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## Awareness and Attitude of Extension Agents toward Problem Solving Method

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**Abstract** Agricultural education plays an important role in developing agriculture and farmers. One of agricultural education principles is learner being active in any learning situation. Problem solving is considered as one of the active educational methods so the purpose of this research was to investigate awareness and attitude of extension agents about problem solving method and determines the effective factors on using this method. The population consisted of all Boushehr's jihad-e-keshavarzi's extension agents (80 extension agents) and 60 of them were selected through simple random sampling. The face validity of the questionnaire was approved by a panel of experts and a pilot study was conducted for reliability. According to t-test results the awareness and attitude of extension agents toward problem solving was low. In addition, there was no meaningful difference between the awareness of extension agents towards problem solving based on their educational levels. Affective factors on extension agents' attitude involved their awareness, number of read journals and their individual's job background. Based on the results practical recommendations have been presented.

**Keywords:** Agricultural education, Problem solving learning, Extension agents

### Introduction

Problem solving skill is one of the crucial principles of the philosophy of adult education and adults should have the ability to do this (UNESCO National Commission in Iran, 1990). On the other hand, the United Nations' Educational, Scientific and Cultural Organization (UNESCO) believes that it is necessary to use methods focusing on issues and actions that require learners' cooperation in the activities to achieve sustainable educational goals in agriculture. One of these methods is using problem-solving method (UNESCO National Commission in Iran, 1990).

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Therefore, providing exploratory learning environments and facilitating learning is the most important supporting aspect of sustainable agriculture. One of the important aspects of intervention is to make a common view about such issue and help the improvement of decision-making ability to deal with it (Rowling, 2003). It is very difficult in extension training to teach learners what to do in every issue. Moreover, it is impossible to predict what kind and what part of such issue will happen in anyone's life. Therefore, in extension and education programs, the success of teachers is in teaching their learners how to think correctly and accurately (Hejazi, 1995). Since, life is originally dealing with various problems and trying to find a solution for them, careful thinking and ability to solve life's problems is one of the most important solutions that must be considered in extension and educational activities for the learners to gain the ability. They will have important roles if different topics are taught and designed in the form of problem to create problem solving ability (Hejazi, 1995). Problem solving is a method that accomplishes learning through thinking and in fact is a kind of learners' preparation for life. Problem solving is a process to find correct ways that leads to a goal or an optimal solution. In this way, the educational activities are set in such a way that create a problem in learner's mind and make him/her interested to find a solution for it by further efforts (Shabani, 1995).

The emphasis of problem solving approach is on real problems, learning, and using critical thinking skills and development of self-directed learning skills. One of the most important parts of learning through problem solving is self-directed learning which is described as a process in which a person him/herself can recognize educational needs, determine educational goals, identify resources for learning and select and employ learning strategies and evaluate the results with or without the help of others (Alper, 2008). Here, the teacher plays the role of facilitator of the learning process and does not provide information directly but also encourages individual thinking among learners, and offers recommendations to them, and clarifies issues if it is necessary (De Goeij, 1997). Problem-solving is a method that aims at achieving learning skills by learning through self-guided, independent study and asking questions. This method is based on real situations. Under the guidance of teacher, learners learn to discover, analyze data, and collect data for their learning individually or collectively (Gok, 2010). The emphasis of advanced educational system is to strengthen problem-solving method for the learners to generalize their learning and

information according to the appropriate time and put potential forces in practice and change them to desirable behaviors in life span. Despite, it should be tried that agricultural extension agents and other adult learners benefit from this method such that this method can be increased in adults. In Iran the agricultural extension activities is the same part of planned learning which is performed mostly in the form of educational programs and by using conventional teaching methods by agricultural extension agents.

To achieve the sustainable goal of education in agriculture, it is necessary to use the methods focused on the issues and actions that require the cooperation of more learners in these activities (UNESCO National Commission in Iran, 1990). On the other hand, Grant and colleagues (Grant *et al.*, 2000) believe that most of agricultural workers do not have such skill, thus, the behavior change of agricultural extension agent toward following philosophical principles of adult education and sustainable agriculture is essential in order to use problem solving method to improve adults' skill and ability in this area.

Ajzen (1988) defines attitudes as latent, hypothetical characteristics that can only be inferred from external, observable cues (Hyytia and Kola, 2005). Attitude refers to an individual's positive or negative evaluation of the performance effect of a particular behavior (Qingfei *et al.*, 2008). Attitude is likely to be relatively good predictor of behavior and provide direction and purpose to behaviors and performance (Hyytia and Kola, 2005). According to Sanderson (2004) attitude is learned and can be changed. Attitude can be viewed as an overall evaluation of behavior and can be measured on a bipolar dimension. "The more favorable a person's attitude toward a behavior, the more they intend to perform that behavior" (MalekSaidi *et al.*, 2012).

Ajzen and Fishbein, in their model which is the provider of effective factors on behavior, state knowledge and attitudes as basic factors on behavior change and believe that these variables are predictors and determiners of individual's behavior (Ajzen and Fishbein, 1977; Ajzen, 1988). According to this theory, the real individual's behavior directly affected by behavioral intentions which is determined by attitudes and mental norms (Liao *et al.*, 2007; Kaiser *et al.*, 1999).

