; and scientific method and communication or group theory (Bawden, in Pretty and Chambers 1993:4). Further, Pretty and Chambers (1993:4) quote Bawden’s statement of the objective of the approach as “to create learning systems which are able to retain their abilities to be influenced by, as well as have a positive influence on, the circumstances which surround them.” To me, Bawden’s framework of agricultural education is likely to address the current complexity of agriculture.

Mezirow (in Kemmis and McTaggart, 1982:143) says that learner dependency on an educator should be reduced by appropriate assistance from the educator. The implication of this is that the learners are guided to be independent learners. I view
independent learners as well equipped in both practical and theoretical knowledge. Several aspects should be taken into account in mastering independent learners. The examples of the aspects are: evaluation of the learning setting; developing better relationships with participants in the learning process, involving participation of all participants of the learning process; changing implementation for better practise; and taking action for improvement. Concerning the research context, it can be said that some outcomes of this research may be transferable to other educational institutions that have similar contexts and problems.

Assumptions

The programme of Masters Science (Honours) in the School of Agriculture and Rural Development, University of Western Sydney-Hawkesbury assumes the use of action research as a way for situation improvement. One action research model is that of Kemmis and Carr. This model follows that of Lewin (1946). The stress of Kemmis and Carr's model is that action is carried out in collaboration with a client to improve a problematic situation. Therefore, I designed this project to employ this model (as pictured in Figure 7, in Chapter Three) and the methodological assumptions embedded in it. One main assumption in this project was that an action research team could intervene in the life of an organisation (which was the Polytechnic) to induce improvement. Thus, the research team expected their work would contribute to situation improvement in the Polytechnic.

It was also assumed that a participatory approach in action research allows some of the people in the institution or community to take part actively with professional
professional researchers throughout the research process from the initial design to action implications (Whyte, 1991:20). However, in this project, we set a boundary on the meaning of participation. Participation was perceived as the teaching staff of Extension actively involved during action phases of the project. In the stage of writing up the thesis, participation of the team members was very low. This can be understood because it is impossible to maintain participation in all stages of the project. Clearly, every stage required a different level and type of participation. For example: we required government extensionists’ participation in the form of sharing experience about agricultural extension. From the students, we needed involvement in their reviewing of the subject contents.

Another underlying assumption was that an experiential learning\(^2\) approach would benefit learners to be competent people in facing problems. The Extension subject teaching staff and I intended to implement this approach into the learning processes. Related to this, I quote Bawden’s definition (1995:9) of learning as “the process by which personal experience (actual and imagined) is transformed into knowledge (meaning) for action.” Learning, can be mastered in three different ways:

1. propositionally - for knowing
2. practically - for doing
3. experientially - for being (ibid.)

The three basic ways of learning (Bawden, 1995:10) can be pictured as a triangle, called a Model of Integrated Learning Strategies. Figure 1 shows this model.

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\(^2\) Learning in the context of experiential approaches can be viewed as “the process whereby knowledge is created through the transformation of experience (Kolb, 1984:38).”
BACKGROUND TO THE RECENT STUDY

Because of the specific educational setting at the Polytechnic, I believe it is beneficial to describe the history and learning process of the Polytechnic. Issues of the Extension subject at the Polytechnic will also be discussed.

The Polytechnic as a Tertiary Educational Institution

The Agricultural Polytechnic was founded in 1985 and began a learning tuition in 1987. Indeed, this institution has a relatively new agricultural education program that attempted to respond to workplaces needs for qualified graduates. Regarding the issue of how the educational institutions can better meet industry training requirements, it is not uncommon to put all the responsibility upon the institution. Thus, the institutions intend to “take action to redress the apparent mis-match between the content of institutional programs and the educational and training needs of the industry, the roots of the mis-match exist with both institutions and industry” (Reeve, et al. 1990:42).

Employers have a common complaint about agricultural graduates (particularly from universities) that they are unable to do anything of value immediately following
graduation. This means, employers need to invest in further training of graduates before they are able to receive a compensation on the amount spent in salaries. It was generally understood that all new recruits would need training on the job. Improving the immediate employability of graduates is not an easy task. Therefore, one objective of polytechnic education is to generate graduates that are ready to work without specific practical training. The priority of academic activities has stressed practical knowledge rather than theoretical knowledge (Table 2).

Table 2. Different priorities of tertiary education in Indonesia

<table>
<thead>
<tr>
<th>UNIVERSITY</th>
<th>INSTITUTE</th>
<th>ACADEMY</th>
<th>POLYTECHNIC</th>
</tr>
</thead>
<tbody>
<tr>
<td>Focusses on the basic development of theoretical and science development rather than practical skills</td>
<td>Focusses on specific field of study and develops professionalism (specialization skill) for the students</td>
<td>Considers the development of practical knowledge but still within theoretical frame reference</td>
<td>Stresses on development of practical skills of the students with supporting theories</td>
</tr>
<tr>
<td>The length of study:</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>8 up to 14 semesters</td>
<td>8 up to 14 semesters</td>
<td>6 up to 12 semesters</td>
<td>6 up to 12 semesters</td>
</tr>
<tr>
<td>The proportion of theories : practicum</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>60-70 : 40-30</td>
<td>60-70 : 40-30</td>
<td>40-50 : 50-60</td>
<td>30-35 : 60-70</td>
</tr>
</tbody>
</table>

Source: Directorate General for Higher Education, Department of Education and Culture, Indonesia

The Polytechnic was designed to stress practical knowledge (as shown in Table 2) and to be an autonomous institution, separated from the main university. However, at this stage the Polytechnic is still part of the University of Jember.

**Learning process at the Polytechnic**

Learning process could be seen as not only the process of transferring knowledge, but also as a medium for learning together (Hiemstra, 1991:26). In other
words, neither students nor lecturers are in a superior position. In the Polytechnic, the learning style before this study, concentrated more on teachers ‘teaching.’ Staff were the central point of the learning process. Students then were in a passive position, since they acted as the receivers of knowledge. The staff believed that this situation was not good for developing students independency, or at least for co-learning.

A staff report in April 1995 about learning approaches at the Polytechnic expressed that there was a need for alternative approaches to generate independent learners. Having reviewed learning approaches from both theoretical and practical aspects of learning, staff wished to promote a transformative learning process. The transformative learning will involve emancipatory education (Mezirow and associates, 1990:18). That means educational institutions will act as “an organisation effort to help the learning challenge presupposition, explore alternative perspectives, transform old ways of understanding, and act on new perspectives.” Transformative learning seems to be relevant with the new learning paradigm based on ‘experience’.

The issues identified regarding learning processes were:

1. Transformation from teacher-centredness to learner-centredness required support and participation from inside and outside the institution. A network was needed for taking such action. However, obtaining participation from outside the institution was rather difficult unless outsiders understood that they also owned the problems in the Polytechnic. To do so, outsiders should be well connected to the Polytechnic and be able to benefit from participation. Developing community links would be of great value for both insiders and outsiders. The link could be used as a medium to learn together, and to develop understanding among participants.
2. The students suggested that experiential learning was possible to apply in the learning process of the Extension subject. The students expected that the staff and students needed to work together with equal responsibilities. It was also expressed by the students that the tasks should be made fully beneficial for them.

3. Even though the practical area is the main arena in the Polytechnic, academic staff claim that the ratio of practical and theoretical knowledge should be made flexible depending on student competency development.

**The ‘Extension’ subject at the Polytechnic**

‘Extension’, also called 'Agricultural Extension' is offered in the core level (one semester) for all students and in the advanced level (one semester) for students enrolled in Cultivation for Foodcrops Field of study. The ‘Extension’ subject is taught with aims that students understand the philosophical views of extension; to become able to practise the basic concept of extension in their daily life; and to be able to resolve their own problems.

Fourteen to 16 weeks per semester were required to cover the topics of the subject. Subject presentation was done in the form of lectures, workshop, fieldwork and fieldtrips. There were two classes for core study lectures, each with 80-85 students. There were an additional 45 students in advanced studies who undertook the subject Extension (continuation subject) as a compulsory subject for students of this School. Attending practicum was compulsory for all students who undertook the subject. If a student more than three was times absent from attending practicum, the student should arranged alternative learning activities with the staff for satisfying the
subject requirements. In practical activities, core students were divided into four
groups with 45 students per class. Two Extension teaching staff led the practicum,
assisted by a technician who provided materials for it. The advanced students
practicum were only two groups, with 22-23 students in each group.

Assessment was aimed at examining the students’ achievement in developing
theoretical and practical knowledge of extension. Assessment was arranged within
conventional procedures in which the teaching staff set up the assessment criteria.
Quiz (Q), practicum assessment and students’ report of practicum (R), middle semester
examination (M), and end of semester examination (E) were used as data for
assessment. A grade then could be drawn from a formula agreed to the staff. Example
of formula: \( ((Q + R)/2 + M + E)/2 \). The grades would be given in label A (very good,
usually for between 75 and 80); B (good, for the mark between 70 and 75); C (fair, for
the mark between 60 and 69); D (poor, for the mark between 55 and 59) and E (fail, for
the mark below 55) if a student got E, he or she should re-undertake the subject in the
following academic year.

Details of the Extension subject

In general, extension was viewed as a process to extend farmers skills and
knowledge in order to improve: their quality of life, their businesses, and their social
relationship within the community. Extension, therefore, was regarded as transforming
ideas, innovation, information, and so forth, from a given source to those who required
the messages to resolve the recipients’ problems.
The details of the subject contents prior to this study were as follows:

A. Level: core studies (Table 3)

Title of the subject: Agricultural Extension (offered in semester three)

General instructional goals were that the students could:

1. Understand the important aspects of developing human resources.
2. Understand the principle of changes in community.
3. Operate principles of communication in various situations.
5. Understand the principles of adult learning.
6. Assess the communities need of effective management in extension service.

B. Level: Advanced studies (Table 4)

Title of the subject: Extension in Foodcrops Cultivation (offered in semester five)

General instructional goals were that the students could:

1. Describe personal qualifications for field extension officers and their roles.
2. Objectively assess the needs and expectations of farmers and villagers.
3. Persuade farmers and farming communities to have specific skills.
4. Plan and make a demo-plot and use it as a medium for extension.
5. Develop appropriate technology and skills for in the field.
Table 3. Topics, time allocation for lectures and practicum\(^3\) of the subject in core studies

<table>
<thead>
<tr>
<th>No</th>
<th>Topic</th>
<th>total weeks(^4) required</th>
<th>Time allocation for</th>
<th>Lecture</th>
<th>Workshop</th>
<th>Fieldwork</th>
<th>Fieldtrip</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Principle of Extension Definition, role and people involved in extension</td>
<td>1 x 50 x 3x50) none</td>
<td>none</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>Human Resources Development 1. Personal assessment 2. Value orientation and the basics of power 3. Sociology survey 4. The group theories</td>
<td>2 x (3x50) 2 x (3x50) 3 x (3x50) none</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>Program Planning and Development 1. Principle of program planning and development for changes 2. Characteristics of the changes and develop participation 3. Techniques survey for the needs, expectation, problems identification and program development</td>
<td>3 x (3x50) none</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>4</td>
<td>Communication 1. Models and process of communication 2. Communication methods 3. Listening &amp; writing skills, and barriers in communication</td>
<td>2 x (3x50) none</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td><strong>Total weeks/meetings</strong></td>
<td><strong>16 weeks</strong> 16 lectures 22 workshops 21 fieldwork 2 fieldtrips</td>
<td></td>
<td></td>
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</tbody>
</table>

\(^3\) Practicum was done in the form of workshop, fieldwork (in campus or near campus) and fieldtrip (off campus)

\(^4\) Total weeks refers to the time required to cover the topic. Activities in each week were lectures, workshop, fieldwork and fieldtrip.
Table 4. Topics, time allocation for lectures and practicum of the subject in advanced studies

<table>
<thead>
<tr>
<th>No</th>
<th>Topic</th>
<th>total weeks required</th>
<th>Lectures</th>
<th>Workshop</th>
<th>Fieldwork</th>
<th>Fieldtrip</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>The Role and Personal Qualification of extension officer</td>
<td>1</td>
<td>1 x 50</td>
<td>1 x (3x50)</td>
<td>1 x (3x50)</td>
<td>none</td>
</tr>
<tr>
<td></td>
<td>1. The role of the agent of change</td>
<td></td>
<td></td>
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<tr>
<td></td>
<td>2. Characteristic of qualified extension officer</td>
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<tr>
<td></td>
<td>2. Group Development</td>
<td></td>
<td></td>
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</tr>
<tr>
<td></td>
<td>1. Social and psychological aspects of a group</td>
<td>2</td>
<td>1 x 50</td>
<td>1 x (3x50)</td>
<td></td>
<td>none</td>
</tr>
<tr>
<td></td>
<td>2. Group dynamic: friction and cohesion, decision making in group</td>
<td></td>
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<tr>
<td></td>
<td>3. Group development process</td>
<td></td>
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</tr>
<tr>
<td>3.</td>
<td>Fulfill the Needs</td>
<td>3</td>
<td>2 x 50</td>
<td>2 x (3x50)</td>
<td>2 x (3x50)</td>
<td>none</td>
</tr>
<tr>
<td></td>
<td>1. Definition of needs</td>
<td></td>
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<tr>
<td></td>
<td>2. Maslow Hierarchical of needs</td>
<td></td>
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<tr>
<td></td>
<td>3. Community needs and problems to fulfill the needs, possible solution</td>
<td></td>
<td></td>
<td></td>
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</tr>
<tr>
<td>4.</td>
<td>Family Sociology and Changes</td>
<td>1</td>
<td>1 x (1x50)</td>
<td>1 x (3x50)</td>
<td></td>
<td>none</td>
</tr>
<tr>
<td></td>
<td>1. Definition of sociology and family sociology</td>
<td></td>
<td></td>
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<tr>
<td></td>
<td>2. Belief, attitude, value and norms in family</td>
<td></td>
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<tr>
<td></td>
<td>3. The role of family in extension</td>
<td></td>
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<tr>
<td>5.</td>
<td>Expectation of Family and Priority</td>
<td>1</td>
<td>1 x 50</td>
<td></td>
<td>1 x (3x50)</td>
<td>none</td>
</tr>
<tr>
<td></td>
<td>1. Decision maker in family</td>
<td></td>
<td></td>
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<tr>
<td></td>
<td>2. Work division in family</td>
<td></td>
<td></td>
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<tr>
<td></td>
<td>3. Rural family expectation to extension</td>
<td></td>
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<tr>
<td>6.</td>
<td>Skill in Instruction Techniques</td>
<td>2</td>
<td>2 x 50</td>
<td>1 x (3x50)</td>
<td></td>
<td>none</td>
</tr>
<tr>
<td></td>
<td>1. Classification of farmers</td>
<td></td>
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<tr>
<td></td>
<td>2. Instruction techniques</td>
<td></td>
<td></td>
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</tr>
<tr>
<td></td>
<td>3. Strength and weaknesses of instruction techniques</td>
<td></td>
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<tr>
<td>7.</td>
<td>Demonstration Plot</td>
<td>2</td>
<td>2 x 50</td>
<td></td>
<td></td>
<td>none</td>
</tr>
<tr>
<td></td>
<td>1. The importance of the demonstration plot within extension</td>
<td></td>
<td></td>
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</tr>
<tr>
<td></td>
<td>2. Farmers' responses to demonstration plot</td>
<td></td>
<td></td>
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</tr>
<tr>
<td></td>
<td>3. Advantages and disadvantages of the demonstration plot</td>
<td></td>
<td></td>
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<tr>
<td>8.</td>
<td>Training and Visit (T and V) System</td>
<td>2</td>
<td>2 x 50</td>
<td>1 x (3x50)</td>
<td></td>
<td>once</td>
</tr>
<tr>
<td></td>
<td>1. Various extension systems</td>
<td></td>
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</tr>
<tr>
<td></td>
<td>2. T and V system in Indonesia</td>
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</tbody>
</table>
A student survey was carried out in July 1995 to gather information on their opinions of the subject. Questions were set up to find out the current issues of extension; the learning approaches used; and student's evaluation on their own learning experience. The students in the survey suggested that some materials in the package should be reviewed because the materials did not correspond to the current context. Example of the materials: Extension methods that was more focused as learning and teaching process (core studies); Instruction techniques, Demonstration plot, and Training and Visit System (advanced studies). Complete results of the survey can be seen in Appendix 2.

Regarding the presentation of the subject, there were several issues needed to be improved. The issues were:

1. Problems of selecting the contents of the subject, particularly for advanced level. Interviews between the research team and the students demonstrated that there were two reasons for curriculum reform. Firstly, a number of materials did not meet student and workplace needs. Secondly, the contents were obsolete to current agricultural development. This was understandable, because when the Polytechnic was established, the curriculum was designed by a consortium without involving many other participants such as agriculture students or agri-industrial communities.
The staff realised that there were areas of the content that were irrelevant. For example: there were too many topics about the importance of extension as the process of exchanging information, technology transfer, and instruction techniques.

A need to develop extension teaching strategies that would equip students with ability to improve the community problems or at least for students to address their personal issues, such as, their ability to communicate with other people. Until the research began, the learning process had been focused on increasing the theoretical and practical knowledge of the students. It had not yet been developed how students could participate on problem solving in their surrounding community.

Coordination with other institutions was still limited for their input in the student lectures, practicum and field trip. The problem was how could we develop the coordination to have more valuable impacts, not only for the students, but also for the staff and the wider community.

Subject staff had an expectation to establish a radio station on campus. The aims were: to give an opportunity for students to practise operating electronic media for use in extension; to make more links between the institution and wider community; and to create a work experience for students talented in broadcasting. However, there was a constraint of a limited budget to realize this activity.
**Purposes of the study**

The main purpose of the study was to promote a learning process at the Polytechnic of Agriculture, University of Jember. It was assumed that a research team could help bring about beneficial change. The specific purposes were:

1. To identify problems through cooperative work within the research team.
2. To understand the context and issues to be improved, developed by participants of the research both inside and outside the Polytechnic.
3. To participatively improve the learning process, led by the research team.
4. To generate valuable outcomes for public knowledge.

**Organisation of this thesis**

Before outlining the rationale of this thesis, it is worthwhile to say that this study very much relates to my professional area. The term “I” is used to address “myself”. The term ‘we’ refers to my colleagues and If as “objects and subjects in a process of critical reflection and self-reflection” (Kemmis, in Zuber-Skerritt, 1991:60). In other words, the project behind this thesis is my colleagues and my learning experience to achieve desired changes.

The remainder of this thesis is divided into five chapters. Chapter Two is Theoretical Overview that captures the relevant theories and approaches. Theory underpinning the research approach is dealt with in Chapter Three, in the terms of implementation of action research, participatory action research (PAR), and experiential learning approaches. The methodology used to gather and analyse data is described in Chapter Three.
Chapter Four is about project implementation describing our experience in conducting the project. Evaluation of the project is then discussed in Chapter Five. The last is Chapter Six, in which I discuss my reflection which can be seen as my praxis. References will follow the last chapter. Finally, appendices consist of some supporting documents and several photos taken during the research will end the thesis.
CHAPTER TWO

THEORETICAL OVERVIEW

In the previous chapter the need for the study was located within a context of philosophical issues in education and against a historical background of polytechnic education. The need to promote a learning process in the Polytechnic by the use of action research was also discussed.

In this chapter, I will present my current conceptual positions drawn from literature, personal experience and discussion with colleagues in my workplace and at Hawkesbury. Action research as the approach used in this work for situation improvement will begin the discussion. This will be followed with a review of participatory action research (PAR) as the methodology in this project. The discussion will continue on the issues of action research in education, experiential learning approaches and two contrasting approaches to extension.

THE NATURE OF ACTION RESEARCH

The term 'action research' was used initially by Kurt Lewin in the 1940s to describe a form of research which could merge the experimental approach of social science with programs of social action in response to major social problems of the day. Lewin believes that within action research, advances in theory and needed social changes might continuously be achieved (Lewin, in Kemmis and McTaggart, 1988:29).

Cohen and Manion (1980:208) suggest that action research have been given more attention over the years than most other methods because of the specific
characteristics of this type of research. Further, the characteristics of action research are that it is situational, collaborative, participatory and self evaluative.

The concept of action research emerges in the behavioural sciences and is clearly applicable to an examination of human activity systems undertaken through the process of attempting to solve problems. The main idea of action research is that the researcher does not remain an observer outside the subject of the investigation but becomes a participant in the research context. The researcher takes part in the action, and the subject of the research is the process of change (Checkland, 1984:152). Thus, the distinction between researched and researcher is blurred.

Bawden (1989:15) suggests that in experimental research, the researcher does not become an integral part of the system. He says in action researching system, the researcher and researched act together in a dynamic relationship when collaboration amongst them is used to learn about the issues together. I comment here that action research is different from experimental research, because in experimental research the researcher is likely to be the outsider or the “expert researcher” (Bawden, 1989:14) investigating the researched or the object of the research.

**Three modes of action research**

It is important to elaborate different modes of action research because there is a tendency of this project to follow these modes through its whole process. Grundy (in Kemmis and McTaggart. 1988:353) suggests three modes: *technical, practical and emancipatory*. These modes are known as distinctive “types” of project life. A project may operate in one mode or it could employ other modes in its later process. Action
research is mainly aimed at allowing persons power to create positive change based on rational reflection on personal experience.

Grundy says that action research is likely to be applied in the study in which practitioners are centrally involved such as in an educational setting. I highlight that not all educational research is action research as three requirements should be met: (a) the project takes as its subject-matter a social practice, regarding it acts as a strategic action susceptible to improvement. (b) the project proceeds through a spiral of cycles of planning, acting, observing and reflecting, with each of these activities being systematically and self-critically implemented and interrelated; and (c) the project involves those responsible for the practice in each of the moments of the activity, with a widening participation in the project gradually including others affected by the practice, while maintaining collaborative control of the process.

Technical action research

This type is aimed to achieve more effective or efficient practice, the measured outcome pre-exists in the leader’s mind. The action is modeled to create or produce something beneficial, such as the creation of an effective specific studies’ program, an efficient administrative system or a set of new knowledge to be investigated by other people. In the technical mode, a project would be instigated by a particular body, person or group of people that is based on their greater experience. They would be regarded as “experts” or “competent figures.” The research facilitator could then be regarded as a research technician or engineer. The ultimate responsibility for the success of the project rests
with this facilitator (Grundy, in Kemmis and McTaggart 1988:355). The aim of establishing a facilitation role is to create action that results from the idea, image or pattern that the actor intends to generate. Characteristics of technical action research are:

"The project would be instigated by a particular person or group of persons who, by reason of their greater experience or qualifications, would be regarded as ‘experts’ or ‘authority figures’. The research facilitator could be regarded as a research technician or engineer and the ultimate responsibility for the success of the project rests with this facilitator."

Product centredness is the main purpose of this technical type of action research. For instance, the product may be the creation of a new education system in a tertiary institution. I expected the project would have this mode in its preliminary phase. In this phase, my role was to facilitate the research team reviewing the situation and understanding the methodology used in the project, as well as to activate participant involvement in the project.

**Practical action research**

Before shifting to the second type of action research, Grundy suggests that practical judgment (*phronesis*—a complex term that knowledge is its basis which is owned by the actor) and doing should be understood by practitioners. Practical judgment is “a true and reasoned disposition toward action with regard to things good and bad for men” (Ethics as cited by Grundy in Kemmis and McTaggart, 1988:356).

In using of an action research approach that encourages greater pupil responsibility for their learning, the teacher would ideally be assisted by a facilitator and a co-operative group of colleagues who, through the process of reflection and
deliberation as a group, could plan and review a serious of action steps. This type of action research is different from a technical action research program. This idea was adopted by establishing a research team consisting ‘Extension’ subject staff who worked together in assisting the change.

Emancipatory action research

In this type, the action research will need to be more powerful than the two other types of action research. The purpose of emancipation of participants in the action focuses not only upon specific practice, but also the theoretical and organisational structures and social structures which support it. In my opinion, emancipatory action research could only be achieved if the participants in the project understood the issues and had a commitment to work together for the desired change.

Participatory action research (PAR)

Participatory action research (PAR) can be seen as a generic methodology applied in a particular context by the use of a defined cycle of research, and the use of participatory methods (Dick, 1993:17). It is widely applied in educational settings. Whyte (1991:20) defines PAR as when some people in the institution or community under study actively take part with professional researcher throughout the research process from the initial design right through to the final presentation of results and discussion of their action implications.

It is clear that PAR is very different from conventional research approaches. Members of organisations and communities in conventional approaches are treated as
passive subjects, and participation from the subject is limited only to the extent of authorizing the project, being its subjects, and receiving the results.

Walton and Gaffney (in Whyte, 1991:125) say that in PAR, broader participation can lead to stronger consensus for change and sounder models - since models arrived at through broader participation are likely to integrate the interest of more stakeholders.

I point out that participation does not necessarily involving all participants in all stages of the research, because it is impossible to involve everyone in the whole process. Thus, it is important for researchers to decide in what stage/s participants need to actively take part. Some researchers may insist that participation should involve all participants in all stages of the research. Whilst some others acknowledge that participation in action research can be in the definition and taking action for resolving the issues (Fisher, in Inward Bounding, 1991:3). In my project, participation within the research team was built in all phases of the research, excluding the writing phase. Level of participation (Table 5) can range from passive to active participation, as described by Adnan's typology of participation (in Pretty, 1995:173).

