The role of local government developing participatory learning methods in empowering small farmers

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Abstract. Farmers learning process have not increased their awareness to understand their own problems, potentials, and opportunities. The study aimed to analyze participatory learning methods in the implementation of smallholder farmer empowerment programs. The study was designed as a quantitative method by survey methods, and the analysis technique used descriptive statistics. The study results showed that the government's capacity to develop the participatory learning method in small farmer empowerment program was in the low category. The participatory learning method's four indicators including, communication intensity, equality source, dialogical application, and learning material appropriate were in the low category, while the communication method is in the high category. Therefore, the government needs to encourage participatory learning methods in small farmer empowerment programs through some strategies including, increasing the intensity of communication, developing equality and dialogue, adjusting learning materials according to farmers' needs, and developing appropriate learning methods.

1 Introduction

The low income of small farmers in developing countries causes farming households to face food insecurity [1]. In Indonesia, to achieve food security, the government organizes a small farmer empowerment program. This program aims to increase farmers' income and meet their food needs [2,3].

Farmer empowerment programs in developing countries including Indonesia need to highlight on learning methods to increase farmer productivity to produce food in a sustainable manner [3,5]. In the learning process, farmers often lack understanding of information and innovation due to incompatibility of language styles, channels and media as well as outsiders who know better, thus ignoring the knowledge of local farmers [2,6].

The implementation of farmer empowerment programs should provide access to farmers to increase their capacity to understand problems and take action to solve problems based on participatory learning outcomes [7]. According to Leeuwis the new paradigm of farmer learning process through extension from a top-down linear model to a communicative intervention characterized by participatory communication through dialogue. This approach

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gives farmers a high role to work together with extension workers and researchers to identify problems, plan, implement and evaluate various information and technologies [8,9] . Small farmer need to be free from the outsider's perspective such as the extensionists and the other government officer, as Freire said that people can be free from oppression if they had the chance to deal with the problem and think critically on the structural condition of oppression [10].

To ensure success in realizing food security in the agriculture sustainability context, one of the important steps is improving farmer learning methods. The study aims to analyze capacity of local government applied participatory learning methods in small farmer's empowerment program.

Based on literature review, the learning model is a unified series of learning activities in the implementation of approaches, strategies, methods, and learning techniques. The learning model using participation or participatory learning method has been used by educators [11].

Participatory learning methods in the context of agricultural development as a way toward sustainable agriculture [6,11]. It has following six elemen: (1) The focus is on cumulative learning by all participant; (2) multiple perspective, a central objective to seek diversity, the assumption that different individual and group make different action of evaluation which lead to different action; (3) Group in learning process from different sectors and from outsiders (professional) and insider (local people); (4) Context Specific, the approaches are flexible enough to be adapted to suit each new set of condition and actors; (5) Facilitating expert and stakeholders; (6) The learning process leads to debat about change, and debate changes the perception of the actors [7].

Table 1. The new paradigm of farmer learning "creates naive awareness" and "creates critical awareness"

Learnimg Process	**Creates Naive Awareness**	**Creates Critical Awareness**
Intensity of Communication	- Low intensity of communication between farmers and extension workers	- Communication between farmers and extension workers is carried out optimally.
Position of Information Sources	- Domination of Information Source-Passive Farmer	- Equality, extension workers and farmer are active subject
Communication Model	- One way communication (linier), Coercion of knowdeldge and ideas on farmers - Model mekanistis dan statis - Interpersional Communication, media in classroom.	- Interactive, dialogical and convergent communication. - Extension workers and Farmers are learner. - Participatory model respects reality (indigenous/local knowledge and culture) - Sharing of knowledge
Learning Materials	- Learning materials are designed top down - The type and variety of information does not match the problems and needs of farmers. - The curriculum is not based on reality, but an expert perspective	- Learning materils are designed by extension worker and farmers. - The type and variety of information match the problems and the needs of farmers. - The curriculum as a tool to build critical awareness,
Learning Method	- Paedagogy principle. - Lectures method, discussion, and seminar. - Memorizing and farmer compliance.	- Andragogy principle - Experiental Learning, learning by doing dan Discovery Learning - Differences of opinion and debate are appreciated

Participatory learning is inspired by Freire's (1970) concept of education as a liberating practice [13]. Against this regime of 'scientific' idiocy and 'bare pedagogy' stripped of all critical elements of teaching and learning. Education is not only understood as the transfer of knowledge from a subject who has knowledge (teachers) to objects (students), but as a much more collaborative event. Teachers and students are both subjects in the learning process. The learning process begins with awareness, learning gradually about the problem, being able to interpret and reflect on the problem, see the relationship and take action to solve the problem [14].