PAR was employed in this research because of appropriateness of this methodology to the Polytechnic context. There were two main reasons of the use of PAR:

Firstly, the problematic situation in the Polytechnic was unique. As trying something new and different is always somewhat risky, I suggest that the use of participatory approach in promoting the change was very appropriate. Cooperative action research attempts to meet the challenges found in the research place by promoting group ownership; fostering creativity and critical thinking; promoting change and growth; and
serving as a means of resolving social conflicts (Shumsky, in Kemmis and McTaggart 1988:82). Thus, careful investigation from various viewpoints to clarify the problematic situation was required to validate actions.

Table 5. A typology of participation: how people participate in development programmes and projects

<table>
<thead>
<tr>
<th>Typology</th>
<th>Characteristics of each type</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Passive participation</td>
<td>People participate by being told what is going to happen or has already happened. It is a unilateral announcement by an administration or project management without listening to people’s responses. The information being shared belongs only to external professionals</td>
</tr>
<tr>
<td>2. Participation in information giving</td>
<td>People participate by answering questions posed by extractive researchers using questionnaire surveys or similar approaches. People do not have the opportunity to influence proceedings, as the findings are neither shared nor checked for accuracy.</td>
</tr>
<tr>
<td>3. Participation by consultation</td>
<td>People participate by being consulted and external agents listen to views. These external agents define both problems and solutions, and may modify these in the light of people’s responses. Such a consultative process does not concede any share in decision making and professionals are under no obligation to take on board people’s views.</td>
</tr>
<tr>
<td>4. Participation for material incentives</td>
<td>People participate by providing resources, for example labour, in return for food, cash or other material incentives. Much on-farm research falls in this category, as farmers provide the fields but are not involved in experimentation or the process of learning. It is very common to see this called participation, yet people have no stake in prolonging activities when the incentives end.</td>
</tr>
<tr>
<td>5. Functional participation</td>
<td>People participate by forming groups to meet predetermined objectives related to the project, which can involve the development or promotion of externally initiated social organisation. Such involvement does not tend to be at early stages of project cycles or planning, but rather after major decisions have been made. These institutions tend to be dependent on external initiators and facilitator, but may become self-dependent.</td>
</tr>
<tr>
<td>6. Interactive participation</td>
<td>People participate in joint analysis, which leads to action plans and the formation of new local institutions or the strengthening of existing ones. It tends to involve interdisciplinary methodologies that seek multiple perspectives, and so people have a stake in maintaining structures or practices.</td>
</tr>
<tr>
<td>7. Self-mobilization</td>
<td>People participate by taking initiatives independent of external institutions to change systems. They develop contacts with external institutions for resources and technical advice they need, but retain control over how resources are used. Such self-initiated mobilisation and collective action may or may not challenge existing inequitable distributions of wealth and power</td>
</tr>
</tbody>
</table>

Source: Pretty, 1995:173
Secondly, the use of PAR permitted connecting people from inside and outside the institution to work together. It involved active participation from the Extension subject staff and the students who enrolled in the subject at the Polytechnic.

**Action research in education**

It has been widely known that action research is often employed in connecting theory and practice. Kemmis and McTaggart (1988:42) suggest the important of the relationships between educational practices, discourses and organisational form:

"the institutionalisation of educational activities in reasonably well-formed and characteristic practices, depends upon the availability of discourses which can justify and/or legitimate the practices as educationally worthwhile, and upon the existence of stable organisational forms."

Before expanding to a deeper discussion of this issue, I will present Brown et al (in Grundy, and Kemmis 1981:2) definition of educational action research.

"Educational action research is referred to describe a strain of activities in curriculum development, professional development, school improvement programs, and systems planning and policy development. These activities have in common the identification of strategies of planned action research which are implemented and then systematically submitted to observation, reflection and change. Participants in the action being considered are integrally involved in all of these activities."

According to Feldman and Atkin (in Noffke and Stevenson, 1995:128) action research in education could be identified through its characteristics. First, it is collaborative. Collaboration should be strongly developed among the research team. Second, action research tends to employ the researchers as facilitators. This means the researchers could view themselves as facilitators. The researchers as educators focus on their own practice, not on the practice of others. In other words, the educators who
conduct action research can be regarded as the “subjects” of their own research. Therefore, the researchers are expected to improve their practice, and in so doing to reach better understanding of their educational situations. As action research focuses on educator-identified issues, it should be concerned about questions of morale. For example: how can the researchers take action on specific problem.

Further, Cohen and Manion (1980:211) classify five purposes of formal education in action research:

1. it is a means ofremedying problems diagnosed in specific situations, or of improving in some way a given set of circumstances;
2. it is a means of in-service training, thereby equipping the education practitioners with new skills and methods, sharpening their analytical powers and heightening his self-awareness;
3. it is a means of injecting additional or innovatory approaches to teaching and learning into an ongoing system which normally inhibits innovation and change;
4. it is a means of improving the normally poor communications between the practicing teacher and the academic researcher, and of remedying the failure of traditional research to give clear prescriptions; and
5. although lacking the rigour of true scientific research, it is a means of providing a preferable alternative to the more subjective, impressionistic approach to problem-solving in the classroom.

Action research functions best when it is co-operative action research. This method of research incorporates the ideas and expectations of all persons involved in the situation. Co-operative action research has the concomitants of beneficial effects and functions of the situation. In education, this activity translates into more practice in research and problem-solving by teachers, administrators, pupils, and certain community, while the quality of teaching and learning is in the process of being improved. Education has an aim to change cognitive, affective, behavioural and psychometric aspects of the learners. Therefore, lecturers play a major role as agents in
developing mature ways of thinking amongst the students. Learning is an extremely complicated process greatly influenced by a variety of factors. It involves far more than simply having access to information. In the learning process, I point out that both learners and teachers should be active. One of the strategies for active learning (Clark, 1987:68) is to involve students in doing things and thinking about the things they are doing. In other words, students are responsible for their learning experiences.

Active process is better than passive one process in promoting changes through the process. It was found in the Polytechnic, that the students were in a passive position. This may be because the staff were responsible for creating and managing the learning process. Related to this issue, is that effective learning requires a conceptual framework against which experiences are examined.

Educational research is aimed to represent an activity directed toward development of an organised body of scientific knowledge about the events with which educators are concerned. Travers (in Hayman, 1968:2-4) mentions that educational research focuses on the central importance of the behaviour pattern of students, and particularly those to be learned through the educational process. A scientific body of knowledge about education should allow the educator to determine just what teaching and other learning conditions are needed to provide and produce desired aspects of learned behaviour among those attending such a education program. Considering this statement, the research team and I pointed out that investigation into the learning and teaching process on the Extension subject at the Polytechnic was very important to generate the change to improve the problematic situations of educational process that lead to a successful learning process. An example of a successful learning process could
be that students will be well equipped to improve the problems with the staff as facilitators.

THE NATURE OF EXPERIENTIAL LEARNING

Experiential learning can be seen from different points of view. Firstly, it is used to describe the kind of learning undertaken by students who are given a chance to acquire and apply skills and knowledge in an immediate, relevant and meaningful setting. So, it involves direct encounter with phenomena being studied (Borzak, in Brookfield, 1983:16). It is learning in which the learner takes part and is directly in touch with the realities that are studied. The teacher training programmes that require students to spend their first few weeks actually teaching in schools, and which then use that experience as the foundation for an inductive derivation of pedagogic principles, are examples of experiential education. This type of experiential learning is sponsored by an institution which has an aim to give students more direct experience in integrating and applying knowledge through internships, service activities and other field study programmes.

The second way of seeing experiential learning is that of Houle’s idea (1980:22) in which he says that experiential learning is “the education that occurs as a result of direct participation in the event of life.” Such direct participation, however, is not sponsored by an educational agency and the learning which result is referred to variously as learning through life, prior learning. This is the process through which most people learning (Boydell, in Brookfield, 1983:16).
The term ‘experiential learning’ consists of two components - experience and learning. Experience on its own has no intrinsic educative merit, as one could experience any aspects of emotion, or situations that exert no purposeful desire influence to acquire knowledge and skill. For example, experiencing deafness does not in itself constitute learning, unless learning be equivalent to enlarging the scope and intensity of emotions experienced by the individual. On the other hand, if a person acquires new competencies to adjust to the new situation, that acquisition should be counted as experiential learning. Thus, the learning competency of experiential learning “must be neither so esoteric as to defy description nor so mundane as to caricature the academic process” (Kirkwood, 1976:151).

Coleman (1976:56-58) suggests several characteristics of experiential learning that are based on comparison of experiential learning and classroom learning:

1. It is non mediatory: there is no adoption of a symbolic medium (of concepts, abstract ideas, theories, or proposition) but only action and observation of someone who has learned something through this process is that he cannot verbalise it, but he can do it.

2. Motivation is intrinsic as action occurs at the beginning of a sequence that results in satisfaction and unanticipated consequences, the subjective need for learning exists at the outset. This means that ‘motivation is seldom a problem with experiential learning, while teachers often see it as the major problem of learning in the classroom.’

3. It is retentive: its non-symbolic nature ensures retention in that affective and cognitive aspects are linked. Thus, ‘the associations that embed it in memory
are linked with concrete actions and events to which affect was attached, and are not merely associations with abstract symbols or general principles expressed in abstract symbols’.

Before intensively practicing experiential approaches with the learners, it is important to briefly examine people’s learning style. There is much evidence that people learn in different styles. According to Embelton, et. al (1984:8) failure to learn in a specific setting or situation may have nothing to do with ability to learn. It may relate to the type of learning experience offered. In order to learn, participants in learning process should both perceive and process information. Again, there are wide differences in the ways people do these activities. The specific way in which people perceive and process reality is called a learning style.

In the past two decades there has been great interest shown in trying to analyse the various types of learning. McCarthy (in Embelton, et al, 1984: 8) compares the work of various researchers and has found that even though the terminology may be different, there is considerable agreement on the various styles. McCarthy says that “in a new situation some of us sense our way while others think their way through. Those who sense and feel focus more on the actual experience itself. They immerse themselves in concrete reality. They perceive through their senses. They are intuitive.” On the other hand, “those who think through the experience tend more to the abstract dimension of reality. They analyse what is happening. Their intellect makes the first appraisal. They reason experience.”

The next stage to achieve better results in learning as Embelton, et. al. (1984:9) say is processing information. There are wide differences in the ways in which people
process information. Some learners actively process information. They go and try it out. Other learners may observe and reflect on what is happening. Thus, it is possible to depict ways of perceiving and processing reality on two intersecting continua in the Kolb Learning Cycle (Figure 2).

![Kolb Learning Cycle Diagram](image)

*Figure 2. Kolb Learning Cycle (After Kolb, 1984:124)*

The Kolb Experiential Learning Cycle was utilised as the foundation of our research to develop participants' understanding of the issue. This learning cycle enabled participants to explore, understand and analyse the problematic situation. From these activities, proper actions were made to resolve the issues.

Within experiential learning approaches, various activities could be utilised, such as role play, simulation, field visits, discussions, and workshops. These activities permit both the students and the teachers to act as learners. Learners will understand the issues found and work together to solve and to achieve the expected situation. Colleagues and I were very interested in such approaches. Indeed, modifications were needed to ensure relevancy of the approaches within the Polytechnic context.
Macadam and Packham (in Simpson, 1993:150) suggest that experiential and adult learning approaches are perceived as voluntary activities. This concept considers participants are active in improving the real situations of their daily life and professional area. For example: The staff may give the students responsibilities to select the topics of discussion, prepare for a learning session and evaluate their own learning progress. These are some principles of adult learning (paraphrased from Brundage and Mackeracher, in Simpson, 1993:151):

1. Adult learning is based on past experience that should be considered.

2. The past experience of the learners must be respected and valued by others, and an attempt to apply it in the learning process. Learning involving transformation of past experiences takes longer time and more energy, compared with other learning styles.

3. Environment affects adult learning ability. The best environments, such as the condition that reduces potential threat to adult learners, will provide support for improvement. Adults learn best if they can regulate their own domain. They do not learn effectively when under pressure or restricted time. They are likely not to be interested in activities that only waste their energy or time. They are more interested in a learning process that contributes immediate results.

4. Adults will learn with materials they need. They have specific feelings and expectation from the learning process that should be recognised.

5. Adults are highly encouraged to learn in areas relevant to their recent roles and life experiences.
6. Adult learning emphasises learning both for their own lives and for those of participating groups. Less satisfaction for learners may occur when the learning programs neglect one or the other members of the group.

Taylor (in Boud and Griffin, 1993:179) quotes Lindeman’s idea of education (1926) that says “in adult education, the curriculum is established around the learner or the student’s needs and interests.” This is different from conventional education in that the student has to adjust himself to an established curriculum. My proposition is that a curriculum based on the student’s needs will contribute more benefits to learners than the established curriculum of a conventional education system.

Investigation into the ways of learning about how can we improve problematic situations in agriculture required the development of insights into the learning-problem-solving-research process is regarded as an active transformation process, in which people try to provide meaning out of their changing environment. Learning is most successful when it is viewed as a process of mutual inquiry between learners and others.

The use of action research at Hawkesbury (Bawden and Valentine, 1984; Macadam et al, 1985) emphasises the development of an educational program and a compatible organisational structure. Bawden et. al. (in Remenyi, 1985:35-36) established program design and the interaction between the needs of farming communities, education of graduates to fulfill these needs, and the experiential learning process. Figure 3 illustrates the strategy to respond to the challenge in agricultural education used at Hawkesbury.
Saddington (in Criticos 1989:66) suggests that experiential learning is a learning model "that begins with the experience followed by reflection, discussion, analysis and evaluation of the experience." This means, the main theme in experiential learning is the learner making sense of and sorting things out for her/himself. There are five elements of experiential learning (Saddington, in Criticos, 1989:67) as a guide for
reflection: (a) problem-solving; (b) the experience; (c) reflection; (d) the roles of learner and educator; and (e) the goal of emancipation or empowerment. Based on the essence of experiential learning, I would say that implementation of experiential approaches in my Polytechnic is likely to contribute more benefits for students, staff and others involved in the learning process.

**Relationship between action research and experiential learning in this study**

Action research and experiential learning approaches have a similar *assumption* that one can learn from factual issue/s. If we look into Lewin’s action research spiral, it is apparent that the spiral suggests a process of improving such problematic situations through a sequence of plan-act-observe-revise plan. Experiential learning approaches have the same notion with action research though the terms used for activities involved in the approaches are different (divergence, accommodation, convergence and assimilation). The objective of both approaches is that one can take any action for improvement from finding out about the situation and making sense of it. Clearly, there is a link between action research and experiential learning. Action research has a similar objective with experiential learning in that the learner learns through experience.

In this study, action research was used as a vehicle through which the research team induced a learning process improvement. At the same time, experiencing the project allowed transforming knowledge in order to take further action. Action research was employed to generate improvement in the Extension subject through experiential learning as the probable approach to be chosen in the institution.
CONVENTIONAL AND NEW APPROACHES TO EXTENSION

The conventional approach to extension is characterised by viewing Extension as a communication and innovations diffusion process. Traditionally, extension is defined only for activities related to information delivery in which farmers are recipients of the process -- just like students were passive recipients in teacher-centred education. This, in my view, could prevent farmers from participating in extension. It would ignore their knowledge and their needs and experiential learning development. The conventional view had been recognised for a long time in the Extension subject. Rogers’s concept of adoption of innovation (1963) has very much contributed to this view. In the Polytechnic, this idea had been adapted in the subject. The staff suggested that the conventional view of extension was no more relevant with the current agricultural development that placed farmers as the focal point of extension.

New perspective of extension began emerging in the 1970s. They considered farmers were equals with extensionists and researchers in the generation and implementation of new knowledge. Farmers thus had a central role in the extension process (Salmon, 1980). Robert Rhoades historical review of 40 years of agricultural research and development can be used to identify the nature of the challenge. Rhoades (in Pretty, 1995:192) classifies four overlapping periods of steadily shifting emphases. These stages are:

1. Production era (roughly 1950-1975), in which the pioneering disciplines were breeding and genetics, and farmers were seen as recipients of technology;
2. Economic stage (roughly 1975-1985), in which Farming Systems Research was pioneered by economists and agronomists, and farmers were seen as sources of information for technology design;
3. Ecological stage (roughly 1985-1995), in which anthropology, agroecology and geography are pioneers, and farmers contribute their indigenous knowledge, and are seen both as victims and cause of unsustainable development;
Theoretical Overview

Institutional stage (roughly 1995 onwards), in which the pioneering disciplines will be management specialists, psychologists, organisational sociologists, political scientists, training specialists and extension; and in which alliances will be developed between different institutions.

Our research team felt a need to generate a change in extension’s perspective. The argument presented by the team was that we were still moving along ecological and institutional stages. Therefore, a model involving farmer participation in extension by Rhoades and Booth (1982), modeling a farmer-back-to-farmer (Figure 4) seemed to be relevant with current agricultural development in my region.

Figure 4. Model: Farmer- Back- to-Farmer


The basic assumption of the farmer-back-to-farmer model is that farmers should not be treated as mere recipients in activities, but as real actors. This model focuses on the identification and solution of farmers’ problems and requires interdisciplinary teamwork and consultations with farmers in all phases of continuous research. In the new model, extension is aimed to provide materials based on farmer needs. Providing
appropriate information involves the on-farm-test to evaluate acceptability and compatibility of technology transferred to farm sites. This model focuses on farmers as extension’s subjects, not objects.

Having compared the “conventional and new philosophies of extension,” I attempt to contextualise the problematic situation in the study (Figure 5). It can be described from Figure 5 that the subject deals with other internal and external components in the Polytechnic. For example: it has relationships with the rural community and with other institutions to enable students to practise their theoretical and practical knowledge. However, this is not the only goal of developing relationships with outside institutions. There are many reasons for the importance of relationships such as to create community links that work on issues promoting farming systems, and developing better understanding of the role of insiders and outsiders in promoting tertiary education.

![Diagram](Figure 5. Exploring current relationship of the Extension subject with other aspects in its learning and teaching process at the Polytechnic of Agriculture, University of Jember, East Java)
The theoretical framework has been discussed in this chapter. The framework is a foundation for developing further work in the study its methodology. In the next chapter, I describe the choice of methodology and methods applied in the study.
CHAPTER THREE
METHODOLOGY

Chapter Three discusses the choice of methodology and the method that guided the study conducted. This chapter also explains research methods in terms of how specific data was gathered from participants and how the data was analysed and utilised. The method of evaluating the project is also presented.

METHODOLOGY

Action research as the research paradigm for this study

Action research can be perceived as a research paradigm subsuming a variety of research approaches (Dick, 1993:9). Within the paradigm (Figure 6), several methodologies exist, such as soft system methodology (Checkland, 1981), action science (Argyris, 1985), Critical Action Research (Carr and Kemmis, 1986) and Patron’s approach (1990) to evaluation. Each methodology employs a number of methods for information gathering and interpretation, for example: interviewing and content analysis (Dick, 1993:9).

Figure 6. Schema of paradigm, methodologies and methods
Source: Dick, 1993:9
Methodology

Action research can also be viewed as one approach for groups of educational practitioners, students, parents and others to understand the complexity of real experiences while, at the same time, striving for concrete improvement (Kemmis and McTaggart, 1988:7). The reasons for the use of action research as the paradigm for this project were:

a. I had been involved in the learning-teaching process at the Polytechnic for several years and had a deep understanding with the people at the institution. This paradigm could be appropriately used in field situations, by us, as the academic staff in our activities. Dick (1993:4) says, action research provides an opportunity for the practitioner to create more use of their practices as part of the research. To me, this view explicitly presents a point that action research can be employed as a tool to improve our practices. The subject teaching team had interest to work together in creating more links between theory, research and practice. Thus, in the action research, practitioners are allowed to work in and with the complexity of their own worlds and allows for the fluid, dynamic nature of human systems and organisation (Zuber-Skerritt, 1991:123). I was interested because it is my belief that it is important to acknowledge this fluidity. Of similar importance was the iterative nature of action research and the clear links that it creates between theory and practice.

b. Action research allows flexibility in bringing about change to the situation. This meant that the research team, the participants and myself were permitted to seek alternative solutions, to adapt to unforeseen effects and unrecognised constraints. As a team, we could work together with more collaboration and avoid rigidity when such actions were
undertaken. In this case, flexibility is a benefit in using this paradigm whereas Dick (1993:4) argues that flexibility in good conventional research is hardly approved.

c. Action research is very relevant to apply it to my professional area as it can lead us directly to improve our practice together with improving problematic situations. Thus, action research benefits for both practitioners (the staff), students and the other participants in the learning.

d. Action research permitted connecting people from inside and outside the Polytechnic to work together in a participatory relationship. It involved active participation from the lecturers of Extension, the students enrolled in the subject, administrators, extensionists, agri-industrialists, and staff in other departments who were connected to the learning process. We understood that it was impossible to provide full and active participation in all stages of the project. Therefore, participation in this project referred to involvement of participants in certain activities. Examples included contribution from the students about preferred learning climate; contribution on recent agricultural development by field-workers such as extensionists; and staff commitment to attend the meetings.

The following are our expectations of conducting this project:

- We (the lecturers, students and other participants) could understand the contextual issues being investigated and were able to improve the problematic situations found;
- We could decide to operate such methods where possible to improve the situations; and
- We were expected to contribute valuable things to public knowledge.
Implementation of action research in this study

The Lewin’s spiral (Figure 7) was employed as the approach in this research. The spiral is composed of planning, acting, evaluating of the result of action, revising the plan and so on (Kemmis, and McTaggart, 1988:8). Kemmis’s outline of Lewin’s approach to action research influenced the research team to implement it into our context, with some flexibility to the Polytechnic’s situation. The process in this project began with an idea that some kind of improvement in the Extension subject was required.

Figure 7. Lewin’s Action Research Spiral (In Kemmis and McTaggart, 1988:11)
A team consisting of six Extension teaching staff was set up to lead the change. Initially, each member of the group identified an aspect where all members could share knowledge and experience in achieving the expected improved learning situation. The group carefully decided about thematic concerns or the issues to be addressed. It was realised that a flexible and responsive action plan should be produced to face the complexity of the situation. The main perspective in building the action plan was that, we, as a group of people could understand the situation and learn from our own experience, and make our experience accessible to others.

At first, the group reviewed the learning-teaching process of the subject to identify thematic concerns. The group realised that we needed to work together in sustaining four fundamental aspects of the action research involved in this process, as mentioned by Kemmis and McTaggart (1988:10). They were:

- to develop a plan of critically informed action to improve what is already happening.
- to act to implement the plan,
- to observe the effects of the critically informed action in the context in which it occurs, and
- to reflect upon these effects as a basis for further planning, subsequent critically informed action and so on, through a succession of cycles.

In conducting the process, we intended to undertake the above four aspects collaboratively. This was an important point of action research because the approach underpinning the study was not *individualistic*. Individualism was likely to prevent the critical dynamic of the group.
Implementation of PAR in this study

We realised that we required active participation from people associated with the learning process at the Polytechnic to take any actions for improvement. In implementation of PAR in the project, all members shared responsibility for deciding upon the action within the project, including participating in the ongoing assessment of the project developments/activities. In project implementation, we proposed the fortnightly meetings to discuss the various activities of group members.

The following is quoted from McTaggart (1989:5) that explain PAR and its specific characteristic regarding social aspect of human being.

"PAR recognises that people are social beings, and that they are members of several groups --active participants in the living, local and concrete process of constructing the language, activities and relationships which they are members. To change the culture of their groups (let alone of whole institutions or society more broadly), people must change themselves, with others, through changing the substance, forms and patterns of language, activities and social relationships which characterise groups and interactions among their members. In PAR, they do this collectively, and deliberately set aside time to reflect on these matters as a basis for conscious individual and group decision."

I highlight the notion of PAR (McTaggart, ibid) consisting of three important elements:

a. People are socially *constructed*

b. People should change themselves before changing the culture of their groups

c. The changes can be brought about by cooperative and collaborative action

Participation in this study was built amongst the research team, the critique group and the students. There were several points that should be highlighted in the implementation of PAR in this project. These points were that the research team should:
Methodology

a. Have a clear understanding of the problematic situation to improve and to work together in good interrelationships within the group, as well as with the outsiders. The members of the team should share the experiences of their own practice, knowledge and perspectives together in the team to enrich a picture of the complex situation.

b. Members of the research team should act as co-learners rather than of experts in charge of change (Elden and Levin, in Whyte, 1991:129).

c. Within the team, there were commitments to participate in order to bring about the desired changes. The team intended to work together and gain new learning experience with other participants in a collaborative and co-operative approach.

d. Tandon’s (1988:13) three ‘determinants’ were utilised to develop authentic participation in the study. The determinants were:

- People’s role in setting the agenda of the inquiry
- People participation in the data collection and the analysis, and
- People’s control over the use of outcomes and the whole process.

Implementation of experiential learning (Kolb Learning Cycle) in this study

Kolb (1984:8-9) maintains that experiential learning is an integral part of an action research model, as is the concept of a critical community and a critical practitioner. One approach to learning is that learning has a cyclical nature. For example, at Hawkesbury, learning tends to commence with experience, then reflection, followed by conceptualisation, experimentation and experience again; then the learning cycle repeats.
Thus, learning can be viewed as interaction between learners and their environments. Considering the importance aspect of experience, Buckle (1988:1-2) mentions that most people learn from doing something and experiencing the consequences of that action. Then from the action, they learn a lesson. People may learn something by trial and error, not only from the books or lectures. However, I note that experience does not necessarily mean a person should become a victim of such phenomena because s/he can learn from any sources.

Bawden's (1989:11) learning model consists of a double loop of learning (Figure 8) is very useful to assist the research team to understand the issue, experience new learning and make sense of or reflect on the learning experience both as a team and individually.

Figure 8. Model of the Two “Levels” of Learning (After Bawden, 1989:35)

Based on Figure 8, I present the implementation of the learning together as follows:

In the first order loop:
Methodology

- I brought the Extension teaching staff to see their recent practice and to evaluate the learning process from various aspects such as student’s satisfaction, the subject contents, relevancy of the contents to agricultural development, and so forth. Simultaneously, the research team included the students in the research process through depth discussion. The students were guided to evaluate their position in the learning process and were asked their opinion about it. The students were led to the main issue using their own views. Having gathered all requirements for identifying and articulating the key issue, the research team worked together to set up an action plan for the next step.

- The same way was applied to the administrators and outsiders to see their position in the learning process and to evaluate the learning process from their views. Specifically to the outsiders, they were interviewed concerning their understanding of the learning process which was rather different. For example: two employers were questioned about their opinion of the graduate’s performance in their place, and extensionists were interviewed about their perspective of extension.

- Having found out much information about current issues from participants in the research, the team processed the results of finding out about meanings, into theories of interpretation as a basis for informed action. During this stage, the research team actively accessed relevant scientific theories from public knowledge. The theories were then put into action in a way appropriate for change.

As the project continued, we gradually shifted from the first to the second loop (the meta loop) and at this loop we questioned the following points:
Methodology

- relevancy to the way of data collection to the facts that were already known. We also tested whether the research questions were relevant to the issues.
- the specification of the views or dispositions that we were bringing about to produce these views, as we proceeded with our methods of inquiry.
- the practice of our thinking, our conceptual model, our construing and our thought on thinking, theories of pure theorising process and their meta-theories.
- the way we were practicing upon the way we were going about our learning.

From Bawden’s model of the two ‘levels’ of learning (Figure 8), it is apparent that learning relates to activities of finding out about the issue or context (analog in Kolb’ cycle is concrete experience). One will assimilate and construct his or her own action for further observation (in Kolb’s cycle: assimilation and abstract conceptualisation) and for further action. One can then take action (active experimentation in Kolb’ cycle). Thus, the learning ‘level’ now is in the second loop, meanwhile in the Kolb cycle, the activities are also repeated making an endless learning cycle. It is clear that the two learning models have a similar principle of people learning from a given issue or context.

To me, learning from experience means the learners can learn from their own experiences and from others experiences. The term ‘experience’ should not be given a narrow perspective. I disagree with Cunningham’s opinion (in Hodgson, et al. 1987:44) that says the supporters of learning cycle theory are likely to over-value experience. Cunningham maintains that past experience does not contribute a certain foundation for future action. He also suggests that he prefers to learn a whole lot of things non-
experientially, for example the nature of World War I or the result of catching diseases. He says that he can learn from other people who inform him, and that he can learn those things without direct experiential reference. I would argue that Cunningham gives a narrow meaning to experience, as a factual or direct thing to happen to learners. This is not what the term experience in experiential learning refers to, because experience implies our finding out some thing, and from this we make sense of it and/or take any action as our learning journey demands.

With the use of the learning cycle, action research’s two essential aims of improving and involving (Kemmis and McTaggart 1988:22-23) could be achieved. Bawden (1989:17) suggests improvement involves five levels objective and we sought to achieve these in this project:

- the improvement of practice
- the improvement of professional development, or understanding of practice by its practitioners
- the improvement of the situation in which the practice happens
- the improvement of the understanding of the situation in which the practice happens
- the exposure of the research to critique by others to improve the understanding of the team and of others.

Thus, given this expectation, experiential learning was employed as the foundation for the research team and participants in order to:

- produce a medium for discussion or sharing knowledge and experience about the issues in the Extension subject
• form the teams to establish priorities for these issues. The activities of the teams would be monitored through Lewin’s spiral of action research.

• the activities of the research would be repeated to generate self-motivating activities with insiders in the Polytechnic and to bring about situation improvement.

Initial working assumptions

The working assumptions in this project were:

1. The research team could induce situation improvement; and

2. Active participation by insiders and outsiders could be used to approach the issue. The specific intention of our participation, particularly insiders’ involvement could be sustained throughout action phase of this project. Therefore, the team group should have a clear understanding of the research questions. Moreover, each member of the group had to understand the method used to answer the research questions.

Walton and Gaffney’s statement about the theory of PAR (in Whyte, 1991: 122) was borrowed to implement the change. The statement is that:

Each step of the research process can be viewed as potentially contributing to, or being informed by, the corresponding aspect of the action process. At each stage, broadening the pattern of participation can potentially strengthen both the knowledge and the action outcomes.
METHOD USED

Collection of data

A unique situation developed in the research’s domain at the preliminary phase of the study. The main activities at this stage were the discussion of the research team about the issues and the goals of the research. These two points were then discussed with the rest of the research participants to set up the possible actions to promote change. Accurate data was urgently required to enable myself to form a critical reflection of the study. The data composed of the group’s discussion and reflection that was recorded, written journals which were based on the outcome of the meetings, and the result of the interview with the Former Director of the Agricultural Polytechnic Education Project. Real changes occurred during the research about learning style were also documented.

Fortunately, I had an opportunity to conduct an evaluation of the project. The evaluation was undertaken six months after the last meeting of the project. I used the fourth generation evaluation introduced by Guba and Lincoln (1989:50).

“The fourth evaluation is a form of evaluation in which the claims, concerns, and issues of stakeholders serve as organisational foci, that is implemented within the methodological precepts of the constructivist inquiry paradigm.”(ibid.)

Information collected in the evaluation phase included:

a. Achievements of the project;

b. Commitment of the team to continue working on the project in my absence;

c. Evaluation of my role as facilitator within the group

d. Students’ views of the changes occurring
Primary data

At the preliminary phase, a discussion about a network for improving the learning and teaching process of extension was carried out both formally or informally. The network was called as the core team with its main function to lead us in to an understanding of the issues, and to bring the action together with participants (a simple figure of relationship among participants in the project is pictured in Appendix 3). The research team consisted of the six Extension subject staff plus myself. The six teaching staff were:

1. Suwardi (the subject coordinator for core studies),
2. M. Zayin Sukri (the subject coordinator for advanced studies, and was especially selected as my own adviser for action research in this project),
3. R. A. Djamali,
4. Muqwin Asyim (also Associate Director for Academic),
5. Kasutjianingati,
6. Tri Rini K.

A critique group was formed to provide input to the research team and to critique the way the team worked. The critique group consisted of the Head of School, Cholyubi Yusuf, a technician and an administrator. Other participants in the project were the Director of Polytechnic: Soetrismo Widjaja, whom I consulted when I was in the field; other staff interested in this project were Djenal, Gita Pawana and most colleagues in my program and socio-economic laboratory at the Polytechnic. All people involved in this study together with their roles are outlined in Table 6.
Table 6. Stakeholders and their roles in the study

<table>
<thead>
<tr>
<th>Stakeholder</th>
<th>Involvement in the study</th>
</tr>
</thead>
<tbody>
<tr>
<td>Myself</td>
<td>At the whole stages of the study; from the beginning until the thesis is completed</td>
</tr>
<tr>
<td>The research team consisting six Extension subject teaching staff plus myself</td>
<td>In the action phase of the project to facilitate the change. The team conducted interview with the students, analyse the results of interview and facilitate the students in implementation of the learner-centred activities.</td>
</tr>
<tr>
<td>The critique group consisting the Head of School, a technician and an administrator</td>
<td>In the action phase of the project. This group should contribute input, in form of constructive critiques to the research team on the way the team work.</td>
</tr>
<tr>
<td>The students enrolled in the Extension subject: 170 core students and 45 advanced students</td>
<td>These students involved in the preliminary phase and in action implementation in the study. They were interviewed about their expression of the learning process by the research team.</td>
</tr>
<tr>
<td>The Director, Associate Director for Academic, and other staff in my program</td>
<td>Supported the research team in the form of providing information related academic development in the Polytechnic</td>
</tr>
<tr>
<td>Three extensionists</td>
<td>Providing data and information about current extension development in the region.</td>
</tr>
<tr>
<td>The Former Director of the Agricultural Polytechnic Project in Jakarta</td>
<td>Contributed much information to the background of the polytechnic educational system, improvement in the learning process, curriculum reconstruction and further strategy for development of polytechnic.</td>
</tr>
<tr>
<td>Farmers near the Polytechnic</td>
<td>In project’ workshop to contribute ideas of extension</td>
</tr>
<tr>
<td>Students’ parents and employers recruit polytechnic graduates</td>
<td>In project’ workshop to express their expectation from the Polytechnic</td>
</tr>
</tbody>
</table>

Having established the research team, the next step in this project was to develop an action plan. The team (including myself) worked together to establish a new approach within the learning process. It was not easy to decide what type of approach was suitable for the learning process in the Polytechnic. Many aspects needed to be assessed before deciding upon the appropriate approaches. To achieve a consensus by all members of the team, each member was asked to state his/her impressions and experiences during the learning process. Clearly, each of us reflected our own current style in the teaching and
learning process. Most academic staff within the Extension subject were less-satisfied with our current situation. Therefore, they strongly intended to reform the learning process.

My suggestion for operating an experiential learning approach in the learning process was not directly approved by the Polytechnic Board. This may have been caused by the priority in polytechnic education that is still focused on the target of completing the learning packages covered in the curriculum within the specified time. Also it seemed to me that a conventional approach was operated mainly throughout the course.

Even though my suggestion for employing other learning approaches such as learner-centred approach was supported by all members of the team, most participants in the project questioned the appropriateness of such an approach and its credibility in improving the learning process. It was so fortunate that I had a number of action research references, various types of learning approaches, literature and some papers of agricultural education from Hawkesbury with me. Thus, the team had an opportunity to learn more about this approach. This was important to develop an understanding about investigating the issue.

The change from a conventional style to a new style of learning could not drastically occur because time was required to enable participants in the learning process to become familiar with the approach. A workshop was arranged in October 1995 to pose a problematic situation; to discuss the learning approach that would meet the students’ expectations. To do so, input from outsiders such as extensionists, the students’ parents, and employers who were indirectly connected with the Extension subject was required.
I realised that it would be better to divide this project into four stages: stage one (early phase of the study), stages two and three (project implementation), and four (evaluation and reflection) as outlined in Table 7.

Table 7. Research stages from April 1995 to September 1996

<table>
<thead>
<tr>
<th>Research Stage (Early phase of the study)</th>
<th>Activity</th>
<th>When and where</th>
<th>How</th>
<th>Who with Whom</th>
</tr>
</thead>
<tbody>
<tr>
<td>i</td>
<td>ii</td>
<td>iii</td>
<td>iv</td>
<td>v</td>
</tr>
<tr>
<td>Stage One</td>
<td>a) Broad literature review</td>
<td>April - May 1995 at the University of Western Sydney-Hawkesbury</td>
<td>Library study</td>
<td>Myself</td>
</tr>
<tr>
<td></td>
<td>b) Discussion with staff / facilitators at Hawkesbury about the approaches used</td>
<td></td>
<td>Discussion, seminar and workshop</td>
<td>Myself with staff, and with fellow students at Hawkesbury</td>
</tr>
<tr>
<td></td>
<td>c) Contact with colleagues at the Polytechnic via mail</td>
<td>April - June 1995</td>
<td>correspondence</td>
<td>Myself with the Director of Polytechnic, with the Head of School and the subject teaching staff</td>
</tr>
<tr>
<td></td>
<td>d) Arrived in Jember, East Java for running the project</td>
<td>25 July 1995, at the Polytechnic of Agriculture - Univ. of Jember</td>
<td>-</td>
<td>Myself, staff, students and relevant outsiders: extensionists and farmers</td>
</tr>
<tr>
<td>Stage Two (Action implementation one)</td>
<td>a) Data and information gathering</td>
<td>26-27 July 1995 at the Polytechnic</td>
<td>Depth Interview</td>
<td>The research team interviewed the students enrolled in the subject</td>
</tr>
<tr>
<td></td>
<td>b) Process information and analyse the data to build a picture of the real issue</td>
<td>31 July 1995</td>
<td>Discussion in the meeting two</td>
<td>Among the research team</td>
</tr>
<tr>
<td></td>
<td>c) Negotiation the project with participants</td>
<td>1 - 5 August 1995</td>
<td>Informal approaches with the participants</td>
<td>The research team, with the students, and with the critique group</td>
</tr>
<tr>
<td>Stage three (Action implementation two)</td>
<td>a) Implementation of the learner-centred approaches</td>
<td>5 August 1995 to February 1996. It was expected that the approaches would continue to operate regardless the completion of the project.</td>
<td>The students were given responsibilities to lead the meeting by an appropriate topic on the subject</td>
<td>The research team facilitated the students, assisted by a technician at the Socio-Economic Laboratory</td>
</tr>
</tbody>
</table>
### Methodology

<table>
<thead>
<tr>
<th>i</th>
<th>ii</th>
<th>iii</th>
<th>iv</th>
<th>v</th>
</tr>
</thead>
</table>
| Activities included:  
- Activities between the meetings and the research team meetings from early phase of the study  
- Workshop  
- Interview | b) Gather information of agricultural extension's policy | October - December 1995 at the field | interviewing extensionists and using delphi face to face for the extensionist that was out of reach | The two members of the research team interviewed two extensionists in Jember. A member arranged interview - delphi face to face for the extension officer that was far away from Jember |
| | c) Facilitation and consultation | 5 August 1995 - 6 February 1996 at the Polytechnic | Discussion in the research team meetings; dialogue among the staff and the students | Among the research team. The staff with the students enrolled in the subject |
| | d) Interviewing the Former Directors of the Agricultural Polytechnic project | January 1996 at the Department of Education and Culture, Jakarta | Depth Interview | I interviewed the Former Director of the Polytechnic Project, and the staff of polytechnic curriculum |
| | e) Reviewing curriculum | October 1995 - December 1995 | Discussion with the students, workshop | The subject teaching staff, student* representatives and the critique group |

| Stage Four (Reflection and evaluation) | a) Reflection and general evaluation | 7-27 February 1996 in the Polytechnic | Meeting among the research team members consultation with the supervisors at Hawkesbury | The research team and the Head of School |
| | b) Writing up the thesis | 5 March to the completion of the thesis | Informal interview with the team and staff; meetings and discussion with the students | Myself with supervisors, also with facilitators |
| | c) Evaluation of the project | 26 August 1996 - 20 September 1996 in the Polytechnic | Meeting with the research team | The research team, the Head of School, the Director and the students |
| | d) Action plan for further improvement | 31 August 1996 | | Among the research team |
Stage one (Early phase of the study):

At this stage, an exploration of the learning process in the Extension subject was commenced. I did a broad literature review and extended my knowledge of research approaches appropriate to the problematic situation. Discussion with facilitators at the University of Western Sydney-Hawkesbury about the topic of my research continued while I communicated with fellow students about the possibility of employing PAR in the research process. Reflection on my experience in teaching the students was used as part of the foundation of the research. Discussion with my colleagues about the context was also very beneficial in order to understand the many changes since I left Jember to undertake the Masters research program in Hawkesbury.

I was in Indonesia between July 1995 and February 1996 for the research. We, the research team had a number of questions dealing with this project. At first, we were tentative about what issues should be given priority to be resolved. The Extension subject teaching staff and I then attempted to clarify the questions. The purpose of this was to make it easier for us to undertake the next action stage of the project. The questions were:

- What is the thematic concern?
- What should be done to create the positive changes?
- What are the paradigm, methodologies, method employed in the project?
- Why are these issues investigated?
- Who will be involved in the project?
- When will the project be started?
- Who will benefit from the project?
- Where does the project start?
- How do we start the project?
- How are relationships built in the research?
- And many other questions
Methodology

The discussion continued in order to undertake these questions. At first the schedule for the project was set up with some flexibility, as all staff were required to work in the laboratory or in the farm. The research team also approached participants to negotiate the way we take actions to bring about a situation of improvement.

Stage two (Action implementation one):
Depth interviews with the students at the preliminary stage were aimed at gathering information particularly about their views of the subject’s learning process and their expectations of learning. The students were classified into two main groups: core and advanced. Each main group was divided into several groups as mentioned in the interviewing section in this chapter. The result of these interviews was analysed by the research team in order to build a picture of the research questions. The team then arranged 12 meetings as the medium to discuss further action, to reflect upon our experience and to take into account any arising issues, as the project developed into the following stage of the cycle.

Stage three (Action implementation two):
Having carried out a dialogue with all participants in the project, the network made an action plan for implementation of the learner-centred approached in the subject. The lecturers tried to work together with the students as a team to operate more intensively within the new learning approach. This was not easy to do for the following reasons.
Firstly, many students, particularly core students were in-favour of the new approach. These students commented that this approach made them uncertain about the direction of the subject. They argued that they preferred the traditional approach to the new one. About forty percent of core students suggested that the new approach was not relevant to the Polytechnic as a formal educational institution. We, the research team felt a need to approach the students to broaden their views of experiential learning. We planned a deeper discussion forum with them to develop their understanding of the new approach.

Secondly, the learner-centred approach, with various activities such as brainstorming, role-play simulation, drama, debate, ‘snowballing’ and personal tutorial, was regarded as too time consuming. This prevented us covering the contents of the subject. We then discussed how we could resolve this issue.

Thirdly, we were aware that we are all ‘learners’ in the research process. For example: the teaching staff may have a different learning experience or knowledge associated with the theoretical aspects of education. In a factual learning situation, there were various learning styles and learning experiences of the students. The learning process should allow a sharing of knowledge and experience among the participants in the process. Therefore, a good level of communication was required to establish participation among the students, the lecturers and the other participants.

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5 Snowballing is an approach that starts with each individual learner but then becomes a group process. Initially, individuals are asked to reflect upon a task, proposition, etc. and to reach some conclusion about it. (Jarvis, 1995:130)
Fourthly, the subject contents was needed to be adjusted following the current agricultural development and student's needs. The needs of farming communities of extension were also considered because the students would interact with the communities after they graduated. The changes occurring in action phases were recorded.

**Stage four (Reflection and evaluation phases):**

As a learning cycle, of course these stages interrelate with each other, and this is an endless cycle that should be considered in facing such problematic situations. We sometimes turned back to the previous cycle and went forward to the next cycle during the project. Evaluation of the action taken was undertaken at this stage. Flexibility of changes were insured to enable participants to achieve better learning experiences. Within a relatively short time in conducting the project, most staff and students were glad to monitor the development of the new learning approach.

The techniques carried out to access primary data in this project were:

**Recording**

Audio taping was operated during the research meetings. Before the recording was done, I informed attendants of the meeting that the recording was used for research purposes. The research team agreed that this activity would benefit the team for evaluation of every stage of the research. However, due to personal concerns, on some occasions the
discussions were made off the record. Basically, recording was an essential tool for me to provide accurate data for further analysis.

**Interviewing**

Interviews with the students was one source of data. The “focus-group” interview was used in interviewing the students. Dowsett (in Gamble, 1990:3) suggests that this type of interview can be used to gather data from small groups of people. The “focus-group interview” is utilised to provide data about feelings and opinions of small groups of participants about a given problem, experience, service or other phenomenon (Basch, 1987:414). Further, “the focus-group” interview is very useful in assisting the researchers to build a rich picture of a community or organisation.

During the interview, the students were divided into two main groups: core and advanced students. About 170 students in core semester were then divided into 17 groups. Then about 45 students in the advanced semester were divided into five groups. The members of the research team trained the selected students as moderators in the group discussions. The role of the moderator was to manage the discussion, and to motivate the group members to talk or share their views. Table 8 presents the student focus group details.

**Table 8. Student focus group details**

<table>
<thead>
<tr>
<th>No.</th>
<th>Core/Advanced students</th>
<th>Total number of students</th>
<th>Number of groups</th>
<th>Students of each group</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>Core students</td>
<td>170</td>
<td>17</td>
<td>10</td>
</tr>
<tr>
<td>2</td>
<td>Advance students</td>
<td>45</td>
<td>5</td>
<td>9</td>
</tr>
<tr>
<td></td>
<td>Total groups</td>
<td></td>
<td>22</td>
<td>-</td>
</tr>
</tbody>
</table>
Methodology

In each group interview, a member of the research team acted as a facilitator to assist the group to discuss a topic, problem or experience. To do so, before starting the interview or discussion, the team explained the purposes of the project, the student’s position or role in the project, and the expectation of the team for the students as co-learners. The students were free to present their concerns or opinions during the interview. The interview was formed as a group discussion to carefully evaluate Extension as the subject in which they were enrolled. The group decided the starting point of the discussion. Discussion started from different teaching styles, subject contents, relevancy of the subject to the reality, student’s expectations and the student satisfaction of the current learning process.

Written journals

Written journals were used to record the progress of the situation as it improved. The research team kept the journals as a tool to analyse our learning processes. According to Kemmis, and McTaggart (1988:145), the journal requires a structure and supportive environment. Such a structure and environment can be produced by providing a clear insight about beginning writing and the procedures for interaction amongst the participants, as they share their journal and collaborate together. This type of journal was very useful in gathering information and in sharing the experience of issues arising during the research and in evaluating the actions taken.
Methodology

The research team including myself regularly discussed the journal, in order to build a rich picture of the situation. Sources of information for the journal were the meetings, activities between the meetings and interviews with outsiders. Each participant had the following content in her/his journal following the action research activities: plan, act, observe, reflect, and revise the plan. Three main elements of my journal were:

1. Observation of the situation before the research was conducted. This involved a detailed information from participants in the research about their opinion of the situation, and about their expected learning situations, and personal views on the implementation of this study.

2. The outcomes of each meeting during the research. The issues that arose during the research were documented in the journals, and discussed together within the research team. The discussion was audio recorded and I continued to keep the journals.

3. Evaluation of the project and my reflection from the research.

Secondary data

It was impossible to build a rich picture of the problematic situation without being supported by available information. To do so, I collected data and related information from various sources, mainly from the local Polytechnic library, the University library and The Department of Education and Culture in Jakarta.
Library

Much information was gathered from the library. In the library at the University of Western Sydney - Hawkesbury, I reviewed literature about action research, PAR, experiential learning, agricultural extension and theories associated with the research.

Some supporting documents were collected from the Polytechnic library, either from each program or from archives in the Director and Associate Director’s room. The documents varied from priority of each study program, the contents of different subjects to information about the future planning of each study program. Other supporting documents could only be gathered from the University of Jember or from the Department of Education and Culture in Jakarta.

Data analysis

The reflective moment of each cycle in this research is presented as data analysis. According to Grundy and Kemmis (in Kemmis and McTaggart, 1988:330), the purpose of reflection is “to provide the practitioner with authentic insights which will further the process of enlightenment.” The analysis would be based on three main streams of data:

- The discussions and the outcomes of each workshop, together with reflective conversations within the research group’ in the meetings.
- Student reflections on their current learning experience
- The recorded interview with research team members, with extension officers and staff at the Department of Education and Culture.
Discussions on outcomes of each meeting together with reflective conversations among the research team

Both formal and informal discussions were used as the data of this research. The contents of the discussion represented the development or regression occurring during the process. Each discussion was held to allow each member to share their personal experiences and impressions. The discussions varied in intensity, though each meeting was required to progress of the project. An effective group relationship rapidly developed by the middle of the project and continued until the end, when the actions for improvement were undertaken. Careful investigation to the initial assumptions was aimed to achieve appropriate interpretation of the outcomes of the workshop. This is what Kemmis and McTaggart (1988:45) suggest that the action research process is a social process, as it involves group collaboration in guiding the project as a shared group enterprise. So, within the project, a dialectical relationship enriched the process in creating critical analysis of the changing situation.

Students' reflection on their current learning experience

Students were asked to reflect on their experience during implementation of the project. The procedure of this inquiry was the same as that of previous activities. Group discussion was used as a technique to gather a more informed picture for the evaluation.

The research team played a role as facilitator in the discussion. The important points produced during dialogues with the students were highlighted for further discussion
in research team meetings. Further actions, therefore, were based on the students and other participants within the research reflection.

**Interviewing research team members, extension officers and the Former Director of the Agricultural Polytechnic Project at the Department of Education and Culture**

Interviews with research team members were developed initially at the preliminary phase. Permission to record the interview was agreeable to the team and participants of the project. The interview was developed into a more in-depth discussion, as we were all concerned about thematic issues in the project. Details of these discussions will be presented in Chapter Four.

Interviews with extension officers were arranged by the research team. The use of delphi with face-to-face version was conducted to gather data from extensionists who were far away from us. Delphi is a way of pooling data from a number of informants done via mail (Dick, 1993:26). In this way, two members of the research team were employed to interview the extension officers in gathering more information and opinions of extension, also about their views of our practice.

Information of the learning process was also collected from the Former Director of the Agricultural Polytechnic Project, and the staff of an agricultural polytechnic curriculum at the Department of Education and Culture in Jakarta. The staff were interviewed for their experiences when they were involved in the Agricultural Polytechnic projects. The contents of interviews ranged from the initial purposes of polytechnic education, the
achievement of the project, the strength and weaknesses of education in polytechnics and future development strategy.