Freire's critique of extension practices that apply the ideology of hierarchical, vertical structures, social control, and one-way relations from experts to those who are assisted, is fundamentally unparticipatory. In this process, the aim of education is to “fill” farmers with “knowledge” which is referred to as “Banking Concept Education”. Therefore, according to Freire, the best way to build awareness among farmers is to confront them with problems to find solutions. So that they are more confident and have the awareness to act critically according to reality [10]. Based on Freire’conception, the authors designed a new paradigm of farmer learning (Table 1).

2 Method

The study used a survey method with a descriptive analysis approach and a quantitative paradigm. The research locations were chosen purposively, namely four villages in West Halmahera Regency which held the Small Holder Lifelihood Program (SOLID Program).

The researched population was 583 the head of household of farmers spread in four villages, namely Tuada, Todowongi, Bukumatiti, and Taba Campaka that had held SOLID Program. 162 smalholder farmers were selected as respondent that had less than 20 hectares of land.

Data was collected through questionnaires which fulfill validity and reliability requirements as presented in Table 2.

Table 2. Results of validity and reliability tests

Variable	Validity	Reliability	Result
Participative Method	0.647-0.866	0.616-0.895	Valid/Reliable

The author uses a transformation technique so that the survey data collected becomes interval data, the range is between 0 - 100. The minimum transformation value (0) is if the parameter of each measured indicator has a value of 1. The maximum value (100) if the parameter of each indicator has a value of 4 Transformation formula as follows:

$$\text{Indicator Transformation Index:} \quad (1)$$

$$\frac{\text{Total achieved scores} - \text{Total minimum expected score}}{\text{Total maximum expected score} - \text{Minimum expected score}} \times 100$$

$$\text{Variable Transformation Index:} \quad (2)$$

$$\frac{\text{Total achieved scores} - \text{total minimum expected score}}{\text{Total maximum expected score} - \text{Minimum expected score}} \times 100$$

Interval data is in the range of 0-100. The grouping of categories uses three levels, namely: values 0-50 in the "low" category, 51-75 in the "medium" category, and 76-100 in the high category.

3 Result and Discussion

The results of the analysis of the application of participatory learning methods are in the low category (average score 37.3). The results of the analysis of each indicator show that except for the learning method, 4 (four) indicators are in the low category, namely the intensity of communication, equality sources, dialogical application, and learning materials. The results of the analysis are presented in Table 3.

3.1 Communication Intensity

The intensity of communication between information sources and farmers is in the low category (average scores 27.8). Sources of information (extensions, program assistants, regional agricultural officers as well as university researchers) have not routinely and continuously. The activity of sharing information of innovative cultivation techniques is rarely carried out. Cultivation techniques practiced by farmers are based on local knowledge. There is no adequate innovation to develop farming.

Table 3. Learning Method of Small Farmer Learning

Indicators	**Category**	**Smallholder Farmer (%) n=162**	**Average (%)**	**Results**
Communication Intensity	Very low low High Very high	70 24 6 0	27.8	Low
Equality Sources	Not Equal Less Equal Equa Very Equal	29 49 20 2	36.2	Low
Dialogical Application	Very low low High Very high	2 40 58 0	46.0	Low
Learning Materials Approprite	Inadequate Less Adequate Adequate Very Adequate	 6 74 20 0	37.0	Low
Suitability of Learning Method	Very low\ Low High Very High	5 18 71 6	55.0	Low
	Total Average		37.5	Low

Note.: 0-<25 = very low, 26-<50 low, 51-75 high, 76-100= very high.

Farmers get information from fellow farmers and local moneylenders. In fact, farmers really need information and access to capital and product marketing. During the research,

there were extension workers and program assistants assigned by the local government to assist farmers. They actively visited the village during the program, especially during the visits of the Central and Regional Teams. However, when the program is finished, the activity of visiting is getting lower.

The lack of frequency of communication and interaction between farmers-extensions/officers, farmers-researchers/experts, farmers-advanced farmer groups. Extension workers and technical officers as well as agricultural researchers as sources of information. The low exchange of knowledge, experience and skills between farmers and outsiders causes the low capacity of cultivation techniques. Farming techniques still rely on traditional methods based on ancestral heritage. The practice of traditional and subsistence farming methods does not increase farmers' income and even does not guarantee the adequacy and availability of food for farming families.

3.2 Equality Sources

Equality between sources of information and farmers is in the low category (average scores 34.1). Farmers still considered that officers or extension workers as “government” while farmers are “ordinary people”. The government usually “gives” programs and assistance, while farmers are the “recipients” of aid and programs. In the view of farmer, the government's position is higher, farmers as ordinary people must obey programs submitted by the government.

The perception of inequality position between oustsiders (extension workers, agricultural officer,or scientist) and farmers caused the communication gaps [15]. When farmers faced farming problems need some information, they will not meet extension workers or technical officers but going to farmers in other villages.