Selection of analytical instruments

Kolb learning cycle

It has been mentioned that the Kolb learning cycle was used throughout the research. This cycle was a valuable tool for me in analysing the position of the team and the participants in the cycle at any given moment. Based on this cycle, reflection either from the member of the team personally or as a group could be initiated by referring participants back to particular phases and activities of our learning process.

![Kolb Learning Cycle Diagram]

Figure 9. Activities involved in the research process
Figure 9 shows the Kolb cycle capturing several activities in each cycle. Activities done in this study are printed in italic. In other words, the study undertook about 75 percent of activities reflecting the notion of experiential approaches. For example: in the divergent phase, most activities were aimed to gather much of the information within the context of the study. The activities included: a literature review, brainstorming, as well a number of discussions with the students and simulations.

**Lewin’s spirals**

The Lewin Action Research Spirals were an integral part of the Action Research (Lewin, 1946; Kemmis and McTaggart, 1988:11). These spirals (Figure 7 in this chapter), were seen as an important means to build understanding and to utilise data that was being gathered. The meetings in the project were analysed by the use of Lewin’s spirals. The implications are as follows:

1. Material connected to the spirals was content based, rather than a reflection of the process as it occurred.

2. Each meeting was divided into stages that reflected the arbitrary division created by the project being organised into meetings.

I think it should be emphasized that the meetings often did not reflect a logical grouping of all or any of the elements of a spiral. When it occurred, one of my colleagues and I sought to apply the spirals to the material generated from my reflections as well as to the minutes. In this practice, the essential element of process was introduced. At the same
time, the arbitrary division between meetings was disposed of, and instead I tried to fit the material into spirals as a flow on from the project.

Chapter Three has provided justification for the methodology chosen and the method whereby we put the methodology into practice. The methodology and method discussed in this chapter is very closely related to the action phase of this project. The next chapter explains the continuing process of the study which is project implementation.
CHAPTER FOUR
PROJECT IMPLEMENTATION

The first three chapters may be seen as the foundation of the aspects of the way the study took shape. Chapter Four presents my own experience of conducting the action research project. The ongoing story in this chapter discusses the research team as such: in relation to the project, and the research team meetings were used to explain how the team put the action research team into practice. The action research spirals capturing activities (plan-act-observe-revised plan) are illustrated in appropriate sections of the meeting reports.

ACTION PHASE OF THE PROJECT

Preliminary meetings: 24 to 27 July 1995

To plan the project, from April to June 1995, I contacted the Director, the Associate Directors, the Head of School of Foodcrops Cultivation, and my colleagues teaching Extension to get a picture of the recent situation. I sent my research proposal via mail because I was in Hawkesbury to undertake my training program. During that time, I told my colleagues that I needed their participation in the project. To do so, I attached a form to be filled out by the staff who would voluntarily take part in my project. Later on, I received the Head of School’s reply that he, on behalf of my colleagues, would assist me in the project as they realised my proposal was likely to bring a positive change in the learning process, particularly in the Extension subject.
Prior to my arrival, I confirmed with the Director that I would meet him on 25 July 1995 to discuss project realization and any other things related to this. The Director commented that the Polytechnic always required improvement in terms of curriculum development and staff professionalism. Considering the notion of the research paradigm that I intended to use, the Director commented that my project was the first action research project conducted to improve the learning process at the Polytechnic. It seemed to him that I would face some challenges to achieve the desired change: student interest and motivation showed various learning and teaching styles; and different experiences of the staff and students in extension.

From 25 to 27 July 1995, my agenda was formation of a research team and a critique group; discussion among the research team about research questions; and discussion between the research team and the students enrolled in the Extension subject.

**Formation of a research team and a critique group**

A meeting was conducted in the School of Foodcrops Cultivation on 25 July 1995 morning. Those attending this meeting were the Head of School, 10 staff of this School (including myself), two technicians and a school administrator. The Head of School opened the meeting and then asked me to explain the purpose of the meeting. I talked briefly to the forum about my learning experience at Hawkesbury and my proposed study. Then, I explained to my colleagues about the need of a research team to run the project.

I questioned the Head of School, Cholyubi Yusuf, about the list of staff who would voluntarily take part in the project. There were ten names in the list. Therefore, we
needed to discuss how many staff members would work in the team. We thought that the number of staff in the research team should not exceed seven. I then suggested that it would be better if the research team consisted of staff involved in teaching the Extension subject. At that time, we had six staff for the subject, so they formed the research team. I thanked the rest of the staff who were not selected and appreciated their enthusiasm. I asked to these staff for their needed support in the later project (e.g. October workshop).

The next day (26 July 1995) I discussed with the research team of our need for people outside the team to contribute views and critiques of the way the team worked. Most members of the research team argued that we actually did not require involving too many people to ensure effectiveness of our work. They said too many people would make it difficult for the research team to make decision. After discussing advantages and disadvantage of having a critiquing group, we at last chose three people to form a critique group. The three were Cholyubi (the Head of School), Musawir (a technician in the Laboratory of Socio-Economic at the Polytechnic) and Nurhayati (an administrator of the school).

Discussion among the research team about the research questions (26 July 1995)

I continued to discuss the research questions with the research team, about reviewing the current situation and expectations, and about planning the next steps. During the discussion, I started to build research team understanding of the use of action research for the project. It was fortunate that most members had been involved in a
workshop on research methodology. Two colleagues mentioned that they knew of the
notion of action research. However, they had not applied this methodology to any project.
To refresh their understanding of this methodology, I utilised Carr and Kemmis’s
(1986:165) views on two essentials aims of action research, *improvement* and *involvement*.

Carr and Kemmis (Ibid.) maintained that improvement is stressed in three areas:

the improvement of *a practice*; the improvement of the *understanding* of the practice
by its practitioners; and, the improvement of the *situation* in which the practice takes
place. The aim of *improvement* stands shoulder to shoulder with the aim of
involvement by *involving* those in the practise in the research process (plan-act-
observe-reflect).

To know the teaching staff impressions of the current situation of the Extension subject
learning process, I asked each member to express his/her opinion in a paper (given to
reply: ten minutes). Each member then was asked to write down his/her key words on the
whiteboard. From this process of gathering information, I found that there were two main
problematic arenas within the subject. Firstly, I knew that until the research commenced,
the learning process was mainly operated by the conventional approach, based mainly on
the curriculum. The learning approach was similar to that of a teacher-centred approach
mentioned in Chapter One. In this situation, the students’ dependency upon the staff was
very strong. The research team were conscious that this situation should be transformed
into a dynamic and active learning situation.

Secondly, the research team felt a need to review the subject contents, following
the agricultural development in the region. There were topics such as those related to
philosophical views of extension (as discussed in Chapters One and Two), should be
changed or modified to improve the students' understanding of extension theory and practise.

In the first three days of the project (25-27 July 1995), we reviewed the subject contents, presentation and assessment procedures. The presentation details of the subject has been described in Chapter One.

The research team negotiated the project with the students

Over two days (26 and 27 July 1995), two members of the research team (Suwardi and Zayin) and I negotiated the project with core and advanced students. The practicum was used as the medium for discussion with the students. Refer to Table 8 in Chapter Three about the focus-group discussion details. The core students formed 17 groups (10 students per group) and advanced students formed 5 groups (9 students per group). However, not all students were involved. About 70 percent of core students (119 students) and 60 percent of advanced students (27) were likely to take part in the discussion. Discussion was divided into four sessions: session one, two and three for core students, and session three and four for advanced students. Session one and two were conducted on 26 July 1995 and session three and four were done on 27 July 1995.

To begin the discussion, Suwardi at first introduced me to the students. Why? This was because I had not been at the Polytechnic for about one year. I had left the Polytechnic for six months from May to November 1994 to undertake an intensive English course at the Indonesia-Australia Language Foundation and for the rest of the time
I studied at Hawkesbury. Then, Suwardi asked me to explain my study purposes, my plan, and my expectation of the student contribution to the project. I tried to develop student understanding of the thematic concern.

The next step were the interview sessions where students were asked to discuss in groups of five to discuss their views of the subject, also their critiques and expectation of the teaching and learning process. From all sessions of discussion, the team found that students nowadays were more skeptical than before. For example: their statements critiquing staff teaching styles, the performance of the subject, the benefits they gained from learning and relevancy of the subject with their daily lives.

Most students expected that from attending the learning process at the Polytechnic, they could enter the workplace soon after graduation or at least mastering skills and knowledge for creating their own job. The current issue was that the students felt that the learning process composed too many activities, in which some did not meet the student needs.

Interviewed students also expressed their opinion on the subject learning process. About 40 percent of core students said that some staff acted as if they were in a superior position in the process. Forty five percent of them commented that they were reluctant to actively involve themselves in learning activities, as they felt they had not enough experience of extension: 15 percent of core students expressed that they felt nervous when they were appointed as moderator in discussions, whilst some others expressed reluctance to do things of which they were not expert. To me, this was one specific characteristic of
learning in teacher-centred approaches in which the students were dependent on the source of knowledge.

Concerning the subject contents about 70 percent of core students suggested the contents needed to be reviewed following the change of the agricultural community development (the same comment within the Extension teaching staff). Most core students expected that the size of the class should be much smaller. The class of core studies was too large (85 students per class). The preferred size was that of practicum group (about 40-45 students per group).

Having discussed the current learning situation with students, we got a picture of the issues that needed to be improved. We then planned a meeting on 28 July 1995.

Meeting one: 28 July 1995

Extension teaching staff and I organised meeting on 28 July 1995 in the main meeting room at the Polytechnic. Attendants of this meeting were four research team members (two were absence because they worked in the practicum of another subject) plus the Head of School. I opened the meeting and proposed that we continue the project. Therefore, I asked the forum to discuss research roles and the issues to be addressed in the research.

The team realised that to achieve the desired changes, we should make clear about roles within the research team. The attendants of this meeting suggested that I should be a facilitator of the team, because I initially came to the Polytechnic to run the project. The
members assumed that I had learnt about an action research paradigm and generic facilitation skills in Hawkesbury. Similarly, the research team's role was as a facilitator in facilitating change in the learning process at the Polytechnic. The critique group had a specific task to monitor the way the team worked.

Figure 10. Action spirals one

After establishing the role of the main stakeholders in the project, we then set up project rules. The rules were:

a. The research team would meet fortnightly or as required by the team;
b. Ideas, opinions, views and criticisms expressed personally by a member of the team would be confidential within the team. For purpose of communication to the broader institution, we would only present team decisions.

c. We would work step by step so that each problem or issue found during the action phase would be resolved thoroughly before shifting on to the next stage or activity.

d. In every meeting, one member was permitted to talk once at any one occasion to provide clarity and assist resolution. Each member was expected to take minutes of the meeting.

e. If, for example, one of the research team member was not be able to attend the meeting, she/he should inform the team in advance. If possible, she/he could leave her/his critiques, comments and opinions of project development.

Two issues were discussed in this meeting:

A. The underlying assumption about the research question and

B. Analysing the current situation at the Polytechnic by using Strength, Weaknesses, Opportunities and Threats (SWOT) analysis.

A. Underlying assumption about the research questions

1. A research team can affect the learning process for the benefit of all participants in the process and the Polytechnic as an organisation. Within this assumption, we set the following points that:

a. The team can specifically decide the problem areas (issues) as well as the desired change in the Polytechnic.
b. The team can produce an action plan or appropriate strategy to implement the change.

c. The team is the competent agent promoting the change in the Polytechnic.

d. The team can generate a valuable outcome to the wider community.

2. Both group and sub-group within an organisation can work cooperatively and collaboratively and act as an effective agent of change for the desired changes.

These sets of assumptions and perceptions were the major issues in the research team at subsequent meetings.

B. Analysis the current situation at the Polytechnic by using Strength Weaknesses Opportunity and Threaten (SWOT)

Four members of the team indicated that the weaknesses of the current learning process were outweighed by its strengths. This was a critical situation to be resolved.

**Strength:**
1) Qualified staff
2) Land and water resources availability
3) Improved library and laboratory facilities
4) Enough buildings to run activities
5) Strategic location
6) Sponsorship from the outsiders

**Weaknesses:**
1) Limited funding from the Government
2) Staff training program rarely conducted
3) Centralization of decision making
4) Lack of evaluation/incentives
5) Conventional learning (teacher-centred) approaches
6) Lack of staff and or students motivation
7) Lack of cooperation in using facilities
10) Self interest

**Opportunities:**
1) Further education and training for staff and students
2) Quality in education, research and outreach
3) Join with agricultural companies for production of agricultural products.
4) Modern facilities or equipment  
5) Cooperation of the Polytechnic with other polytechnics  
6) Private Businesses, Government and other bodies to sponsor projects.  
7) Relationship with farming communities

Threats:  
1) Larger number of unskilled staff  
2) Limited job opportunities for graduates  
3) Bureaucratic procedures  
4) Centralization of power  
5) Unmotivated students  
6) Educational approaches

The research team tried to put our view, experience, idea and opinion of the areas to be improved into a dendogram (Appendix 4-6). Three team members argued that teaching styles could affect the achievement of the learning process. The rest of the members suggested that the contents of the subject would be a possible factor contributing to the achievement of the learning process. Whilst, most attendants in the meeting believed that the learning approach was the main issue to be investigated regarding the current situation. In facing this contradiction, I brought the team to the thought of making an action plan as stated in the assumption. The attendants were asked to form two groups to make an action plan. Each group should make one action plan consisting of expectation of the time and activities from August to February 1995. When these activities had finished, I asked the attendants to discuss it together to form ‘team action plan’. The team action plan is as seen in Table 9. The team planned that the next meeting would be done at the end of July 1995.
<table>
<thead>
<tr>
<th>Proposed time</th>
<th>Intended activities</th>
<th>People involved</th>
</tr>
</thead>
<tbody>
<tr>
<td>i</td>
<td></td>
<td></td>
</tr>
<tr>
<td>August 1995 to February 1996</td>
<td>- Regular research team meeting at the Polytechnic to discuss findings and issues arising, to review activities and to plan follow up activities</td>
<td>The research team, the critique group and myself</td>
</tr>
</tbody>
</table>
| August 1995   | - The research team conducts focus-group interview about learning process of the Extension subject with students  
- Two or three members of the research team approach extensionists and farmers in or near Jember to involve in making contribution to the project  
- The research team starts operating activities reflecting learner-centred approaches in the Extension subject  
- Plan workshop of learning approaches in the Polytechnic: what, who, where, how, why, when and for whom | The research team, myself, the students enrolled in the subject, the technician, selected extensionists and farmers |
| September 1995 | - Core and advanced students contribute idea, opinion and expectation of the subject contents  
- The team review students’ contribution  
- The team evaluate to the subject contents, assessment procedures, and teaching-learning styles as part of learning process improvement  
- Prepare for the workshop                                                                 | The students enrolled in the subject who voluntarily take part in the project, the research team, the critique group, myself |
| October 1995  | - The team together with supporting staff organise the workshop  
- Run the workshop  
- Continuing practice of learner-centred approaches and review its implementation  
- Seeking information of polytechnic education, its strategy and development? | The research team, the students enrolled in the subject, technicians and administrators               |
| November 1995 | - The research team needed to develop facilitation competency  
- The research team and the critique group review activities  
- The team works on curriculum development                                                                 | The research team, the critique group, myself                                                       |
| December 1995 | - Facilitation process: the students express their impression of the learner-centred approaches  
- A complete documentation of polytechnic education from Department of Education and Culture, Jakarta may be needed to provide more information about polytechnic strategy and development | The research team, the students and myself                                                         |
| January 1996  | - Collect information from Department of Education and Culture, Jakarta about agricultural polytechnic education  
- Continuing process of re-structuring the subject contents                                                                                   | Myself, the Former Director and staff of the Polytechnic Education Project  
The research team, the technician, students; representative                                        |
| February 1996 | - Action plan for curriculum development  
- Ending the action phase of the project  
- Reflection                                                                                                                                        | The research team and myself                                                                       |
Meeting two: 31 July 1995

Attendants of meeting two were five members of the research time, and a member of the critique group. The purposes of this meeting were to review what had been done during the first week of the project and to discuss the way improvement in the Polytechnic could be implemented. I started the meeting by outlining outcomes of the meeting one and asked the attendants to spend careful attention on the research questions.

In meeting two, members of the team appeared to develop cohesion as well as interdependency within the members. Attendants in the meeting were able to work together in discussing the research questions. The meeting two was composed of the following agenda:

1. Discussion about the research context. The discussion involved approaches used in this action research project, who were involved in the research, the types of actions to be taken and with whom, and who would benefit from the research and many other questions.

2. From brainstorming done in meeting one, we highlighted the main points or arena to be improved in the project. I attempted to facilitate the group in deciding the thematic concerns of the project. Suwardi and Zayin, the subject co-ordinators of the core and advanced studies attempted to elaborate upon the issues dealing with the subjects. The main concerns according to the co-ordinators were:

   a. About 50 percent of the students enrolling in the subject claimed that the teaching style employed by some staff was too autocratic and monotonous.
Project Implementation

b Some contents of the subject were out of date or not relevant to the current agricultural development (i.e. views of extension as service, extension methods).

c There were too limited opportunities for students to share their own experience with outsiders. This may be because of limited field study in the current policy (cutting budget). This policy recommends that a field study could be arranged only one per two subjects if the destination of the field study is outside the East Java Province.

d The subject teaching staff were too busy in preparing materials, assisting students in practicum and the farms, thus it seemed that the student’s dependency upon the staff was too high.

e Up to now, materials or information related to the subject in the Polytechnic library were too scarce.

f Four staff of the subject and half the core students had complained about limited facilities or equipment provided for the subject. Compared to the non-social subject, the facilities for science subjects were more completed.

I then posed co-ordinators statements to the whole group, two members seemed to be irritated with these statements. It was apparent that conflict among the team happened as a reaction to statement a. According to the rest of the subject teaching staff there were two additional issues concerning the learning situation:

Firstly, the class size in core studies was too large and it was difficult to manage discussion or activities with the such a class.
Secondly, the relationships amongst students, staff, technicians and administrators was not significantly apparent in terms of cooperation and collaboration within the group.

3. We also discussed our relationship to people involved in the project. We understood that good relationships between the research team, the critique group and students should be positive if the learning process was to be improved.

The expected learning climate would be the students were active and responsible to their progress

The research team set rules of the project (meeting one 28 July 1995)
The research team analysed situation using SWOT analysis

Participation from inside and outside institution contributed a positive effect to the learning climate

The subject contents required to be re-formed

Implementing learner-centred approaches
Improving the subject performance

Two research team members approached extensionists and farmers (August 1995)

The research team negotiated the project with insiders in August 1995

The research team planned research team meetings as medium to discuss research question; to make plan; to exchange experience among the members

The Extension teaching staff modified learning style, students enrolled in the subject were facilitated to lead learning activities starting from the end of August 1995

Figure 11. Action spirals two

The important decision of meeting one was we chose improving learning process at the Extension subject as a priority. Two members of the research team felt uncertain about the success of the project, and whether participation could be developed within the team, insiders, and outsiders. Some projects such as Improving Practice of Soy Cultivation, Irrigation Project and Cow Breeding had been conducted as joint research
between the Polytechnic and the Department of Agriculture showed that building participation was difficult. People usually only took part if they felt the project would benefit them.

The team suggested that the next meeting would be conducted by the end of August 1995 for two reasons:

a. Three research team members would be on leave as they supervised students in their fieldwork (off-campus)
b. My personal situation was that I would give birth to my baby in early August 1995.

**Between meetings two and three**

During this period, communication about the project’s progress continued within the team. Activities mentioned in our action plan were ready to implement, such as negotiating the project with the students, technician and administrator. Two members of the team approached five extensionists and six farmers close to the Polytechnic to involve them in the project. Approaching outsiders for this project was *hard work* because they were *laissez-faire* to our concerns. Only three extensionists and two farmers responded to our approach. The rest of them said they had no time to spend for other activities besides their routines. Facing this problem, the team discussed at a deeper level just how we could resolve this situation. Three members of the research team felt distressed not developing much participation with outsiders. The rest of the team suggested that this problem was common in a project. Thus, it would be better to continue working with these five people.
It was also indicated by the team that not all students were interested in this project. About 30 percent of core and advanced students were cynical about the project, and a number of administrative staff were, too. Suwardi, the subject co-ordinator for the advanced semester suggested that understanding and participation of the students and staff with regards improving the subject should be developed well before stepping on to the next stage. He also commented that evaluation of the learning and teaching of the subject was needed in order to decide the appropriate course of action for the improvement required.

**Meeting three: 30 August 1995**

Attendants at the meeting three were all members of the research team and two members of the critique group. The meeting three was aimed at continuing discussion issues arising from July to this meeting. Different from the first two meetings, at this meeting Zayin, co-ordinator of the subject for advanced studies began the meeting because I was absent during August from the Polytechnic. After opening the meeting, Zayin described what had been done prior to this meeting together with difficulties he found.

The group started with each member expressing his or her experience as a research team member. Meeting three covered the issue of the common ground, the research team commitment to the action research project, and re-thinking of the views of extension. It was apparent that there was friction within the research team and that conflict in dealing
with these issues was likely to occur. Meeting three also reviewed work that had been done between meeting two and three. The agenda of this meeting was:

1. Discussing data or any information gathered from interviews with the students. The results of interview were:
   a. About 65 percents of the students in core studies felt less-satisfied with the current learning process. Examples of contributory factors to this situation according to them were monotonous teaching style, passive students’ position, inappropriate subject contents, large class size and limited practicum facilities.
   b. At first, only 20 percent out of 170 core semester students were willing to take part. However, about 50 percent out of 45 advanced semester students agreed to support the project. It was a long discussion between the staff and students regarding the research. The students were not easy to persuade to participate actively in the project. They felt that they were satisfied with the current climate. In fact, they were not. It became apparent later that they were worried about effectively playing their role in the research.

   To gather information about the possibility of changing the learning process, the students were divided into several groups (see Table 8, Chapter Three). Communication amongst the team and the students allowed for better understanding about the purposes of the project. However, the students still hesitated to take action in the implementation of the learner-centred approaches. They said that they were not ready yet if they were directly given such tasks to act as facilitator without any
preparation. This was a good sign, as this meant the students started to pay attention to
the project.

2. Two subject co-ordinators (Suwardi and Zayin) presented their expectation to the forum
about the plan to change the subject contents. The intended changes were:

- To extend the subject contents from agricultural extension to extension for development
considering the recent agricultural development which placed farmers as central to the
extension system.

- The contents of the curriculum would become a problem solving oriented, stressing
communication and related issues in core studies, evaluation to the extension program
and critical review into the program in advanced studies.

- Create a more dynamic learning process by employing alternative learning approaches
with modification within the Polytechnic setting.

- Relationship with farmers and the agricultural community would be made closer to
enable the students and the community to learn together in a co-operative relationship.

- There was an expectation of the staff and the students to establish a radio station on
campus. The station can be utilised for practical activities and to give an opportunity
for the talented students to have the experience of using electronical equipment in mass
communication. This station would also be used as a vehicle to activate the group
dynamics amongst the insiders, outsiders and people interested in the learning process.

- The students were expected to be well equipped with good competency to enter the
workplace or to create jobs soon after graduation.
3. Action plans for the next activities were:

1. Planning a workshop for learning approaches and improvement on the Extension subject in both core and advanced semesters.

2. The subject teaching staff would continually operate the experiential approaches with various activities. Comparing learning outcomes between old and new approaches. The learning outcomes could be seen from student’s responses and staff learning experience in using the approaches.

3. Developing more active participation from technicians, other staff, and administrators. One way to develop participation was to create activities within participant-centred areas.

4. Regarding the relationships with outsiders who were out of reach, the research team planned to employ delphi face to face to meet with extensionists; interviewing the Former Director of the Agricultural Polytechnic Educational Project in the Department of Education and Culture in Jakarta and the staff at the department working with the polytechnic curriculum project; students’ parents and the farmers.

5. Monitoring the changes occurring within the project. The changes were recorded for further discussion in the next meeting. Reflection of each core member was also requested to ensure the learning outcomes.
Between meetings three and four

Activity during this time was to continue implementation of the learner-centred approaches. The activities in the learner-centred approaches can be classified into two: student-centred group methods, and individual student-centred methods (Jarvis, 1995:122-132). Examples of activities in the student centred group methods in the study were brainstorming, debate, workshops, group discussion, project and case studies, role play, simulation and gaming, and so forth. Examples of activities in individual student-centred methods were assignments, personal tutorial and self-directed learning.

The research team negotiated with the core and advanced students attending both practical and theoretical activities about topics in regard to such activities. Main arenas of concerns were: - the views of agricultural extension from different philosophies
                  - responsibilities of the students and staff in the learning process
                  - the preferred activities in the learning process

The research team met three technicians and two administrators to talk about how we could provide better service in the learning themes. We needed to work shoulder to shoulder for providing a better resource, facilities and support for the students. For example: Students in the practicum required a number of facilities, such as a handycam, microphone, television and radio-cassette recorder. To use the facilities, the students should contact the technician in advance to make a booking. If the equipment was broken or not available at the time required, the technician could offer alternative facilities to use.
The teaching staff operated activities in the classroom, the laboratory and in the field of the new learning paradigm. The core and advanced students enrolled in the subject were assisted in knowing their weaknesses or the area to be improved and to recognise their strengths as well. Consultation was used for this purpose which was arranged by teaching staff and the students enrolled in the subject. The teaching staff involved the students in selecting the subject contents. To do so, the students were asked to fill out forms we circulated with the expected topics to be involved within the subject contents.

![Diagram](Finding out, making sense, taking action, events and things)

Figure 12. Experiential learning flux (after Bawden, 1989:23)

Pursuance to meeting four, the team shared experience in facilitating students. The constraints at this stage were that we required more references concerning the success of the use of experiential learning at the level of formal tertiary education. The team acknowledged that learning is a continuous process. We can *take an action* after finding out or observe *the thing* as pictured in Figure 12. In relation to this, Bawden (1989:23) maintains that:

> learning can be construed as a dynamic process; a flux between sensory experiences of the world and their mental abstractions - between experiencing and making meaning of these experiences, between sensing and making sense.
Meeting four: 17 September 1995

Attendants of meeting four were the research team, the Head of School, and the critique group. At first, I began the meeting by simply reviewing the previous meeting, the recent activities or actions and the agenda of the meeting four. As usual, the Lewin spiral was used as a tool to evaluate our actions, to reflect upon our learning experience and to revise a plan for the next action.

We reviewed the actions and progress of changes. It was a bit difficult to assess our own action. Thus, the critique group played an important role in monitoring the project progress. There was a significant change on learning performance in that the students were very responsive to enter the new learning situation.

Agendas of the meeting three were:

1. The Head of School suggested that learning activities (i.e. simulation, role play, drama, and workshop) of the learner-centred approaches seemed to be more flexible to the situation than the conventional ones. The new ones considered the students as the clients to which the staff could share knowledge, experiences and facilitate the learners. However, regarding curriculum at the Polytechnic which put priority on practical knowledge, the application of the new approaches needed to be modified. For example: the tasks could be made on practical experience with relevant supporting theories.

2. Many comments and critiques had been gathered from students, staff and technicians, particularly about more time allocation which was required for covering the topic of the subject when using the new learning approaches.
3. I suggested that the Extension teaching staff needed to construct the subject contents from conventional approaches of extension (as technology or information transfer) to the new approaches of extension (i.e. model-farmer-back-to-farmer, as pictured in Chapter Two). The following two models of the conventional approaches had been adapted in our Extension subject:

conventional approaches to extension views extension as:

- a linear model: research \(\rightarrow\) knowledge \(\rightarrow\) transfer \(\rightarrow\) adoption \(\rightarrow\) diffusion (Rogers, 1983)

- a triangle relationship among research, education and extension (Watson, in Van Beek, 1995:12)

4. Workshop confirmation. I brought the team in to clarify details of the workshop. Details involved the purposes of the workshop; those who would discuss about what and with whom; who would implement any recommendation resulting from the workshop; and how such implementation would be undertaken? These were just the guidelines of the workshop. We opted for flexibility when the workshop was arranged.

One member of the research team brought forth the issue of evaluating our practices. This was a really interesting topic. We shared our experience in an *open air situation*. Two staff of the research team members acknowledged that their practices had led the students to becoming passive learners. But some other staff members contested this opinion. These latest staff members argued that they had already done their best with their students practices and that students were responsible for achieving their own expectations from the learning. The students should be active in making their learning
experiences complete by accessing other sources such as fellow students, extensionists, library, mass-media, other staff, and the competent people. Staff could not be accused of being the cause of the students becoming passive learners.

The member who began the issue based his argument through his findings from students’ interviews. He recognised that the students were in a dilemma. On one side, the students were expected to achieve high grades with high competencies of practical knowledge and skill. On the other side, the students should attend all activities in the class, laboratory, farm, workshop and fieldwork, then from attending the activities, the students should make reports of their attendance in a professional format. So, the students’ time was mainly spent on these activities. They only had little extra time to make social-relationships with the community, as one example of practicing the principle of extension in their daily life. Thus, it was difficult for students to satisfy the teaching staff within this situation.

Regarding the discussion becoming emotional, I as the facilitator attempted to bring the discussion into the role of us in situation improvement with CATWOE (Checkland, 1981:287). CATWOE was used to derive our root definition of learning Extension at the Polytechnic. It is an acronym for:

C - Customers (the beneficiaries of a notional system). Customers or clients of the learning system may be beneficiaries or victims of its output. They could be the academic staff, the students, student’ parents, the institution, the farmers, the
extensionists, and the wider community who perceive a need to maintain a desirable learning process.

A - Actors (those playing roles in the system). The actors or participants that formed core team of this research included the staff and institutional representatives, administrators and people contributing to the learning process.

T - Transformation. The transformation, or the essential purpose of the system, is to improve the extent to which people act pro-actively instead of re-actively, by learning practices of managing their own situation. The learning process is an active process by which people learn by working together to manage the problems. Transformation is a system to develop a set criteria for academic practice.

W - Weltanschauung (the perspective or worldview adopted). Our weltanschauung suggests that people have the right to solve their problems by helping people understand the situation and work cooperatively in a learning process.

O - Owners (those who could destroy it). The learning process at the Polytechnic was owned by some organisations including: staff, students, the Department of Education and Culture. Effective group linkages are required to improve the efficient use of resources for the benefit of all within the organisation.

E - Environment (the constraint in which the system is subject to). The system operates in an environment of decreasing human and financial resources within a governmental institution. This was counteracted by an increasing demand for high qualification within the workplaces.
The team commented that CATWOE framework was interesting, and seemed to be appropriate to this project. According to the three members of the team, our work in this project had followed this framework even though it was not explicitly stated. For example: we, the Extension teaching staff as the actors, operated a new learning approach for improvement with the students, as the clients. The intention was to satisfy the client in the transformation process, involving the negotiation with the Director as the owner within certain constraints, such as, low motivated students or administrators, and limited supporting facilities.

**Meeting five (workshop): 17 October 1995**

A one day workshop was facilitated to discuss the research issues. Attendants at the workshop were the research team plus myself, the critique group, all associate directors (academic, administrative, and student affairs), 26 academic staff from different schools at the Polytechnic, three administrators, two technicians, 22 student representatives and two extensionists. The attendants at the workshop were seventy people in number. The purposes of the workshop was:

a. To analyse the current learning situation, problems associated with the learning, implementation of the new approach and its constraints.

b. To develop a strategy of learning process that can satisfy the clients, and to increase professionalism or promotion for the academic and administrative staff, and technicians as well.
c. To discuss current policy of the Polytechnic development program for 1995 to 2000, and to review the recent situation regarding the human resources, financial condition, and organisational system.

d. To strengthen the relationship between the Polytechnic and other institutions or organisations, and the wider community.

The Director of Polytechnic opened the workshop, followed by his presentation about the current learning situation in the Polytechnic. After the presentation, the team divided the attendants into seven groups (ten participants per group) to discuss the workshop issue. The topic of discussion was a strategy to improve learning outcomes, and evaluation to the project which was started since the end of July 1995.

I highlight the important points as they emerged from the workshop:

1. About 70 percent of the insiders (the staff, administrators, and technician) agreed with the plan for the changes and they would support the project. The plan for the change was designed as part of the project:
   - continue implementation of the new approach in the Extension subject;
   - re-construct the subject content;
   - evaluate the changes to ensure they were the appropriate changes
   - revise the plan for further action

The rest (30 percent) of the insiders did not respond to the intended change. Thirty percent staff did not want to participate in the project.

2. The students felt too tired with the current learning strategy with 70 percent (this proportion was an approximate approach) of their time spend in the practical work; whereas only 30 percent was given to theoretical work. Student representatives
suggested that the practical and theoretical ratio should be re-defined for two main purposes. The purposes were, firstly, the students would have enough time to do other activities and socialize with the community. Secondly, the Extension teaching staff could provide the students with a better foundation in theoretical knowledge.

3. Future strategy for the Polytechnic would be to develop the increasing quality of education, improving resource management and efficiency of the organisation and strengthening relationships between the Polytechnic and the wider community.

I point out from the outcomes of the workshop that there were some barriers faced by the staff in the use of the learner-centred approach, such as, time constraint, student motivation and the size of the class.

**Between meetings five and six**

The Extension teaching staff continued to operate within the principle of the learner-centred approaches in the subject. The learning process seemed to follow a certain mode in which every person associated with the process would pass through a cycle that reflects *both external activities and internal mental states*. Related to this fact, Mortiss (1993:77) has proposed various learning cycles, some emphasizing interaction with a teacher, others the adjustment of the learners and their learning. Figure 13 shows a possible model of learning.

Practicum in the subject was modified with activities reflecting the learner-centred approaches. For instance: the subject teaching staff usually discussed the topic for the
next meeting, activities to be done, who would take responsibility to lead the activities and discussed the facilitator’s role. Indeed, this required more time to negotiate with the students. The staff members understood that the students had limited time to do many tasks because the students’ time was spent intensively in the laboratory, farms, workshops and class. Thus, the staff avoided the tasks that interfered with student time allocation to other activities. This meant, the tasks were made suitable to their condition. For example students were required to prepare their own current project presentation, their own problems facing how to learn effectively and to make a report of their activities or implementation of extension in daily life.

![Learning Model](image)

Figure 13. Learning Model (Mortiss, 1993:77)

**Meeting six: 26 November 1995**

Four research team members and one member of the critique group attended meeting six. I began meeting six by expressing my gratitude to my colleagues for their consistent commitment to the work through the project. I then suggested that it would be beneficial if the research team share their experience of practicing the learner-centred approach and discuss the outcomes of the previous workshop.
A learner-centred approach was preferred to teacher-centred ones. However, the staff were arguing about assessment methods in the learner-centred approaches.

The research team facilitated the workshop (17 October 1996). The research team recorded discussion in the workshop.

A good level of facilitation skills is required to develop students' understanding of practical and theoretical aspects of extension.

The Extension teaching staff based on students' contribution of relevant topics changed subject content (sequencing, eliminating, adding). The teaching staff facilitated learning using the new re-constructed subject content.

Plan a workshop to discuss the issue of the learning approaches; to gather more information about the expected learning climate.

Continued to work on curriculum reformation.

The research team observed the students (enrolled in the subject) responses within the new learning process by asking them to comment: upon the way the staff presented the subject; on the subject content; on assessment procedures.

Figure 14. Action spirals three

Firstly, the attendants formed two groups consisting of three members per group. Each member of the sub-group discussed activities in practising the approach, such as simulation, role play, drama and discussion. Two members of the research team presented the students' response to the new learning process, with an example of dialogue found in 24 November 1995 (details in Appendix 7). Based on the workshop of 17 October 1995, three members of the research team reported that implementation of the experiential learning approach demonstrated an excellent result in participants in the process being able
to learn together. There was a weakness indicated by the staff that the approach seemed to be time consuming based on the current experience. This was because each time when we had a meeting for the subject it was full of activities for discussing a given topic. Thus, one staff commented that the implementation of the approach could be re-constructed or re-planned to achieve the goals of the subject.

Agendas of the meeting six were:

1. The research team developed a revised plan. The plan was focused on modification of the new approach, such as by joining activities with subject content.

2. Content of the subject was reformed following agricultural community development.

**Between meetings six and seven:**

In the period between meetings six and seven, the team continued working on the project. The team and I facilitated the students in practicum. About 70 percent of core and advanced students seemed to support the learning approach which was focused on their needs without ignoring polytechnic education goals. This was known when students expressed their comments on given activities. The research team kept documenting the project progress to be brought into the next meeting. Instead of those who supported the learner-centred approach, the research team recognised that about 30 percent of all students undertook the subject were not enthusiastic both in the classroom and practicum.

From 28 November to 4 December 1995, the team arranged consultation with the students who did not support the change. This was acknowledged from interviews
between the research team and the students in the first week of this project. Practicum had been used as a medium to create dialogue between the research team and these students. The dialogues were arranged by each member of the team. They each interviewed five students at one time. This was aimed to allow multi-ways of communication to occur. In the discussion, the students who did not positively respond to the change argued that the activities of the new approach were too time consuming and that there little content to be covered. About a quarter of the core and advanced students also commented that they came to the Polytechnic to gain new skills and knowledge for their future, not for attending such strange activities.

**Meeting seven: 5 December 1995**

In meeting seven, all members of the research team and two members of the critique group were present. I opened the meeting and talked to the forum that Suwardi of the research team would be leading this meeting.

Suwardi began to report activities between meetings six and seven and evaluating our actions. This was continued with the critique group’s feedback on progression of our project. In general, the critique group commented that the research team should work harder than before, by increasing co-operative and collaboration work with insiders and with outsiders as well.

Even though the project showed good progression indicated by the creativity of the students in the subject (whether the activities were conducted in the class, in the field, or in
the laboratory), the critique group pointed out that the main issues in the implementation of the project were:

1. Maintaining active participation from insiders and outsiders was not easy. This could be caused by the fact that those people had a low level of understanding of the problems or issues of improvement. Also, there was not enough communication amongst participants in the project.

2. The meaning of improving practice in each action of the project should be made clear. For example: The staff should know about her or his weaknesses in her or his professional practice, for which s/he intends to improve.

3. Implementation of a given learning approach should be done gradually - not drastically, as it required time to make participants in the learning process accustomed to such an approach. Thus, one approach could not be directly adopted within the Polytechnic context. For instance, in adopting learner-centred or experiential approaches, students’ tasks should be guided to the idea of improving their practical skill and knowledge.

Discussion among attendants of meeting seven continued to face the issue of the way the team carried out action. Two members of the research team reflected that the actions taken were mainly aimed to satisfy the clients. Negotiation and facilitation enriched the activities in the action phases of the project. The staff undertaking these actions were:

Suwardi, Kasutjianingati, Rini, and Muqwin (working with core students) and
Zayin, Djamali and I (working with advanced students).
However, we sometimes switched with whom we worked. In other words, there was flexibility in the way the team took action. The research team indicated that there were some barriers affecting this implementation, such as:

- The students enrolled in the subject were still affected by the teacher-centred approaches. This could be understood, because most non-Extension teaching staff employed this style. We acknowledged that "changing always required time."

- Non Extension subject teaching staff could be grouped into two: those who supported and those who did not support our project. The last group did not attempt to inhibit our activities, but their cynicism had influenced our confidence and our optimismism for the success of this project.

- Communication with the outsiders was the main issue to be resolved at this stage. Extensionists were very difficult to be included directly in the project.

To know to what degree team members learnt from the project, I asked each member to express individually about their reflections concerning the projects' achievement. Firstly, I stressed that the project was a process or an object from which the research team learnt. The way we learnt might be different, but it was virtually relevant with the Kolb learning cycle. One member of the team commented that reflection was very important for evaluating the way we learn.

Secondly, the team divided into two groups consisting three members per group. However, we considered that each member would express personally his or her reflection. Some individual views expressed were:
the appropriateness of certain learning approaches for the Extension subject could be seen from satisfaction of the students and lecturers of the learning process.

2 that the action research methodology was not clearly understood by some members of the research team. This could be understood, as they usually conducted their’s within conventional research paradigm with researcher - researched relationship.

3 the sense of belonging and commitment to the project was not equally shared across the research team.

4 a frustration that the hierarchical structures from outside the group had not been opened freely, and that the members of the research team could share input and output equally.

5 an acknowledged commitment to a methodology that was considered to be superior to this project.

6 a recognition that the emotional level of each staff member fluctuated during the progress of the project and due to fluctuating understanding amongst group members.

7 the project could not achieve its goals without active participation from insiders and outsiders for the long term. Up to now, participation from outsiders was relatively low.

8 as documentation of the historical story of the Polytechnic in Jember was incomplete, the research team decided that it would be better to gather more information from the Former Director of the Polytechnic Education Project. The research team assumed that the Former Director had much more information about historical aspects of the polytechnic educational system and its development.
information about the separation of the Polytechnic from the University was also required. As mentioned previously in Chapter One, there are different priorities between these institutions which then lead to a need to build the Polytechnic as a separate institution. There is now a transition phase in the Polytechnic, and it is expected that all polytechnics in Indonesia not incorporated within universities, will be individually managed in year 2000. The transition has more or less affected academic activities in the Polytechnic because academic policies keep changing following the separation plan. For example: staff at other faculties at the University of Jember have more opportunity to receive scholarship for their professional development than the Polytechnic staff, because priority is given to the Faculties in the University. Another reason given is that the Polytechnic is expected to be able to manage such things separately. From my experience in 1994, approval from the Rector of Jember University was required for Polytechnic staff to undertake any further training or education. Thus, it is still impossible for the Polytechnic to manage staff development privately, except when it is financed by the Polytechnic foundation.

Meeting eight: 9 January 1996

Following meeting seven, which ended with the personal reflection of each team member, meeting eight continued to resolve the issues that arose on reflection. Attendants of this meeting were five members of the research team. The meeting evaluated the actions taken, discussed the learning model that would be appropriate for participants at
the Polytechnic, further action, and the action plan for the rest of the project. Issues recorded by the research team between 5 December 1995 and 9 January 1996 were:

a. Approximately 30 percent of the students enrolling in the subject sometimes felt reluctant to do the task or to lead the practicum, because they were afraid to make a mistake. On the other hand, about 40 percent of students dominated the activities. In facing this situation, the Extension teaching staff who facilitated the practicum would enter the discussion and attempt to create a new dialogue flow among the group.

b. As said before, experiential approaches tended to be time consuming. To minimise this weakness, we modified the practice by stressing the need to fulfill the subject content.

c. Thirty percent of the students who were not interested in the approach suggested that they preferred the conventional approach to the new one, because they just did what was instructed by the staff in the previous one. In the new approach they needed to be more active and creative. These unsatisfied students, expressed that the new approaches required much more energy and additional work than before.

d. Relationships with student parents was nearly nil. In fact, this relationship was very important to build students motivation to learning actively. For example:

• One case in 1993 showed that a student (whose name was kept confidential) did not expect to study at the Polytechnic nor at other Higher Institutions. He just wanted to work, instead. His parents, however pushed him to go to campus for certain expectations (i.e. prestige). As he entered school involuntarily, he did not show any
respect in satisfying all the course requirements set. The result was that he failed to complete the study.

- Another case showed, a student (whose name was kept confidentially) who entered the Polytechnic of his own volition. He came from a low income family. He worked as a newspaper distributor in his spare time. He produced very good performances. His parents were proud of him and they supported their son to study hard. At the end of the study, this student achieved an award for his excellent grade.

From these two examples, there was an indication that the parents’ influence played a major role in the student’s achievement. However, attendants at this meeting argued that it would not have much influence achieving the project if students’ parents were not involved in the project. Most students, nowadays, did not like to be monitored by their parents.

In this meeting, I announced to the team that I would not be available for the next meeting. The research team members suggested that they would continue working on the project in my absence. This commitment indicated that the group had strong ownership of the project. The next meeting was planned on 27 January 1996.

**Between meetings eight and nine**

1. I was in Jakarta from 19 January to 1 February 1996 to gather information. I interviewed the Former Director of the Agricultural Polytechnic Education Project and
the staff of polytechnic curriculum development, the Department of Education and Culture.

2. The Extension teaching staff continued assisting core and advanced students who had problems with learning, indicating less than 20 percent from total students had learning problems (such as difficulty with time management, not doing the task, and inactivity) to improve their presentation in the learning process. The six subject teaching staff used informal discussions during break time between practicum as consultation time.

- The subject teaching staff (particularly the co-ordinators: Suwardi and Zayin) kept working on re-constructing contents of the subject, including the appropriate assessment procedures.

Meeting nine: 27 January 1996

I was absent in meeting nine. All members of the research team attended the meetings. The critique group was absent because they had another activity with final examinations. Suwardi, one of my colleagues who acted as facilitator in charge, opened the meeting with a discussion of the outcomes of the action so far and evaluated the process.

Each member of the team reported his or her findings in facilitating the students, experiences and any barriers found. Most team members were satisfied with the action because there was an increased number of students who were involved in the activities.

The points discussed by the team were:
a. Communication was the key issue in the new approach that influenced the activities. For example: the staff should communicate with students about the changes and evaluate the changes to ensure that they were the changes to be reached.

b. Overloaded work of the research team and difficulty for the team negotiating an action plan, as they had only limited time to meet together.

c. Create a network for curriculum development for the subject. The new curriculum for the subject was to be completed by the end of this semester for approval. The subject co-ordinators prepared an action plan for this purpose.

Meeting ten: 7 February 1996

Five members of the team and two of the critique group joined the meeting. Suwardi opened the meeting by presenting a brief explanation of meeting nine, and activities that had been done during my absence. After that, Suwardi asked me to present the result of the interview with the Former Director of the Polytechnic Educational Project and curriculum development staff at the Department of Education and Culture in Jakarta (Appendix 8).

Firstly, I saluted the research team work in my absence, and spoke to the forum that I expected this good team work could remain constant when I returned to Hawkesbury next March 1996. I then presented the material that I had gathered from Jakarta. The team commented that the contents of interview were interesting as they indicated the problem of
the educational system at the Polytechnic, the strategy for further development of it and policies related to it.

One important agenda of the meeting ten was an action plan for the curriculum development presented by the co-ordinators (Appendix 9). The rest of the group reviewed the plan in terms of relevancy of the contents with the Polytechnic students.

The research team facilitated the students enrolled in the subject who had problems in learning to determine their strength and weaknesses; to assist the students to improve their weaknesses (in January 1996) The research team modified assessment procedures by involving students comments (assessment of August-January semester 1995)

The research team members had strong ownership of the project

In the research team meeting on 25 February 1996, I circulated a paper to attendants questioning about the staff commitment to be involved again in the team after the action phase of the project ended

Figure 15. Action spirals four

**Between meetings ten and eleven**

In this period, the research team made significance effort to change the Extension subject contents and to continue implementing the learner-centred approaches. The form
of change in the subject contents was done by restructuring the contents, eliminating irrelevant topics and by adding appropriate topics. The sequence of topics was changed to provide a more rational flow of the subject. Similarly, the topic of problem based learning was added to develop students' competency in problem solving in both core and advanced studies. Some topics such as Family Sociology and its Changes and Expectation of the Family and Priority were eliminated following advanced students' suggestions that they were not interested in these topics. Proposed contents of the subject is included in Appendix 9.

Assessment of student achievements was also an issue discussed within the teaching staff. The research team commented that assessment procedures could not be changed within a short period of time. We still used the conventional assessment process, which was based on examination results as explained in Chapter One, section on the Extension subject at the Polytechnic. However, during the August-January academic semester, we attempted to involve students' comments on their progression to estimate appropriateness of the grade given.

**Meeting eleven: 25 February 1996**

I was not happy during meeting eleven because not all members attended. I tried to understand that members of the research team had many other tasks besides their involvement in this project. Five research team members and two members of the critique
group were involved in this meeting. I started the meeting by stating to the forum that
"this could be the last meeting for the project, but not as the last action!"

I expected the research team would continue to take over the project while I was
not at the Polytechnic. I was not sure that the research team would like to do this.
Therefore, I circulated a paper to the attendants asking them to select one member of the
research team as a leader to facilitate the team. I also asked in the paper whether he/she
would continue to be included in the research team after this last meeting.

About seven attendants wished Suwardi to be the leader to facilitate the team.
Most members of the research team expressed their commitment to continue working on
improving the learning situation. Two members of the critique group suggested that the
research team should develop facilitation skills to prevent dependency upon one person.

At this meeting, we divided the discussion into the following agenda:

1. Initial assumptions and expectations of the task of each member of the research team.
2. Individual perception of the activities or action during the project.
3. Personal view on the outcomes of the project
4. Unresolved issues

To know the effects of the project on the way the Extension subject is presented I
summarise changes that occurred during and at end of project period (Tables 10 and 11). I
asked each attendant to express his or her impression of the project. Each presented
different impressions. However, in general, the comments given reflected a unity in
experiencing project ownership. Positive comments were very much supportive of
activities in the learner-centred and experiential learning approaches. The weaknesses of such approaches (i.e. time-consuming and difficulty in covering all previous subject content) were understood because each approach, indeed had weaknesses and strengths.