When the program is implemented, agricultural officers and extension workers intensively visit farmers. They pushed the farmers to participate in the program. After the program was completed, all program asisstence farming was discontinue. For example, a long time ago, there was a hybrid coconut cultivation program. During the program, farmers got assistence, they taught hybrid coconut cultivation techniques by the extension workers. Also they obtained fertilizer and pesticides. However when the hybrid coconut program is finished, all learning and program assitence was finished too. Farmers discontinue hybrid coconut cultivation because they dont have budget to buy fertilizers and pesticides. Farmer back to plant local coconut because this plant not need fertilizers and pesticides. Finaly, the hybrid coconut program failed.

3.3 Dialogical Application

The application of dialogue in learning program is in the low category (average scores, 46). The dialogical communication model has been applied in the learning process, although it is not optimal. The farmer's learning process is dominated by “teaching” compared to the “learning” model. Learning process is used one-way communication and lecture method.

The teaching model in learning process has positioned farmers as passive recipients of agricultural information and innovation [16]. In the learning process, the role of the instructor is not as a teacher who transfers knowledge to his students, but as a motivator and facilitator who arouses interest in learning and explores the knowledge and experiences of the farmers themselves.

Extension and training program have not implemented dialogical communication that places farmers as learning partners. Exchange of information (knowledge, skill and expeirence) between farmers and extension workers or agricultural officers has not occurred in the learning process The ideal concept that extension workers and technical officers are

farmers' learning partners to combine expert knowledge with local farmers' knowledge is still far from being expected.

The technology transfer communication method used in extension and training has proven not to empower farmers [17]. Information and innovations brought by extension workers or technical officers are often new practices that need to be adapted to the farmer's environment. Sharing information extension workers or officers with local knowledge of farmers is an important factor.

3.4 Learning Materials Approprite

Learning materials appropriate is in the low category (averages scores 37,0). According to the farmers, the learning material provided in the training pprogram was important, but it did not macht their needs. The type of information conveyed by the sources (extension or agricultural officer) is not in accordance with the needs of farmers.

Nevertheless farmer learning process is dominated by sources information. It seems that farmers are "led" to receive information from the top down's perspective. Automatically does not answer the farmer's problem. According to the government's perspective, the materials needed by farmers are techniques for cultivating livestock and processing agricultural potential, such as nutmeg into nutmeg syrup, cassava into tapioca flour, coconut into coconut biscuits, cocoa into chocolate ice cream. Unfortunately, based on farmer"s perception, most of the information is not a priority for farming. So, the results of learning are rarely applied by farmers.

The learning materials has always been come from "above" (the government or program providers) without making discussion or exchange ideas between extension workers and farmers as the way to get information or the problem that farmer faced. The extension workers never make needs assessment of training materials such as types and quantities of information and skill are needed by farmers. As a result, the training materials are not related to the real needs of farmers to increase agricultural yields and farmers' incomes.

3.5 Suitability of Learning Method

Suitability of learning method is in the high category (average scores 55,0). Learning has applied a variety of learning methods including lectures, question and answer, group discussions and the use of demonstrations technique. However, during the learning process in class, the majority of farmers did not dare to ask questions cocerning the material that they did not understand.

In the learning process, farmer rarely ask some questions or express differences of opinion, even though they have much farming knowledge and experiences. According to farmers, the learning materials are still theoretical. Farmers need direct practice through pilot models or field schools, so that farmers can learn while practicing and ask questions directly to guides and or extension workers. This means, application of method such as experiental learning and learning by doing are very important to increase farmer's competency.

The suitability of the method of learning very influential on changes in farmer behavior [18]. The learning process will be effective if it is delivered in suitable learning method. Based on interview, farmers want a "learning by doing" where they can practice the extension material directly. This method more fast increasing farmer's understanding than lecture method in class.

This study is in line with research conducted by Carr et al (2015) in Uganda found that technology transfer method has been proven not to increase farmer empowerment. Information and innovation by extension agents is a new practice that needs to be adapted to the farmer's environment. Therefore, there needs to be an integration of new knowledge

conveyed by extension workers and local knowledge is an important factor for innovation to be used by farmers [19].

4 Conclusion

The capacity of local governments to develop participatory learning methods is in the low. The learning model applied in the smallholder empowerment program characterizes linear communication and not participatory. First, the intensity of communication is low due to the minimal frequency of communication and interaction between farmers and outsiders. Second, the position of the extension worker and the farmer is not equal as a learning partner, thus creating a communication gap. Third, the learning process has not implemented dialogue, as a means of sharing knowledge, skills and experiences. Fourth, the discrepancy between the information conveyed by the information sources and the needs of farmers, learning is dominated by the information source. Finally, the learning method is quite varied, but on the other hand, farmers want learning by doing's method.

Therefore, the government needs to encourage participatory learning methods in small farmer empowerment programs through some strategies including, increasing the intensity of communication, developing equality and dialogue, adjusting learning materials according to farmers' needs, and developing appropriate learning methods.

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