Table 10. Summary of the Extension subject presentation during project period

<table>
<thead>
<tr>
<th>Subject in level</th>
<th>Change in learning activities</th>
<th>Assessment procedures</th>
</tr>
</thead>
<tbody>
<tr>
<td>i</td>
<td>ii Activities in classroom, in laboratory and in the field were arranged in the same stream by using student-centred activities.</td>
<td>iii Conventional assessment methods still dominated the way the Extension teaching staff assess students development competency in gaining practical and theoretical aspects of extension</td>
</tr>
<tr>
<td>Core studies: Change in sequencing the topics. The sequence of topics during project (main topics): 1. Principle and Philosophy of Extension. 2. Communication in Agriculture 3. Human Resources Development 4. Planning for Development 5. Principle of Adult Learning 6. Learning Evaluation</td>
<td>In the classroom, students attending lectures of theoretical aspects of extension were asked to give feedback on the way the lecture presented, to what extent the students understand the lecture and how could the students and lectures improve activities in the classroom.</td>
<td>Quiz, practicum assessment, student’s report of practicum, middle semester examination and end semester examination were used to assess student’s competency. Format of middle and end semester was in the form of essay, multiple choices</td>
</tr>
<tr>
<td>Advanced studies: Change in contents of the subject. Topics of Family Sociology, Family Expectation were eliminated. Other topics such as The role of Extension Officers as Agent of Changes, and T and V System were just modified. The contents, therefore, are as follows: 1. Identification and Role of People Involved in Extension 2. Group Process and Development 3. Sociology of Rural Community 4. Identification of Rural Community’s Needs and Possible Ways to Fulfill the Needs 5. Strengths and Weaknesses of T and V System 6. Alternative Extension Strategy</td>
<td>In laboratory and field work in or near campus, students involved in the practicum were assisted to be able to work individually and in a group (usually in group of five). The Extension teaching staff facilitated activity. Sequence of topics for practicum was discussed between students and the subject teaching staff. Examples of this included who prepared for presentation, who acted as moderator, what would be presented and what should other students prepare for the activities</td>
<td>Grade given was in form of: A (very good) B (good) C (fair) D (poor) E (fail)- If a student got E mark, then he or she should re-enroll in the subject in the following academic year.</td>
</tr>
</tbody>
</table>
Table 11. Summary of the Extension subject presentation at the end of project period

<table>
<thead>
<tr>
<th>Subject in level</th>
<th>Change in learning activities</th>
<th>Assessment procedures</th>
</tr>
</thead>
<tbody>
<tr>
<td>Core studies:</td>
<td>In the classroom, students attending activities were given the opportunity to take over the role</td>
<td>The use of conventional assessment method (quiz, middle and end semester examination, students’ report practicum) was modified by including student personal comment of his or her competency development from his or her presentation in the Extension subject. This was aimed to ensure the appropriateness of grade given and to create more “open” method of assessment.</td>
</tr>
<tr>
<td></td>
<td>of Extension teaching staff who facilitate the classroom activities. This was done by pointing some students to lead the meeting. The staff then asked the students to make a schedule of the coming activities. To do so, the students worked in group and then reported the result to the class. From this, the teaching staff trained the students to be more active and independent</td>
<td></td>
</tr>
<tr>
<td>Advanced studies:</td>
<td>The same process was also operated in the laboratory and field activities. Example of activities done were role play, simulation, presentation, and workshop. However, because of the use of learner-centred approaches tended to be time consuming, the Extension teaching staff and the students decided to put stress on covering the topics of the subject. For example: Each group of students made a paper of certain topic that had not been discussed before and presented the paper to the class. Thus other groups could learn together.</td>
<td></td>
</tr>
<tr>
<td>Contents of subject were stressed around developing extension theory and practice for rural and agricultural development. The main topics were:</td>
<td>The grade was in the form of: A (very good) B (good) C (fair) D (poor) E (fail) - If a student got E mark, then he or she should re-enroll in the subject in the following academic year.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>1. Development of Extension Theory and Practice</td>
<td></td>
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<td></td>
<td>2. Extension and Rural Change</td>
<td></td>
</tr>
<tr>
<td></td>
<td>3. Extension and Agricultural Development</td>
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<tr>
<td></td>
<td>4. Evaluation of Extension Practice</td>
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</tbody>
</table>

Attendants of the meeting eleven pointed out that the issue of involving more outsiders in this project was still an unresolved issue. So far, the outsiders participating were three extensionists, and two farmers. We acknowledged that participation was impossible to maintain at the same level in every stage. Participation itself could be
highlighted in a given form (for example, the extensionists, the farmers took part in sharing information about extension in their experience). These participants contributed the idea of extension from different views. Another unresolved issue was the method of assessment in the use of experiential approaches as stated before in the section ‘between meetings ten and eleven’.

**SUMMARY OF ACTION PHASE OF THE PROJECT**

The research team meetings finished at meeting eleven, for a number of reasons. It is worth exploring the reasons, for the insight the meetings offer to understanding the action research. Meetings one to four were mainly information exchanging among participants regarding methodologies to be elaborated during the action phases of this project. The mode of action research at this stage was largely *technical* (Grundy, in Kemmis and McTaggart, 1988:353) where criteria were set and not seriously questioned. The group was developing cohesion and a stage of interdependency.

Meetings five to eleven were about questioning criteria on the methodology used and belief and value systems of group members. The issue of participation became an important element together with action steps taken. These action steps reflected the pressure for action from the staff outside the research team, together with a sense inside the group that something should be undertaken. The pressure for action and the challenges to belief and value systems that questioned current practices of group members, shifted the team into a stage of questioning criteria. This led to conflict struggles and the *practical*
mode of action research. The group moved from friction or conflict to cohesion and back to conflict several times during this process. Tasks were set by the group and action taken.

Pursuance of actions continued until the ninth meeting in the absence of me. Even though there had been occasions of the group looking at themselves and their practices up to this stage in the project, the real insight that the process concerned research into the professional practice of the practitioners was apparent at this point. The last meetings were concerned in detailed exploration of the group’s needs. This indicated the start of an emancipatory mode of action research (Grundy, in Kemmis and McTaggart, 1988:358). In the emancipatory mode, the research team worked under restriction such as polytechnic educational system, organisational structures in the Polytechnic and social relationship.

The meeting eleven was called by group members to think about the unfinished work. It is not easy to explain the emotional level at the conclusion of that meeting. The reasons of why the research team ended the meetings were:

First, the research group had achieved its own conclusions that the final task had been completed. Second, I should now move into the next stage of my program, to start reporting the action phase of this study, in which at the same time, the research team commitment had been achieved in taking over the project. Later, I returned to the Polytechnic at the end of August until the third week of September 1996 for the project evaluation.

Chapter Four have provided a story of experiencing the project. The action phase of the project, in short, presents:
① the way the team approached the research context,
② the way through which the team facilitated participants for the improved situation and
③ particular issues arising during the project implementation.

The next chapter discusses evaluation of the project. This chapter presents the research team personal experience of the project, effects of the project to the learning process improvement, the students' views of the project achievement and how the research team brought forward the unresolved issues.
CHAPTER FIVE
EVALUATION OF THE PROJECT

Chapter Four has presented the way the research team and I carried out the study. Chapter Five continues to discuss evaluation of the project. Evaluation was conducted to review the overall project effects to research team and to the learning process, to examine whether or not the changes occurred were the desired changes, and to evaluate my role as facilitator for the research team.

Regarding the Bawden’s two ‘levels’ of learning (as cited in Chapter Three), the evaluation of the project can be viewed as the second loop of learning; whereas the action phase of the project can be seen as the first level of learning. The reason is that evaluation can be seen as ‘finding out about our action for learning improvement.’

EVALUATION OF THE PROJECT

Six months after the last meeting of the project, I had an opportunity to undertake evaluation to the project. The evaluation methodology I used was that of Guba and Lincoln (1989:185) methodology of Fourth Generation Evaluation (FGE). This methodology involves 12 steps. However, in its practise, I modified these 12 steps into several activities as shown in Table 12. Even though the steps appear to be linear in sequence, it is not necessarily that such a linear flow either must or should be adhered to rigidly. The 12 steps are:

1. initiating a contract with the client or sponsor commissioning the evaluation;
2. organising the evaluation;
3. identifying stakeholders;
(4) developing within-stakeholder-group joint construction (collaboration, share);
(5) enlarging joint stakeholder constructions through new information/increased sophistication;
(6) sorting out resolved claims, concerns, and issues;
(7) prioritising unresolved items;
(8) collecting information bearing on unresolved issues;
(9) preparing an agenda for negotiation;
(10) carrying out a negotiation;
(11) reporting via the case study - the joint construction as product; and
(12) recycling.

Evaluation was carried out from 28 August until 20 September 1996. Sequence of steps done in the evaluation is outlined in Table 12. Communication within the research team continued after I returned to Hawkesbury in March 1996. I received information from the team that there were a number of changes occurring since my return to Hawkesbury. The changes included the new Polytechnic Board such as the new Director and Associate Directors, the new Head of School (Suwardi, one of the research team now holds this position) and the new administrative structure. Even though these changes did not interfere much with the project, the team reported that these changes provided a different ‘environment’ at the Polytechnic’s Board level.

I felt it necessary to contact the new Director regarding the plan for the project evaluation. When talking to the Director on 28 August 1998, the Director already knew about the project. He said that he was briefly introduced to the project by the team members. This demonstrated that the team was consistent with a commitment to take over the project in my absence. I asked the Director’s impression of the project. The Director commented that the project had done a good work. He could comment about this, after monitoring it for about five months since he headed the Polytechnic. On the whole, the Director appreciated the initiative of the team to improve the learning
process. The Director, however, expressed that the new more learner-centred approach, should not be given full expression as the learners would have an absolute freedom to act the way they like (for example, the students could behave impolitely to the staff). This view is not right because the meaning of the leaner-centred approaches is that the learners have the right to talk and act intellectually, to acquire and share knowledge together, and to be co-learners with the staff. The Director’s comments were brought to the team in the following meeting.

Table 12 Sequence of activities in evaluation of the project

<table>
<thead>
<tr>
<th>When</th>
<th>What</th>
<th>Who with whom</th>
<th>How</th>
<th>Where</th>
</tr>
</thead>
<tbody>
<tr>
<td>March to August 1996</td>
<td>Continuing communication</td>
<td>the research team with myself</td>
<td>fax, telephone calls, and correspondence,</td>
<td>the research team in Jember and myself in Hawkesbury</td>
</tr>
<tr>
<td></td>
<td>Assimilating action phase of the project Writing up the thesis Consultation</td>
<td>myself</td>
<td>reflecting of what had happened discussion</td>
<td>At the University of Western Sydney- Hawkesbury</td>
</tr>
<tr>
<td>July to August 1996</td>
<td>Discussion of a need of evaluation the project (step 1 of FGE)</td>
<td>myself with supervisors the research team and myself</td>
<td>consultation I contacted (via mail, fax and telephone three members of the research team about project achievement and what had occurred after the last meeting of the project (25 Feb. 1996). The research team suggested an evaluation would be very beneficial to know the effects of the project to stakeholders and to learn from evaluation of how could we improve our ability in conducting other project</td>
<td>at the Hawkesbury the research team members in Jember and myself in Hawkesbury</td>
</tr>
<tr>
<td>Date</td>
<td>Activity Description</td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>--------------------</td>
<td>--------------------------------------------------------------------------------------</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>28 August 1996</td>
<td>Met the new Director to explain the plan of evaluation</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Met with Suwardi (the leader chosen by the research team, which is also now the Head</td>
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<td></td>
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<tr>
<td></td>
<td>of School) to explain method 1 used for evaluation</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>(step 4 of FGE)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>29 August to 2</td>
<td>Interviewed each member of the research team</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>September 1996</td>
<td>(step 5 of FGE)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3 to 4 September</td>
<td>Met each member of the critique group</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1996</td>
<td>(step 5 of FGE)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>5 September 1996</td>
<td>Meeting among the research team and the critique group members to sort out</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>resolved claims, concerns, and issues expressed by each member of the team</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>(step 6 of FGE)</td>
<td></td>
<td></td>
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</tr>
</tbody>
</table>

**Evaluation of the Project**

- **i** Made a plan of evaluation including what would be done, who would be involved, how it would be done, why it needed to be done, when etc (steps 2 and 3 of FGE)
- **ii** Myself with consultation with the supervisors
- **iii** Review literature about evaluation methodology and chose one of the methodology to apply in my study
- **iv** Met the new Director to explain the plan of evaluation
- **v** Meeting

**Time and Location**

- **28 August 1996**
  - In the Director room at the Polytechnic
  - In the School of Foodcrops
- **29 August to 2 September 1996**
  - In School common room, in the laboratory, and in staff individual room
- **3 to 4 September 1996**
  - In each member's room
- **5 September 1996**
  - In the School of the Foodcrops common room, at the Polytechnic
<table>
<thead>
<tr>
<th>Date</th>
<th>Event Description</th>
<th>Interviewed Subjects</th>
<th>Notes</th>
<th>Location</th>
</tr>
</thead>
<tbody>
<tr>
<td>6 September 1996</td>
<td>Discussed with the Head of School and with the Extension subject coordinators about changes occurring in the subject</td>
<td>The Head of School, Bagus and Zayin (the subject coordinators) and myself</td>
<td>We looked back into the subject before the project started, in term of contents, learning styles and assessment procedures. Then we looked into the current subject performance. We compared the two performance and discussed what areas/issues that remained challenge</td>
<td>In the Head of School room at the Polytechnic</td>
</tr>
<tr>
<td>7-9 September 1996</td>
<td>Preparing agenda to interview the students who previously involved in the project</td>
<td>Two members of the research team, and myself</td>
<td>We made a guideline of interview. We selected One student randomly from each group that had been formed (22 groups) in the project. So, totaling 22 students to be interviewed.</td>
<td>In the laboratory of socio-economic study, at the Polytechnic</td>
</tr>
<tr>
<td>10-12 September 1996</td>
<td>Four members of the research team interviewed the 22 students (step 8 of FGE)</td>
<td>Each member of the research team interviewed five to six students. Topics of the interview were issues that had been resolved, situation, students views of the current and expected situation</td>
<td>Each student was interviewed individually. He or she was asked his or her comments on the current learning situation, what liked/did not like from the learning. We also questioned what would he/she have like to see in the future learning at the Polytechnic</td>
<td>In the classroom and staff individual room</td>
</tr>
<tr>
<td>14 September 1996</td>
<td>Discussion among the research team about outcomes of the interview with the students: resolved and unresolved issues, concerns, and future action (step 7 of FGE)</td>
<td>the research team and myself</td>
<td>Four research team members explained results of students interviews. Attendants discussed students' comments on the way the subject to be improved in the future</td>
<td>In staff common room at the School of Foodcrops</td>
</tr>
</tbody>
</table>
Interviewing the research team and the critique group members

I met the research team and the critique group members both individually and as a group. Two pictures can be drawn from the individual interviews with each member of the research team (29 August to 2 September 1996). First, most individual members felt that the project enriched their experience in improving such a problematic situation. Second, the research team members expressed that it was very difficult to maintain active participation particularly from outsiders. On the second point, the research team had worked without involving many extensionists and farmers.

I interviewed the critique group members 3-4 September 1996. They made a suggestion to create continual communication between the students and the Extension teaching staff. The aim of this according to the Head of School was to keep the
students better informed about the project progress. Therefore, the students would feel that the project really involved them. Another issue expressed by the critique group was that the research team needed to spend attention on the criteria for assessment. Cholyubi, the former Head of School, who was the member of the critique group commented that the selection of assessment method in polytechnic contexts could be the issue to be further studied.

RESULTS OF THE PROJECT EVALUATION

An important part of our role as academic staff at a tertiary institution is our responsibility to promote a learning climate that provides positive environment for students to learn together and that improves our professional practice as well. Therefore, this section presents data generated from the evaluation which is focused on the research team reflection from the project experience.

Data generated from evaluation of the project

It has been acknowledged that action research focuses on the exploration of the personal practice of practitioners, while learning can be extended to other practitioners and groups through mutual relationships in their professional practice. In the light of this, after the action phase of the project ended, I interviewed the six research team members individually and questioned them about the things they learned from the team and from the activities conducted. The interview was aimed at understanding the effects of the project upon individual members of the research team. Briefly, each team member was asked to express their own experience of the project. This was similar to
what Ludlow and Pantion (1992:27) state about the purposes of interview: ‘to select a person for a specific task’; ‘to monitor performance’; ‘to exchange and provide information’; ‘to advise and to counsel.’

The interviews were conducted informally. Each member was asked to look back and reflect upon his/her experiences of past activities in the project. When the members met as a group, I used informal discussions to generate more ideas and expression. The interviews were carried out during the lunch breaks on campus. I have summarised the lessons learnt by the research team members into five categories. The lessons learnt are as follows:

1. Learning how to learn

One member said: “I believe my learning could be more valuable when we, as the learners, are being involved in the process and reflecting on that involvement. I think I need to improve the way I learn and communicate with others. My learning experience has arrived at the point that I should evaluate the way I operate with others.”

The other member said:

“Learning is affected by two main factors, from within and without the learner. From inside the learner, by this I mean psychological aspects such as motivation, interest, and ability or capacity to learn; from outside the learner, physical conditions or environmental atmosphere where the learning process takes place will inevitably influence the achievements of the learner. The more inside and outside factors are maintained at sufficient levels, the more chance the learner has to become a good learner.”
2. The facilitation skills

"I would use the research team meetings to express what I had learnt because I was very clear about what I had learnt from the meetings. My learning was circled around my expectations of how could an academic staff group could facilitate the change."

"I realised that the benefits of the project were for me, for us, for the students, for the institution, for the community and for other people who felt the need for improvement in their practices. The meaning of the facilitator and clients became very clear to me when we discussed thoroughly our role, our position, our needs and expectations in achieving the goals of this project. The main aim to facilitate the change is that we should make clear the criteria about what changes are desired, what constitutes a client and be very clear about the client’s needs and our own role. Our role is one that assists the students to meet their needs. Thus, these insights have influenced the way I discuss with the students about their expectations. The students were assisted to express clearly about their needs to help us to facilitate them in fulfilling their desires. This, in turn, benefits the Polytechnic providing a mutual learning climate for all."

3. Communication and relationship

"I indicate that the issues of communication and relationship are very important and need to be resolved for improvement success. Previously, the stress of the learning process at the Polytechnic was put on the components of agriculture, regardless of the underlying human factors. For example: the students were guided professionally to gain practical knowledge and skills about the crop cultivation, livestock management, tractor driving skills, land and water management and so on. This, indeed, is important."
However, the more urgent matter there is the need to emphasize an integration or holism of agriculture by involving human factors. The links among the farmers and the non-human components of agriculture is required to provide a more valuable benefit for participants in the project. This project showed me issues of the hierarchical structure in the process of decision making at our institution. My role as an associate director for academic affairs has a responsibility to promote a better learning climate to satisfy all our clients. Without support from the upper power structure and from the active participation of insiders, this promotion is hard to achieve. In short, the power behind us in communication or relationships is an essential component for the next action. I recommend that parallel or side by side structures with strong relationships among the members is preferable to the top-down structure for a learning institution.”

4. To learn to work more co-operatively and collaboratively

“I have learnt from this project to work in the group in a cooperative and collaborative manner. I think the group needs to develop a stage whereby we can express our original expectations, our concerns and our responsibility for the actions taken in an open discussion. I consider that we need to learn to control ourselves when we face a contradiction within discussion.”

5. The meaning of human nature and the inanimate

One team member said that from this project he could learn more about the meaning of human nature and related things in order to bring about change. “Human nature is really a complex system, it can not be easily influenced to change its socio-cultural
aspects within a certain time frame as it will require an ongoing process. If we intend to promote a change in the way our colleagues practice in teaching-learning transaction, we should equip ourselves with a good understanding of the human nature (the nature of educational practice) and its socio-psychological aspects. For instance, human nature is much more difficult to change, whereas changing inanimate objects is relatively easy. For example: we want to change the position of a table in a room from in a corner to the center of the room. To do this, we just move the table and there is little risk of a socio-problematic issue arising."

**Five main points drawn from evaluation**

Based on the evaluation of the project from the key people in the project, five main points can be drawn. The five main points are learning climate evaluation, curriculum development, students evaluation of the project, relationships with outsiders, and my role as facilitator.

1. Learning climate transformation

No course in agricultural education at either the college or secondary level can be expected to equip each student so well that every situation encountered can be viewed as part of a previous experience. This is because some elements in all problems are going to be unfamiliar and new to the learner. Therefore transformation from teacher-centred to learner-centred approaches did not drastically occur. The staff and the students experienced a gradual changing process, still in train.

A significance change indicated from the project is that in the learner-centred approaches, the students are not the recipients of the process. The students are
responsible for their own progress in the learning. In the Polytechnic situation, the students expect that they are not entirely the ones responsible in the learning process, because there is still a need for the lecturer’s role as motivator, facilitator, and advisor whenever required.

In the transformation process, the two co-ordinators of the Extension subject reported to me that the Extension teaching staff had modified the learning-teaching styles. An example includes, starting from February-July semester in 1996, the Extension teaching staff did not directly teach every topic of the subject contents. Instead, the subject teaching staff negotiated with the students enrolled in the subject about sequencing topics to be explored. The staff, considering the expectation of covering the target contents in 14 to 16 weeks, made ‘a learning contract’ with the students about the way to present the subject contents. It was reported by the research team that negotiation about these things had been done in the first week of semester. I was very impressed with this report. Therefore, I assumed that my colleagues had a good grasp in applying the principle of learner-centred approaches into practice.

2. Curriculum development

It had been acknowledged by the Extension teaching staff that careful thought was required to reconstruct the curriculum. Contents of the subject were needed to be updated to follow current agricultural development and student needs. In this case, according to the teaching staff, contribution from the community associated with extension was very important to improve the subject presentation. Examples include the extensionists' contributions providing information about current extension systems
and strategies; and farmers' involvement in setting criteria for the expected extension system.

Suwardi, the new Head of School said that the research team continued to work on curriculum development even though I was in Hawkesbury continuing to write this thesis. A focus had been given to sequencing the subject contents, replacing and eliminating topics. The Extension subject in the core studies was not much changed in term of topics. The changes of the core studies subject were in sequencing the topics, adding sub topics of problem solving, and the philosophy of Extension in Topic IV (Appendix 9).

In the subject for advanced studies, compared to the contents of the subject before the study was conducted (as discussed in Chapter Four), there were several topics eliminated (Family Sociology and Changes; Expectation of the Family and Priority; Skill in Instruction Techniques and Demonstration Plot). In the new subject contents, new topics replaced previous topics within Extension and Rural Change and Extension and Agricultural Development. The research team suggested that the possible topics offered by the subject co-ordinators (Appendix 9) needed to be forwarded to the Polytechnic Board for approval. Generally speaking, the new subject performance was more appropriate to current agricultural development.

3. Students' evaluation of the project

It can be said that student involvement in this project was in about 40 percent of total activities of the project. The students were very much involved in the preliminary stage, and in the action phase of the project. To interview students, they were selected
randomly following the group formed in the interview section (Table 3 in Chapter Three). One student was selected from each group. Thus, 22 students were interviewed for the purpose of evaluation.

Fifteen out of 22 students would have liked to see a more dynamic learning process, not only in the Extension subject but also in other subjects. Core student representatives suggested that the project should assist negotiation within the Academic Board to create a smaller class size. Seven students felt that the project had achieved its main goal in improving the learning process. Further, these students expected that the project could be developed on broader issues such as developing a students-graduates network for various objectives. The network would be beneficial in assisting new graduates to enter the workplace, exchanging information, conducting co-operative research and providing scholarship. Moreover, the project did not merely focus on the curriculum development or staff professionalism.

Most interviewed students viewed the learner-centred procedures as a dynamic learning process. On what their impression on the learning process within the Extension subject, 15 out of 22 student representatives commented that the performance of the subject should be continually improved. The students said that they did not intend to dominate the learning process. Instead, the students expected that both staff and students could work co-operatively and collaboratively to achieve teaching and learning improvement at the Polytechnic.

Different comments expressed by advanced students in regard with the action research. About seventy percent of advanced students felt satisfied with the class size (45 students per class). Students were very interested in the use of action research
methodology. However, the students argued that this methodology was more complex to apply in their projects because their final projects were very much related to plants, chemical substances, and animals. One possibility to apply this methodology is in their job experience project which relates to the organisations, firms and farms. The staff and I discussed this issue with the students. Their view that methodology only fits the social aspect should be re-defined. This view is not right because when the students undertake the project, they have a possibility to involve farmers or other relevant community members. Selected farmers, for example, can take part in their project to carefully discuss the topic. Farmers can share their experience with students. As a result, farmers will feel that they own the research, too. Thus, the project would benefit not only the students, but also the community.

The students also commented that they were not fully satisfied with the current assessment of their achievements. Indeed, assessment in this project had not been resolved. As stated earlier in Chapter Four, the Extension teaching staff had attempted to modify the conventional assessment procedure by involving student views of his/her competency development.

Regarding assessment methods in experiential learning approaches, I had discussed with one facilitator at School of Agriculture and Rural Development, Hawkesbury (Head of School: Joe Zarb) on 2 October 1996 about alternative ways of assessment. One suggestion of setting criteria for assessment would be the staff and the students together negotiate the grade. For example: If the student expects/wishes only "pass" grade of a given subject, then he or she should fulfill the requirement for that
grade. This way could then minimise subjectivity or disappointment among the staff and the students.

4. Relationship with outsiders

It has been stated, that involving outsiders is not easy. At the time the evaluation conducted, relationships with outsiders was still an unresolved issue. This was because, outsiders’ involvement in the project was relatively low. Therefore, a strategy to gain higher participation from outsiders was of great value. Providing incentive may be an alternative to getting outsiders involved in such a project. The team attempted to use this way for the next action step.

5. My role as facilitator

Facilitation in this context does not always refer to collections of people working through a predetermined agenda led by a facilitator. Facilitation can also be viewed as a group or as an individual’s task. The group would operate within the boundaries set around the task, and would involve the three essential elements in group activity - cognitive, affective and social interactions. The role of facilitator is required to build personal and or group understanding to the issues and methodologies used in the study. The facilitator needs to assess whether she/he is accepted by the group or people where he or she intends to promote improvement.

The facilitator’ role, is an essential requirement in action research, particularly to motivate the group to be more dynamic. Without this role, it is hard for an action research project to achieve its goal, for example, to achieve the change in professional
practice. The skills of facilitation can be learned. Therefore, to be a good facilitator, one needs to be well equipped with the skills.

To evaluate my facilitation skills, in the meeting with the research team and the critique group on 5 September 1996 (see Table 12), I circulated a paper to the attendants of the meeting questioning their critiques and suggesting my role as facilitator. I explained in the paper that I needed to do this to know the level of skills I had, the strength and weaknesses and how I could improve myself.

Most attendants of the meeting suggested that the facilitator's role was very important, not only in developing the team's understanding of the methodology used in the project, but also in providing more references for the use of various learning approaches in formal tertiary education. In general, the attendants commented that I had played a good role as facilitator in the project. In this particular case, however, the role of myself as facilitator was criticised for the limited references given for the successful use of experiential learning approaches. Later, at the end of the evaluation on 20 September 1996, I responded to my colleagues saying that I would send them more references about the approaches.

This chapter has presented the effects of the project on participants and to issues to be improved. The next chapter is a reflection. The reflection is made upon the changes occurring in the learning process, in relation to the thesis proposition. Issues arising from the methodology are also discussed.
CHAPTER SIX
REFLECTION

Chapter Four and Five have presented action and evaluation phases of the project. Analogue to the action research process consists of activities: plan-act-observe and reflect. Chapters One, Two, and Three are categories for planning the project. Chapter Four can be viewed as taking action for improvement. Chapter Five can be seen as observing the effects of action taken. Consecutively, Chapter Six is the category of reflection upon the research questions in the light of experience.

Chapter Six ponders reflection that is based on the lessons we learnt from the project. In this chapter, I tie up the issues emerging from methodology with the research questions. I discuss the importance of participation, co-operation and ownership in the project, role of facilitator, client’s role, power and empowerment in inducing change, and outcomes of the study. Finally, I outline the theoretical implications of the study and recommendations for further research.

REFLECTION ON THE ISSUES ARISING FROM METHODOLOGY AND THE RESEARCH PROPOSITION

Participatory approach in the project

The role of participation in an action research process has become part of our improvement within the project. Strengthening participation among participants specifically within the research team throughout the action cycle was an essential element. The problem of providing appropriate participation became more complex as
we moved from change within an individual member of the research team to a wider learning approach to change.

The type of participation in action research is democratic: it recognizes that conditions for investigating the truth of knowledge-claims are also the conditions for democratic participation in the critical discussion. I would argue that the democratic way in decision making is the main requirement to reach a satisfaction for the participants in the project. Lewin (1946: pp. 34-46) has stated that action research is a democratic form of social research. Without a democratic climate, it would be very risky to implement such decisions into action.

In this project, participation was initially built within the research team, then it was extended to a broader participation with the students, administrators and technicians. Whilst participation developed into a broader one, it became more complex because at every level of change, we needed to keep our learning journeys developing as our understanding of the issues were improved. Adnan’s concept of typology of people’s participation (adapted by Pretty, 1995:173) is relevant to the various levels of participation from participants in this project. This concept (as shown in Table 3, Chapter Three) suggests seven types of participation in which people can be brought it in to the project:

- passive participation,
- participation in information giving,
- participation by consultation,
- participation for material incentives,
- functional participation,
- interactive participation, and
- self-mobilization
Considering the level of participation in a given phase, the research team and I experienced that a *higher* level of participation was required in action phase two of the project (August 1995 to January 1996). A *lower* level of participation was required in the early phase (April to July 1995) and in writing up this thesis.

I point out that participation from the students, and other insiders in the Polytechnic could be encouraged by creating activities which are participant-centred. Getting people involved, keeps them alert and actively learning and builds their motivation. Group discussions have helped the participants learn from each other. Meetings in this project had been utilised for group discussion. In the meeting, the team members developed better communication skills; learnt to gather their thoughts quickly and spoke audibly and appropriately. Mortiss (1993:76) says: “an activity should be started by directly dealing with participants’ concerns and periodically checking to see if their needs are being met, and if they understand the material.”

**Cooperation in the project and sense of belonging amongst the research team**

The research team acknowledged that cooperation and collaboration in bringing about beneficial change in our learning process should be maintained at a constant level in every stage of the project. We realized that this acknowledgment was easier to speak than actually to do. Thus what Shumsky mentions (in Kemmis, and McTaggart, 1988: 81) about an action research movement is very significant in terms of activating the social and spiritual life of the community in a continuous investigation for self improvement by providing a social setting whereby people can work together to achieve a certain goal. Within cooperative activities, individuals seek outcomes that are
beneficial to themselves and beneficial to all other group members. I highlight here that cooperation in action research is very important to create creative and critical thinking amongst participants to fulfill the many needs of a given situation. Shumsky (Ibid. 83) say that to achieve improvement through the use of action research, the following conditions should be met:

a. Promoting group belonging  
b. Fostering creativity and critical thinking  
c. Promoting change and growth; and  
d. Serving as a means of resolving social conflicts

The establishment of a genuine cooperative and collaborative relationship in this project was invariably difficult. There were many contributing factors to this, such as:

① the team may have not achieved an agreement to work together in an equal position;  
② different levels of motivation and interest of the individual member; and  
③ a lack of mutual relationships within the team.

In this project, the research team came together with a set of criteria, to look at the unease within the Polytechnic. These criteria and the task at hand were not set in the interdependency stage (action phase one, from July to August 1995). Information was exchanged about methodologies and a willingness from the Extension teaching staff to cooperate was present (preliminary meetings-in July 1995).

It was apparent to the team that the degree and the nature of communication among the group members affected the sense of belonging to the group. In the research context, the sense of belonging contributed more power towards the change and it motivated the research team members to work together, in order to ensure a success in the desired goals (action phase two, from August 1995 to January 1996). Van Zelst (in
Stewart and Shamdasani, 1990:42) indicates that the issue of belonging has a positive relationship with group productivity. This means that a higher sense of belonging will result in a more productivity generated through group interaction. Further, this would ensure greater satisfaction of the group. In its practice during the project, the sense of belonging increased from a lower to a higher sense as the research shifted from action phase one, when: the participants had developed a better understanding of the issues to be improved; the notion of the action research; and its role in our educational practices became apparent. For example: in the early phase of the project, participants, particularly, the students did not really realize that the project was theirs. There was an indication of less-awareness of the benefits for them. A critical element for developing a member’s belonging was communication to build their understanding of the purposes of the project, the methodology used and the role of the group. Clearly, without this sense it was very difficult to generate the action.

**Role of facilitator**

A facilitator may be a person who has been invited by others to help in the process of change. S/he could be moved to a certain place for intervention in order to enable change to occur. The role of facilitator in an action research project as a catalyst is very important. Facilitators are needed to precipitate “group formation” and to establish “group identity” (Grundy and Kemmis, in Kemmis and McTaggart, 1988:333). As a consequence of this, a facilitator must be a person who can stand back and monitor the continuing process without becoming too involved in the content of the dialogue.
Table 13. Type of action research, purposes, the role of facilitator and relationship between facilitator and participants

<table>
<thead>
<tr>
<th>TYPE OF ACTION RESEARCH</th>
<th>PURPOSES</th>
<th>THE ROLE OF FACILITATOR</th>
<th>RELATIONSHIP BETWEEN FACILITATOR AND PARTICIPANTS</th>
</tr>
</thead>
</table>
| TECHNICAL               | - development professional practice  
                        - effectiveness and efficiency of educational practice | as an expert | participant’s dependency on facilitator is very high |
| PRACTICAL               | - improvement in professional and educational practice  
                        - understanding of practitioner  
                        - transformation of professional’s consciousness | encouraging participation and personal reflection | co-operation (consultancy process) |
| EMANCIPATORY            | - improvement in professional and educational practice  
                        - develop understanding of practitioner  
                        - participant’s emancipation from dictates of tradition, self deception, coercion; critique of bureaucratic systematisation  
                        - transformation in organisation and in the educational system | as moderator in that responsibility is shared equally by participants | collaboration |

Based on Carr and Kemmis, 1986:201-204

At the early phase, and action phase one of the project (April to July 1995; July to August 1995), the facilitator’s role is especially important in guiding participants in deciding the problematic situation. In these phases, conflicts are likely to occur as each participant has a different view about which change is to be made in the area of the research. Therefore, the early stage of the project is also known as the conflict stage. Carr and Kemmis (1986:201-204) summarise the role of facilitator in each type of action research and the relationship between facilitator and participants (Table 13). I would argue that the facilitator’s role varies from stronger to equal power, as the research progresses from the technical to the emancipatory action research.

Our experience in this project showed that a facilitator may act as the group leader and develop a research team in order to achieve its goals. The value of the
research team having a sense of belonging is crucial to the outcome of the research in providing the commitment to research. An example is when the research team in this project took over the project in my absence (from 1 to 29 August 1995; and from 19 to 1 February 1996). Also, the research team had managed the continuation of the actions that needed to be taken after 27 February 1996. One example of the continuing actions was the implementation of the new subject contents in February-July 1996.

It is essential for us to have specific knowledge or skills in managing a group process. Much research is aimed at data or information gathering about a group or community and leaving the community uninvolved and unchanged when it departs. As a consequence, the community may react cynically and feel that they are just used as the object of the research. At this point, the ethical concerns are tremendously important. Clearly, the research team including myself, were part of the community that had a life of its own. The wider community needed to be kept informed and given the opportunity to take part and collaborate. Thus, it was not a situation of “information gathering and then departing.” Rather the research project was an integral part of the activities of the community.

A facilitator may build the research team within a community and may eventually leave the project before its completion. To enable this to happen, it is necessary to establish a research team that can carry on when the researcher leaves. In this project, the team already had a strong ownership of the project with an indication that the team continued the project in my absence. During my absence after the project finished, the research team continued to work on the curriculum, and to develop their
own facilitation skills, thus resulting in increasing the students involvement in improving the learning process.

**Client’s role**

The nature of the client’s role was blurred in the preliminary phase of this project. On some occasions, the role of the client is very clear, whilst in other stages the role is very complex. I borrow from Checkland (1981:294) his definition of client as follows:

He who wants to know or do something and commissions the study. The implication is that he can cause something to happen as a result of the study. (He may also be in the ‘decision taker’ role)

Checkland (1981:294) in his soft system approach develops three roles in the system and the analyst researcher should make a clear distinction about this. The roles are:

1. the client: (as already quoted)
2. the decision taker: the role player in a human activity system who can alter its content (its activities) and their arrangements within the system (sub-systems) and who can decide resource allocation within the system.
3. the problem owner: he who has a feeling of unease about a situation, either a sense of mismatch between ‘what is’ and ‘what might be’ or a vague feeling that things could be better and who wishes something were done about it. The problem owner may not be able to define what he would regard as a ‘solution’, and may not be able to articulate the feeling of unease in any precise way.

The client’s role presented by Checkland is “a conceptual client” in his CATWOE framework (as elaborated in Chapter Four). If the underlying worldview or weltanschauung alters, then the client's role will alter. This implies that the client and the whole CATWOE analysis, are simply a way of developing a vehicle, the thing that brings the change to fruition. In this case, we call the client’s role the beneficiary(ies).

The research team suggested that the client’s role could be a concrete one that means
the one(s) who would be likely to benefit from the project. Thus, the clients within the project were the institution (Polytechnic) and its members, and the research team itself.

On the other hand, Naughton (1986:19) says there is a difference of analysis between the client’s role in hard and soft systems approaches. The difference is that in hard systems, analysis is likely to raise problems whereas in soft systems analysis, the client is the person causing the study to happen initially. There would be no systems study without the client. To me, this concept can be seen as a clear relationship between the project and the client. Naughton provides the definition of a problem solver and problem owner as follows:

The problem solver is someone who hopes to do something about the situation which is perceived to be problematical. This could be the client but may not necessarily be. The problem owner could be a variety of different people in the situation. In many soft system studies one should at some stage experiment by allocating this role to a number of different people or group. (Ibid.)

Further, the research team acknowledged from this project that, we could work out what and how we established the meaning of a client, the important point of working together with the client/s, and our role as facilitators for the change. The client in this project was referred to in two aspects. The first one is the “real” client as stated before and the second is the “more abstract” client which is the learning situation to be improved. These two meanings of clients were employed in this study.

**Power and empowerment in inducing changes**

Issues of power and empowerment in action research can have connotations of instructions and directions being made without much choice being given to the victims
or beneficiaries of such instructions or directions. This issue still exists after an action research project has been completed, in terms of who has the power for continuing implementation or rejection of ongoing action?

Providing power to the team as a group motoring the change is a crucial factor to continue the project, and to achieve its goals. The issue is who should give the power, and how could it be done? During action phases of this project, the team had experienced being responsibilities in order to continue the project in my absence. In this case, the act of empowerment is related to the act of giving responsibility and authority to perform the task, and having the result acknowledged and recognised. All participants of research are then empowered to move forward, having felt a part of the process of change.

In brief, to promote a change in a given organisation or community, one should have knowledge of issues of power and empowerment with regards both personal and group aspects.

**Development on the learning process at the Polytechnic**

The way humans learn is complex and subject to modification by many environmental factors. An efficient teacher must understand the individual student to know what technique to use at a given time. On this point, Drawbaugh and Hull (1973:65) suggest that attention of an alert teacher is required in sequencing events in order to optimise conceptual learning, knowing when to provide the appropriate amount and kind of reinforcement, exposing the student to different conditions to enhance
transfer of knowledge and using approaches for teaching which encourage favorable attitudes.

An educational program provides a range of activities to the learners. Creative learners could gain both theoretical and practical activities in their learning experience. Even though education at the Polytechnic places a priority on practical knowledge, I point out that the students should have enough theoretical background to such knowledge before diving into the practical knowledge. Regarding this condition, Carr (1995:33) indicates that education is not a theoretical activity, but a practical activity related within the general task of developing the pupils’ minds via teaching and learning activities. Education in the research context was built in a formal setting with a basic foundation of value, interest, motivation, professionalism, practice and theories. Within the research, the strict rule or performance of the formal setting was adjusted to a flexible style that contributed to the refreshment of the learning processes.

I outline that the learning process at the tertiary level of formal education involves three elements: the student, the staff and the environment of the process. These three elements according to Drawbaugh and Hull (1971:7), interact each other to fulfill the needs of the participants in the process. Further, it can be said that “learning is the process by which an activity originates or is changed through reacting to an encountered situation...” Hilgard and Bower (in Drawbaugh and Hull, 1971:8). The student learning remains the only viable and reasonably accurate criterion for evaluating the effectiveness of teaching. In the project, the students’ evaluation of the learning process (for instance, activities of the research team interviewing the students about the Extension subject learning situation) was used as one foundation for the
learning situation improvement. Therefore, the students' position in the process was shifted from passive to active. They become 'active learners'.

One important characteristic of the way of looking at learning is that the approach and outcome being described are seen from the student's perspective rather than from an external point of view. The results are not statements about the contents of memory, but are descriptions of how the learner interprets a phenomenon. Ramsden (1988:19) presents two different approaches to learning as shown in Table 14.

Table 14. Different approaches to learning

<table>
<thead>
<tr>
<th>Deep approach</th>
<th>Surface approach</th>
</tr>
</thead>
<tbody>
<tr>
<td>Intention to understand</td>
<td>Intention to complete task requirements</td>
</tr>
<tr>
<td>• Focus on 'what is signified' (for example, the author's argument)</td>
<td>• Focus on the 'signs' (i.e., the text itself)</td>
</tr>
<tr>
<td>• Relate and distinguish new ideas and previous knowledge</td>
<td>• Focus on discrete elements</td>
</tr>
<tr>
<td>• Relate concepts to everyday experience</td>
<td>• Memorize information and procedures for assessments</td>
</tr>
<tr>
<td>• Relate and distinguish evidence and argument</td>
<td>• Unreflectively associate concepts and facts</td>
</tr>
<tr>
<td>• Organise and structure content</td>
<td>• Fail to distinguish principles from evidence, new information from old</td>
</tr>
<tr>
<td>• Internal emphasis: 'A window through which aspects of reality become visible, and more intelligible'</td>
<td>• Treat task as an external imposition</td>
</tr>
<tr>
<td></td>
<td>• External emphasis: Demands of assessments, knowledge cut off from everyday reality.</td>
</tr>
</tbody>
</table>

Source: After Ramsden (1988:19)

To summarise, people entering a given educational system have an opportunity to choose their own ways of learning that provide a mutual relationship. Implication of this is that learners or students should be the centre of the process, and be responsible in developing their own competency within a suitable support system from the staff as facilitators. Indeed, to provide such a good facilitation, an educational institution requires a conducive learning environment. Examples include: Each participant has a
clear understanding of the learning process at his or her institution; a good level of communication among those involved in the process; and a clear learning contract between students and staff. In accordance with the idea of learning climate, Smith (1982:91) explains that adults enroll in an education to choose a mode of learning and with a requirement for a certain learning climate as follows:

"Adults need criteria for deciding when to undertake personal learning projects, when to learn collaboratively, or when to enroll in educational institutions. The choice between learning in the self-directed, collaborative, or institutional mode obviously has implications for satisfaction and success in learning. Collaborative learning, at its best, or when it is reasonably well carried out, this mode offers opportunities to learn in a mutually supportive climate, one in which one can safely express opinions, test ideas, try new behaviour, and give and help as needed. It enables the curiosity, experience, and problem-solving abilities of several people to be released and harmonised to achieve mutual purposes while meeting individual needs."

**The meaning of experiential learning approaches**

At the beginning of enrolment at the Polytechnic, not all the students had previous experiences in farm/office work. As students entering the Polytechnic, they have to manage their own books, keep their own records and be better informed about what is happening on farms. The skills students have developed during the course, and the recognition of skills they already possessed, together with regular communication with a large number of people within their rural community, have all led to increased self-confidence. Students are now extending their study goals into other areas. The students reported better communication with their farming partners, increased

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6 The meaning of learning contract here is an agreement or negotiation between staff and students about the requirement to complete a given subject. The contract may include: activities covered in the subject, assessment method, and student and staff's responsibilities after a student enrolled in the subject.
responsibility for keeping records, sharing in farm business decisions, and some have even gained control of the cheque book.

Experience is not quite the same as 'learning from experience'. The point is that when a person learns significantly from his or her own experience, s/he will use skills that can be improved and methods that can be described (Winter, 1989:9). Thus, experience could be gained from our and or other people's experiences.

Hutchings and Wutzdorff (1988:63) mention that “knowledge and experience can be powerful partners in advancing students’ learning when systematically structured into a curriculum.” In the light of this, in the students interview on evaluation phase of the project on 14-16 September 1996, one of the students was asked to reflect upon his learning outcomes from this new approach. Three points involved in his reflection were:

a) his personal goal: to become more active in discussion or in practicum

b) his professional goal: to start a peer or facilitation group in learning with fellow students in order to communicate, share experience and knowledge about career

c) academic: improve academic performance.

Each student had different goals in his or her own learning journey. For example: Budi, a second year student at the Polytechnic had an expectation to improve his competency in managing group discussions. He did involve himself in many workshops related to the competency he intended to develop. He also generously browsed and reviewed literature, discussed the issue with fellow students and staff, and practiced it in the class or practicum. A conducive climate is extremely crucial for the learner achieving her or his goal.
I note that people could learn effectively from their own or other people’s experiences, as Alinsky (1972: pp. 68-69) says that there is a tendency for most people to respond to life as a series of happenings which pass through their systems undigested.” He concludes that “happenings become experiences when they are digested, when they are reflected on, related to general patterns, and synthesized.” It seems likely that, as people grow older, one obstacle to learning systematically from experience is the tendency to confuse what one has learned with what one has experienced. (Smith, 1982:128-129). Learning to make relevant connections between experience and principles or concepts might be approached through a process of guided analysis of a local environment. People can take part in an election or walk through a neighborhood, for example, and then draw back and reflect about what they have learnt. The role of the guide, or trainer, is to make the experiences focused for learning about learning from experience.

The issue related to experiential learning for which the research team acknowledged is assessment process. I noted that in the assessment process, the greatest opportunity arises for student’s perceptions on to diverge the educational context and their understanding of concepts. In this project, the issue of assessment was strongly debated among the staff in the School of Foodcrops at the Polytechnic. We, the Extension subject teaching staff argued that we could change the assessment technique which is primarily based on the use of an objective examination in the middle and end of each semester. On the other hand, the rest of the staff said that the use of conventional assessment procedures was still valid such as: reports, quiz, and final
examination. These staff commented that these techniques could prevent subjectivity within the staff assessments of the student’s achievement.

We, the research team have not yet decided the best assessment technique that would suit at this moment because it requires further negotiations with the Academic Board at the Polytechnic. However, in the Extension subject presentation, the assessment has been modified by the use of a dialectical procedures among teaching staff and students in the learning process. Until now, students’ reports on their competency progress have been used for assessment. In the coming academic year, the Extension teaching staff would have liked to develop a more appropriate method of assessment. Therefore, assessment will include not only students reports on their own progress, but also reflection, and feedback from staff and peer groups.

**Curriculum development of the Extension subject**

As stated earlier, this project intended to induce a learning situation improvement at the Polytechnic. The changes in the learning process as effected by the project, are depicted in Figure 16. Improvement had been stressed around the learning process in the Extension subject. The research team analysed from the students’ aspirations that we needed to develop a specific unit in the Extension subject, and to modify the subject contents. An action plan of curriculum reconstruction was developed by the research team (Appendix 9).

The first step in our work for a curriculum development was *diagnosis* (Taba, 1962:231), which was chiefly concerned with determining the educational needs of students, the conditions of learning in the classroom, and the factors affecting an
optimum achievement of the educational objectives. In this diagnosing phase, the research team felt an emergent need to have a good understanding of the student’s capacity in achieving important educational objectives, student cultural backgrounds, motivational patterns, their social learning and their expectations from that learning.

There were four basic areas for the curriculum development to be achieved: the stating of objectives, the selection of content, method and procedures of evaluation. I assisted the research team, and worked through a variety of literature and references, and gathered information from the students related to the purpose of improving curriculum. Examples of references are as follows: Bawden et. al. (1984) about the source of essential themes underpinning the curriculum in Systems Agriculture; Taba (1962) about curriculum development: theory and practice; Checkland (1981) system thinking and practice; Cox and Atkin (1979) about agricultural systems; Burgess (1977) and Boud (1988) about autonomy in learning; and the experiential concepts of Kolb and his colleagues (Kolb, Rubin and McIntyre, 1979). Whilst reforming the contents of the subject, we considered the current agricultural development, students’ expectations, and philosophical issues about extension.
Figure 16. The changes occurring as effected by this project, model based on Bawden, et al. 1984
The “new” was developed into the following themes:

1. The learning approaches would be more learner-centred, rather than teacher-centred. Both students and staff would have similar responsibility in providing better communication and relationships in teaching and learning process.

2. The curriculum would be flexible to modify following agricultural development. Evaluation of the curriculum would be undertaken per annum to update the contents.

3. The students would be facilitated to become problem-solvers. Therefore, the students would be involved in learning projects. The students should be able to demonstrate a systemic approach to problem solving.

4. Agriculture would be seen as a whole consisting of human aspects, non-human aspects and the systems operated in agriculture.

5. Community links would be built to provide more relationships between participants within the educational institution and the wider community.

6. Philosophical issues on extension would be covered together with the strength and weaknesses of each philosophy.

SOME FINAL THOUGHTS

I conclude my reflection of the study with a sentence that what has been found from this thesis is the potential for improvement of a personal professional practice and

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7 These issues refer to conventional and new approaches on Extension. These approaches have been discussed in Chapter Two
educational improvement. In this section, I present theoretical implications of the study and recommendations for further research.

**Theoretical implications of the study**

In providing a dynamic learning climate, the conventional learning approach centred on the teacher’s role needs to be further developed into a new approach centred upon the learners. In the learner-centred approach, learners are responsible for their learning progress. The teachers in the learner-centred approach have the responsibility of providing adequate sources, facilitating students and together with the students negotiating the program, including the assessment procedure.

The choice of adopting experiential learning in formal tertiary education is very much affected by the agreement of the participants involved, and the readiness of the staff in the learning process such as, *the staff’s facilitation capacity*. Therefore, further staff training or workshops for facilitation skills need to be incorporated. It is possible to apply experiential learning approaches in a polytechnic context without ignoring objectives and the philosophy of the educational institution that emphasize developing students practical and theoretical competencies.

Curriculum reform is one major outcome of this project. Contents of curriculum were reconstructed following agricultural extension development. The academic activities were modified reflecting progressive learning approaches, such as the use of simulation, role play, discussion, drama, and field visits. The assessment method, however, is still an unresolved issue that needs to be negotiated.
**Recommendations for future research**

Each formal tertiary education has its own learning paradigm. Most formal tertiary education in the Third World operates within a conventional learning approach, a so-called teacher-centred approach. Progressive learning approaches or learner-centred approaches have not been widely used in formal tertiary education. These may be many reasons, such as, these approaches are more time consuming, and difficulties arise in selecting appropriate assessment methods. However, further research into learning approaches in tertiary education is required. I suspect the research may then provide evidence for the effectiveness of such new approaches in terms of developing the learners’ competency and independency, and improving the teachers’ professional practices as well.
REFERENCES


References


Fisher, B. 1991. ‘Research at Hawkesbury: Reflection of a Newcomer’ in Inward Bounding into Our Researching and Consulting Activities. Faculty of Agriculture and Rural Development. University of Western Sydney, Hawkesbury


APPENDICES
PLEASE NOTE

The greatest amount of care has been taken while scanning the following pages. The best possible results have been obtained.
Appendix 1. Organisational structure of the Polytechnic of Agriculture, University of Jember, East Java
Appendix 2. Results of the students interviews at the early stage of the project

<table>
<thead>
<tr>
<th>No.</th>
<th>Item being observed/evaluated</th>
<th>Students Core Advanced</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>Teaching technique</td>
<td></td>
</tr>
<tr>
<td></td>
<td>a. Lecture</td>
<td>35&lt;sup&gt;1&lt;/sup&gt; 10&lt;sup&gt;2&lt;/sup&gt;</td>
</tr>
<tr>
<td></td>
<td>b. Combination between lecture and discussion</td>
<td>65 35</td>
</tr>
<tr>
<td></td>
<td>c. Abstain</td>
<td>5 -</td>
</tr>
<tr>
<td>2.</td>
<td>Satisfaction of the student</td>
<td></td>
</tr>
<tr>
<td></td>
<td>a. Satisfied</td>
<td>43 30</td>
</tr>
<tr>
<td></td>
<td>b. Less-satisfied</td>
<td>57 15</td>
</tr>
<tr>
<td></td>
<td>c. Unsatisfied</td>
<td>2</td>
</tr>
<tr>
<td>3.</td>
<td>The reason of the students who are unsatisfied with the learning process: the lecturers could not make the learning climate pleasant for the learners. Most students said that the learning process was too monotonous and less communicative.</td>
<td></td>
</tr>
<tr>
<td>4.</td>
<td>The expected learning and teaching process:</td>
<td></td>
</tr>
<tr>
<td></td>
<td>a. Lecture and less discussion</td>
<td>10 14</td>
</tr>
<tr>
<td></td>
<td>b. Both students and lecturers should be active, lecturers could be as stimulators/facilitators</td>
<td>45 18</td>
</tr>
<tr>
<td></td>
<td>c. Combination between lecture, discussion and simulation</td>
<td>50 13</td>
</tr>
<tr>
<td>5.</td>
<td>Response to the experiential learning approach:</td>
<td></td>
</tr>
<tr>
<td></td>
<td>a. Agree</td>
<td>50 38</td>
</tr>
<tr>
<td></td>
<td>b. Disagree</td>
<td>35 5</td>
</tr>
<tr>
<td></td>
<td>c. Abstain</td>
<td>20 2</td>
</tr>
<tr>
<td>6.</td>
<td>Openness to different opinion of the lecturers with the students</td>
<td></td>
</tr>
<tr>
<td></td>
<td>a. Open</td>
<td>35 40</td>
</tr>
<tr>
<td></td>
<td>b. Less-open</td>
<td>55 4</td>
</tr>
<tr>
<td></td>
<td>c. Open, but very limited</td>
<td>15 1</td>
</tr>
<tr>
<td>7.</td>
<td>The reason of some lecturers for dislike of different opinion with students</td>
<td></td>
</tr>
<tr>
<td></td>
<td>a. The lecturers prevent debate with the students</td>
<td>45 25</td>
</tr>
<tr>
<td></td>
<td>b. The lecturers may not like to be fought</td>
<td>55 16</td>
</tr>
<tr>
<td></td>
<td>c. Unknown reason</td>
<td>5 4</td>
</tr>
<tr>
<td>8.1</td>
<td>The weaknesses of operation of the recent learning process:</td>
<td></td>
</tr>
<tr>
<td></td>
<td>a. The students were less active, as the lecturers were still the center</td>
<td>50 23</td>
</tr>
<tr>
<td></td>
<td>b. Limited time for the students to present their opinion</td>
<td>25 6</td>
</tr>
<tr>
<td></td>
<td>c. The materials were nearly difficult to understand</td>
<td>12 5</td>
</tr>
<tr>
<td></td>
<td>d. Limited time for broaden students’ views of extension</td>
<td>18 11</td>
</tr>
<tr>
<td>8.2</td>
<td>The strengths of operation of the recent learning process:</td>
<td></td>
</tr>
<tr>
<td></td>
<td>a. Materials for the subject could be faster completed within the time</td>
<td>80 38</td>
</tr>
<tr>
<td></td>
<td>b. The students were able to discuss their learning problem</td>
<td>9 7</td>
</tr>
<tr>
<td></td>
<td>c. Abstain</td>
<td>16 -</td>
</tr>
<tr>
<td>9.</td>
<td>The view for active learning process:</td>
<td></td>
</tr>
<tr>
<td></td>
<td>a. Good for improving learning climate</td>
<td>60 24</td>
</tr>
<tr>
<td></td>
<td>b. Positive things but it requires some modification to the condition</td>
<td>85 21</td>
</tr>
</tbody>
</table>

<sup>1</sup> Indicates the core students who answer the question with the statement written in column 2;
<sup>2</sup> Indicates the advanced students who answer the question with statement written in column 2.
### The students views of the Extension subject

<table>
<thead>
<tr>
<th>No.</th>
<th>Item being investigated</th>
<th>Students Core</th>
<th>Students Advanced</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>The benefits of the Extension subject in daily life:</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>a. Very beneficial</td>
<td>75</td>
<td>34</td>
</tr>
<tr>
<td></td>
<td>b. Less beneficial</td>
<td>23</td>
<td>8</td>
</tr>
<tr>
<td></td>
<td>c. Not known</td>
<td>7</td>
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</tr>
<tr>
<td>2.</td>
<td>Example of the benefits (interviewee could choose more than one answer)</td>
<td>83</td>
<td>35</td>
</tr>
<tr>
<td></td>
<td>a. In developing communication with other people</td>
<td>42</td>
<td>25</td>
</tr>
<tr>
<td></td>
<td>b. Could learn more about farmers, problem and the effort for improving</td>
<td></td>
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<tr>
<td></td>
<td>quality of life</td>
<td></td>
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<tr>
<td></td>
<td>c. Other such as: broaden the view of agricultural extension</td>
<td>45</td>
<td>15</td>
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<tr>
<td>3.</td>
<td>Some of the materials should be adjusted (students' suggestion)</td>
<td>83</td>
<td>39</td>
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<tr>
<td>4.</td>
<td>Topics that were highly demanded to be more developed:</td>
<td>61</td>
<td>31</td>
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<tr>
<td></td>
<td>a. Communication</td>
<td>67</td>
<td>43</td>
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<tr>
<td></td>
<td>b. New approach to the systems of Extension</td>
<td>25</td>
<td>21</td>
</tr>
<tr>
<td></td>
<td>c. Adult learning approach</td>
<td>43</td>
<td>32</td>
</tr>
<tr>
<td></td>
<td>d. Informal agricultural education</td>
<td>54</td>
<td>29</td>
</tr>
<tr>
<td></td>
<td>e. Development of Extension programs</td>
<td>20</td>
<td>35</td>
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<td></td>
<td>f. Surveying</td>
<td></td>
<td></td>
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<td>5.</td>
<td>The reasons for development to (no. 4) materials:</td>
<td>76</td>
<td>40</td>
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<tr>
<td></td>
<td>a. Easy to understand as much variation in the teaching process</td>
<td>65</td>
<td>39</td>
</tr>
<tr>
<td></td>
<td>b. Very beneficial after the students graduated</td>
<td>68</td>
<td>23</td>
</tr>
<tr>
<td>6.</td>
<td>Less-relevant material (according to the students)</td>
<td>23</td>
<td>15</td>
</tr>
<tr>
<td></td>
<td>a. Survey Sociology</td>
<td>56</td>
<td>30</td>
</tr>
<tr>
<td></td>
<td>b. Family Sociology</td>
<td>10</td>
<td>-</td>
</tr>
<tr>
<td></td>
<td>c. Change and development in community</td>
<td>12</td>
<td>10</td>
</tr>
<tr>
<td></td>
<td>d. Instruction and demoplot</td>
<td></td>
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<tr>
<td>7.</td>
<td>The reasons of difficulties in understanding to the materials:</td>
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<td>15</td>
</tr>
<tr>
<td></td>
<td>a. Less interesting and less beneficial</td>
<td>40</td>
<td>30</td>
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<td>8.</td>
<td>Students understanding to the materials taught:</td>
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<td>38</td>
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<td></td>
<td>a. Understand more than 60%</td>
<td>45</td>
<td>9</td>
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<tr>
<td></td>
<td>b. Less-understand (less than 50%)</td>
<td></td>
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<td>9.</td>
<td>Students' expectation from the contents of the Extension subject:</td>
<td>40</td>
<td>45</td>
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<tr>
<td></td>
<td>a. Involving outsiders (such as, people from agricultural industries,</td>
<td></td>
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</tr>
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<td></td>
<td>government and non-government officers).</td>
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<td></td>
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<tr>
<td></td>
<td>b. Modification to the learning and teaching process</td>
<td>35</td>
<td>30</td>
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<td></td>
<td>c. Broaden the materials, not only to be focused on farmers</td>
<td>48</td>
<td>42</td>
</tr>
<tr>
<td></td>
<td>d. Evaluation of irrelevant aspects on both materials in theories and practicum</td>
<td>50</td>
<td>39</td>
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</table>
To conduct preliminary discussions with the students, the students were divided into groups. The 170 core students formed 17 groups and the 45 advanced students formed about 5 groups. The research team acted as interviewers. The interviews were run during practicum, or whilst breaks between lectures or practicum. Group indepth discussion was used as the method of interview. The aim of the discussion was to gather more information from the students about an urgent issue dealing with the current learning processes and their expectation of the Extension subject.
Appendix 3. Relationship amongst participants in the project

EXPLANATION:
My colleagues (six staff of the Extension subject) and I as the research team carried out several activities in the research process. The activities involved:

- Discuss the materials of Extension taught at the Polytechnic and evaluate it concerning the student’s and community’s needs.
- Practise progressive learning approaches, particularly experiential based learning in the teaching and learning process.
- Regularly communicate amongst the team the progress of implementation of experiential based learning. We also discussed with students, farmers, administrators about their expectation from the learning process.

In participating in the research, the team group also paid attention to the critiques, suggestion or other inputs from the critique group. One colleague who had often employed action research, acted as consultant on the way I ran the project. He gave some comments during the research, for example: about the way I conducted the dialectical procedure with the participants.

From the research, we expected the learning-teaching process for the Extension subject would be improved. The improvement could be achieved in many ways such as: reconstructing the subject contents, operating learner-centred approaches, and involving participation from people associated with the learning and teaching process.
Appendix 4

MIND-MAPPING OF THE CURRENT SITUATION OF THE LEARNING PROCESS OF EXTENSION AS A SUBJECT TAUGHT AT POLYTECHNIC

Limited Personnel
Highly motivated Informal informal
Inter/level.
Leadership
of skills, Knowledge and Experiences

Reading
Discussion
Roleplay
Classroom

Activities

Rapid
Formal vs Democratic
Supporting vs Undersupporting
Different Teaching Style/Discipline/Background/Different Experience

Students
Students
Staff
Faculty

New Learning Approaches
Problem-Solved
Based Learning

Negotiation
Facilitation
Experiential Learning

Learning Approaches

Conventional
Curriculum Based

Extension as a Subject

Administrators
Low vs High Dedicated
Too Large Numbers (Inefficiency)
Various Levels of Skill and Knowledge

Agricultural Policies

Farmers
Unprofessionals
Professionals

Communication Relation

Dependancy? (to supporting the role of
Army Forces or Institutions)

Various Extension Program Faced Socio-Economic Problems in Real Situation
Inappropriateness of Approaches to the Farmers

Subsidies
Always Changing
Extension Policies

Influence to the Farmer's Performance

Research

Joint Venture Work Place

Agricultural Industries

Research

Unprofessionals

Other Staff

Communication Relation

Political Policies

Small Scale Farmers
Constraining Low Income

Hoping More

Democracy Situation

Large Business
Strong Capital
Responsive

Large Scale Farmers
Appendix 7. A dialogue of some students on 24 November 1995

The following dialogue occurred after we finished a practicum of one topic of practicing adult learning approaches (fieldwork activities). This was an informal dialogue among core students at the Polytechnic library. Two Extension teaching staff who led the practicum and I were interested on this dialogue because from it we knew how the project benefited the students. We did not want to intervene the dialogue, so we kept writing notes of what the student spoke about (i.e. practicum).

The students involved in the dialogue were four core students naming Agus, Rudy, Susan, and Heru. These students were classified as those who responded positively to the new learning approaches which was centred upon the students as active learners. Agus was a member of the Polytechnic Student Association; Rudy was just one of participant in the last practicum, Susan and Heru were students who would lead present their paper at the next practicum, Heru was the eldest of these four students, he was 24 years old and had worked as a technician officer at a commercial agricultural enterprise in East Java.

Agus: Hi! What do you think of our recent practicum?
Rudy: Well! I think it was a bit different. I could see a number of students were becoming confused. Some of us dislike the new approach, but some others seemed very happy with that. I indicated this could be the result of our negotiation with the staff regarding learning strategies. Didn’t you recognised that, Gus?
Agus: Yeah, I agree with that. My impression is that I like this change for three reasons. First, the contents of the subject are made more flexible. Second, there is flexibility to choose the topic of the session and we have closer relationship with the staff, as we are in a parallel position, I meant not the students and the lecturers are in the higher position. Third, I noticed that most of us were satisfied with the ways the activities arranged.
Rudy: That are the changes you identified so far. I wonder how do our friends think about the current situation. Would you come with me to talk with others Gus?
Agus: Well... it is my pleasure, but I only have fifteen minutes left. I should go on a meeting for student’s representative then.
Rudy: It does not take long, it will be just five or ten minutes. Come on, let find that group.
Agus: All right.
Rudy: Hmm, what do you discuss about, friends?
Susan and Heru: Well, we just prepare for our presentation for the next meeting. We plan to set our presentation more life, and we create a short drama for the topic. Thus, we hope it would prevent us from feel sleepy or boredom.
Agus: What’s a good idea? I will come on your presentation. Could you give us your presentation draft?
Heru: Of course. This draft is just an outline of our presentation and we welcome for your comment or critique to improve our understanding to the topic.

Rudy: Yeah, this is one of our activities for the last four months. Agus and I want to know your opinion on our learning in the Extension subject regarding the current situation? Can you give your comment on that?

Susan: Sure. Well..., at first I was not interested on the recent change because it made me confused. Also this new approach demands ourselves to be more active. I felt the role of the staff was changed from transformation to the facilitator. This affected the way I learn. Thus ...

Rudy: Sorry to interrupt you. What did you mean by affecting “the way I learn”?

Susan: Well, I mean .... previously, I was told what should I do, but now I should be active and become more independent. I think this derives me mad, you see we all already overloaded with practicum, farms activities, prepare for any reports and many assignments should be done. However, I believe that staff and students should join for achieving success in learning. I then attempted to adapt to the new approaches. It was not easy because I usually learn from what lecturers instructed to us, from text books and from other written materials. Now, I should be more active to gain knowledge, not only from classroom or practicum but also from other available sources such as professionals, our or other people’s experiences and other staff. I gradually respond positively to the new learning processes, and enjoy with the activities as it benefits me in increasing my competencies.

Agus: Congratulation, Susan. And how about you, Heru?

Heru: Well, I think my experience is not so different from Susan’s. I just require myself to be more confident in the way I learn. As you know, I am the oldest student here sent by my office to study at the Polytechnic. I think I could achieve my best learning outcome if I learnt individually. I noticed this way was not always right. This is because, when I learned individually I only got the outcome of what I learnt. On the other hand, I could gain more experience when I learnt together in the group as we practice in the recently. It was great for my experience.

Rudy: Thank you. Well, we should go now and see you on next meeting.

Susan and Heru: See you.
Appendix 8. Outcomes of the interview with the Former Director of the Agricultural Polytechnic Education Project in the Department of Education and Culture, Jakarta

The interview was conducted on 29 and 30 January 1996. The outcomes of the interview were as follows:

1. Agricultural polytechnic education is aimed to produce a middle level agricultural technician who has:
   ① A good general understanding of the major components of Indonesian Agriculture and advanced skills and knowledge in a particular field of study.
   ② Developed competencies and understanding of practical tasks in agriculture, specifically within the specialized field of study.
   ③ An understanding of the integration between and among fields of study and their relative importance to the practice of agriculture.
   ④ After graduation, the ability to be immediately useful to his or her employer without further training.

2. Agricultural polytechnic education would be to extend and to develop the quality of human resources. Thus, relationship between polytechnic and farmers would be strengthened to create togetherness in the learning process. This, therefore, would be a mutual learning process amongst the farmers, students and staff.

3. Following the current development in agriculture, the agricultural polytechnic would increase its level of award with four-year Diploma. Thus, there would be two awards offered three-year and four-year Diploma.

4. Regarding the ambivalent situation about structural of the Polytechnic whether it would be developed into separate institution soon or it would be as current structure, under management of the University of Jember.

5. Research should be developed into more factual outcomes, not merely conventional scientific research. In other words, research with valuable outcome for improving the teaching and learning process at the Polytechnic should be supported.

6. The concept of “link and match” among the students, staff, technicians, and administrators should be maintained for further development.

7. The ratio of practical and theoretical knowledge in all polytechnics could be reviewed and modified to adjust student’s needs as long as it did not replace polytechnic education goals. Reviewing curriculum should be done following agricultural development and student’s needs. Specifically, for the Extension subject, Purwadi (Former Director of the Agricultural Polytechnic Project) says that extension is a dynamic process involving human activity that is very significant to maintain and to resolve the issues in agriculture and improving quality of farming communities as well. He regards the farmer-centred one is better than resource-centred one.
Appendix 9. Action plan for curriculum development on the subject: Extension
(by the subject co-ordinators)

Priorities:
1. Clear goals and objectives formulation involving flexibility in planning
2. Student participation in planning: interests
3. Provide active learning climate and wide range of resources
4. Sequenced learning experience: selection of content and its management
5. Evaluation of the learning process for further development: type of learning, curriculum design, learning activities; physical environment, relationship among the participants; motivation of the students; development of student's competencies and achievement.

Action plan:

<table>
<thead>
<tr>
<th>No.</th>
<th>Activities</th>
<th>Description</th>
</tr>
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<tbody>
<tr>
<td>1.</td>
<td>Introduction into curriculum review of the Extension subject The end of August 1995</td>
<td>Inviting the staff for establishing a collaborative team to work through curriculum revision</td>
</tr>
<tr>
<td>2.</td>
<td>Information and data gathering</td>
<td>Data about educational philosophy of Polytechnic, its priority or orientation, organisation and process is required for developing this action plan. This could be collected through interviewing the staff at the Directorate General for Higher Education of the Dept. of Education and Culture in Jakarta, read and review documents of Polytechnic development strategy. Student's critiques and aspiration.</td>
</tr>
<tr>
<td>3.</td>
<td>Reflection and analysis October 1995</td>
<td>The individual member of the team reflects upon his or her own experience related to the implementation of the current curriculum Analyzing data that have been collected for continuing curriculum re-construction</td>
</tr>
<tr>
<td>4.</td>
<td>The way the team works November 1995 - January 1996</td>
<td>Meetings will be used as a medium to work through the curriculum. This involve: The goals of the subject; the selection of the contents and sequencing, the requirement of facilities and equipment of each activity of the material, resource, the learning styles, organisation of the participants (students-teacher relationship in the activity) and so forth.</td>
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</table>
| i | ii | Each member will be given a task to review the topic of the subject and make modifications if required. Modification could be in the form of elimination, extending the content of the topic, or changing into more relevant topic. All modification is based on the data that is already collected before.
|   |   | After this task is completed, the member would bring his or her work to the team to be reviewed; to be given feedback |
| 5. | Implementation | The new established curriculum will be implemented in the real learning process. Both the staff and students are urged to criticize and comment on this for evaluation |
|   | Second semester: February - July 1996 | The implementation of the new curriculum requires support from all participants involved in Polytechnic |
| 6. | Evaluation | Reflection on implementation from participants is asked for providing new directions in learning |
|   | August - September 1996 | |
| 7. | Organisational climate | Conducive climate indicated by responsive to the on-going change is required. This should be maintained in the action cycle for further development. This involves: open structure, bottom-up approach, priority to student’s needs and staff professional promotion |

Based on the interview with the students in the early phase of this project (26-27 July 1995), we presented the expected contents of the subject on each level. This is just a framework, we require our team to carefully review it and work together to produce the appropriate package for fulfilling student’s needs.

**Level: Core semester**

**Aims:**
1. Develop understanding of the learners of human resource management
2. Develop understanding of the learners to the principle of social change; change for improvement
3. The learners will be able to understand, to practice and to evaluate principle of communication in various situation
4. To recognise different philosophies of extension, various extension practices in communities
5. To learn the technique of problem identification, problem solving in community
6. To understand the way adults learn, the variety of learning approaches and its constraint
7. To understand problem management in extension
The possible topics:

I. HUMAN RESOURCES
   1. Human as a complex system
   2. Human resources development
   3. Issues in management human resources

II. SOCIAL STRUCTURE AND ITS CHANGE
   1. The concept of Social structure
   2. Social issues in agricultural community
   3. Social change for development in community

III. PRINCIPLE OF LEARNING
   1. Learning as a collaborative activities
   2. Principle of adult learners
   3. Factors affecting learning
   4. Development learning strategies

IV. EXTENSION AND COMMUNICATION
   1. Communication: the meaning or principle techniques, methods, barriers and practice of communication.
   2. Communication and participation in Extension
   3. The philosophy of Extension
   4. Problem solving in Extension

V. PRINCIPLE OF EVALUATION

Relationship among the topics

Most topics interrelate with each other. The learning activities would be carried out in the classroom, in the field, in the farmers domain and fieldtrip. The activities such as discussion, seminars, practicum, role play, drama, fieldwork and simulation would be arranged initially between staff and students.
Level: Advanced semester

Aims:
1. To continue equipping students with relevant Extension practices and theory
2. Strengthen students knowledge and skill in facilitation
3. Develop student’s own experience in evaluation of a given Extension program
4. Students are able to operate the strategy for problem solving in the community

The possible topics:

I. DEVELOPMENT OF EXTENSION THEORY AND PRACTICE
   1. The gap between theory and practice
   2. Complexity of socio-economic issues
   3. Agricultural Policy

II. EVALUATION OF EXTENSION
   1. Criteria for better Extension strategy
   2. Program evaluation
   3. The role of farmer, extensionist and researcher in Extension practice

III. EXTENSION AND RURAL CHANGE
   1. Sociology of rural community
   2. Problem identification and the ability to cope it
   3. Community’s participation in Extension practice
   4. The issues of improvement quality of life

IV. EXTENSION AND AGRICULTURAL DEVELOPMENT
   1. Extension organisation and agricultural development
   2. Future orientation
   3. Evaluation and further action
   4. Alternative approaches

RELATIONSHIP AMONG THE TOPICS

EXTENSION AND AGRICULTURAL DEVELOPMENT

\[\xrightarrow{\text{EXTENSION AND RURAL CHANGE}}\]

EVALUATION OF EXTENSION

\[\xrightarrow{\text{DEVELOPMENT OF EXTENSION THEORY AND PRACTICE}}\]
Appendix 10. Several photos taken during the research

The Polytechnic of Agriculture, University of Jember where the study was conducted

One of the students individual project of food-crops cultivation (planted in campus)
Students activities in class-room practicum needed modification

Discussion with facilitators in one village near Jember
One topic of practicum in the Extension subject: students presentation

Other students as participants in peer group presentation
Appendix 11. Participating staff members in the study

LIST OF PARTICIPANTS

TOPIC: EXPERIENTIAL BASED LEARNING ON THE SUBJECT AGRICULTURAL EXTENSION AT POLYTECHNIC OF AGRICULTURE UNIVERSITY OF JEMBER, EAST JAVA, INDONESIA

NAME OF CONDUCTOR: SITI AMANAH

SUPERVISORS: DALE WILLIAMS
ROBERT D. MACADAM

<table>
<thead>
<tr>
<th>No.</th>
<th>Nama (Name)</th>
<th>Pekerjaan (Occupation)</th>
<th>Tanda tangan (Signature)</th>
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<tbody>
<tr>
<td>1.</td>
<td>Suwardi</td>
<td>Lecturer</td>
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<tr>
<td>2.</td>
<td>Rasyid</td>
<td></td>
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<td>3.</td>
<td>Cholyubiyusuf</td>
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<td>4.</td>
<td>Vit Sarno</td>
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<td>5.</td>
<td>Gita Panana</td>
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<td>6.</td>
<td>Tri Rimu Jr.</td>
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<td>7.</td>
<td>DJIEE</td>
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<td>8.</td>
<td>Muywin Rasyim</td>
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<td>9.</td>
<td>R.A. Djamali</td>
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<td>10.</td>
<td>Moh. Zaini Sukri</td>
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### Appendix 12. Core students enrolled in the subject Extension

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<tr>
<td>1</td>
<td>Ulil Lely Khodah</td>
<td>9420150001</td>
</tr>
<tr>
<td>2</td>
<td>Yessi Febriania Hasian</td>
<td>9420150002</td>
</tr>
<tr>
<td>3</td>
<td>Dewi Umbul Rejeki</td>
<td>9420150003</td>
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<tr>
<td>4</td>
<td>Andi Subagyo</td>
<td>9420150004</td>
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<td>5</td>
<td>Evie Setiyowati</td>
<td>9420150005</td>
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<td>6</td>
<td>Kristanto</td>
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<td>Ari Hasan</td>
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<td>8</td>
<td>Muftiyah</td>
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<td>Ani Sulistyarini</td>
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<td>10</td>
<td>Nanang Romadanu A.</td>
<td>9420150010</td>
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<td>Mamik Suprapti</td>
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<td>Agustin Salamah</td>
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<td>Sudjatmi</td>
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<td>Suarno</td>
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B = ....... MHS  D = .......
E = .......

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<tr>
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<td>Nanci Andriani</td>
<td>9420150043</td>
</tr>
<tr>
<td>2</td>
<td>Henny Heksanati</td>
<td>9420150044</td>
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<tr>
<td>3</td>
<td>Rini Rachmad Swandani</td>
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POLITEKNIK PERTANIAN

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