In fact, this theory states that the adoption of innovation would be affected by individual and social factors. Individual factor is defined as a positive or negative belief toward forming behavior, or it is considered as the same attitude toward forming behavior and social factor is the subjective

norms or the impact of social pressure on the person, whether it results in forming the behavior or not (King and Gribbins, 2002). According to the Theory of Reasoned Action, attitudes are, in fact, functions of beliefs. Beliefs related to individual attitude toward a behavior are called behavioral beliefs. In addition, subjective norms are a function of beliefs that are different and called norm beliefs as they emphasize the person's subjective norms (Afshari, 2007). If it is possible to distinguish knowledge and attitudes of extension agents toward problem-solving method, we can change their behavior in such way to some extent. Therefore, the purpose of this research was to investigate awareness and attitude of extension agents of Boushehr province, Iran about problem solving method and determines the effective factors on using this method.

### **Research method**

A cross-sectional survey was used to collect data using a questionnaire. Data was gathered among agricultural extension agents in Boushehr- southern provinces in Iran. This province includes 9 towns and has a hot climate and its average annual precipitation is between 200 to 250 millimeters. In 2015, its total under cultivation fields was about 236053 hectares. 5142 hectares of these fields are allocated to water farming and the remaining 184811 hectares are allocated to dry farming. The largest part of the under cultivation fields is dedicated to wheat in 167351 hectares and tomato in 14519 hectares. Farming in gardens of Boushehr province is done in 40661 hectares, of which dates are the largest section with 37265/2 hectares. Statistical population in this research includes all Jihad-e-Keshavarzi extension agents (80 extension agents) who were working in Boushehr province. A simple random sampling was used to gather data. The number of samples was estimated based on the studied population and Tuckman table and 60 extension agents of Boushehr province were interviewed and the required data was gathered through questionnaires. The validity of questionnaire was tested by panel of experts of Agricultural Organization. The questionnaire was pilot-tested with 30 randomly selected agricultural extension agents from out of sample. Based on the feedback from the pilot test, the questionnaire was refined and a revised final questionnaire was developed. The Cronbach alpha coefficients for the variables was between 0.74- 0.80.

The variables of this research are awareness toward problem-solving method, attitude toward problem-solving method, degree of education, service location, age, job background, gender, number of educational courses held as a teacher, number of educational courses passed as a learner, and number of journals and publication in agriculture related to the tasks.

## Findings

The descriptive statistics showed the highest frequency of the major respondents is cultivation and plants breeding with 18 people (30 percent) and irrigation with 2 people had the lowest frequency among respondents. The descriptive statistics also showed that about half of the respondents have bachelor degree, diploma and associated degree are in the next ranks in terms of frequency. In terms of service location, 20 people of respondents are working in rural agricultural service centers and 30 people are in the city managements and 10 people are working in province. More than half of the under studied people have salaried employment and 14 have contractual employment and the 8 remaining have conditional employment.

The amount of awareness and attitude of extension agents and agriculture training experts toward problem-solving method is so low (table 1). According to these results, agricultural teachers do not use this method in their classes and educational courses.

**Table 1.** Awareness and attitude of extension agents toward problem solving method

variables	Mean*	Standard deviation
Awareness of extension agent toward problem solving method	4.89	1.29
Attitude of extension agents toward problem solving method	4.76	1.62

\*The range is between zero and 20.

The descriptive statistics also showed that agricultural extension agents held an average of 7 educational classes last year which weren't held by problem-solving method. They also participated in an average of more than 2 educational courses or classes that none of them was related to problem-solving method. T-test was run to investigate the difference in the amount of awareness and attitude of extension agents toward problem-

solving method based on education degree and type of employment. Table 2 and 3 showed that there is no difference between people with bachelor degree and people with lower degree and also governmental and non-governmental extension agents about awareness toward problem-solving method.

**Table 2.** T-Test comparing means of extension agents awareness toward problem-solving method based on education degree

<b>variable</b>	<b>Mean of bachelor degree</b>	<b>Mean of non-bachelor degree</b>	<b>T-Value</b>	<b>Level of significance</b>
<b>Degree of education</b>	5.31	4.57	1.81	0.086

**Table 3.** T-Test comparing means of extension agents awareness toward problem-solving method based on type of employment

<b>variable</b>	<b>Mean of governmental employment</b>	<b>Mean of non-governmental employment</b>	<b>T-Value</b>	<b>Level of significance</b>
<b>Type of employment</b>	4.57	4.71	- 0.498	0.624

It is considered that there is no significant difference in the attitude of bachelors or non-bachelors (experts or non-experts) and governmental workers and non-governmental employment toward problem-solving method (table 4 and 5). This indicated that unfortunately, the educational problem-solving methods have not taught to students and agricultural experts neither in academic courses in universities nor in in-service courses.

**Table 4.** T-Test comparing means of extension agents attitude toward problem-solving method based on education degree

<b>variable</b>	<b>Mean of bachelor degree</b>	<b>Mean of non-bachelor degree</b>	<b>T-Value</b>	<b>Level of significance</b>
<b>Degree of education</b>	5.08	4.51	1.61	0.122

**Table 5.** T-Test comparing means of extension agents attitude toward problem-solving method based on type of employment

<b>variable</b>	<b>Mean of governmental employment</b>	<b>Mean of non-governmental employment</b>	<b>T-Value</b>	<b>Level of significance</b>
<b>Type of employment</b>	4.78	4.47	1.90	0.185

The results of multiple regression analysis to determine effective variables on attitude of extension agents toward problem-solving method were shown in table 6. As we see, awareness toward problem-solving method, number of read journals and newspapers, and job background were entered to the equation. This means that, these three variables could explain the attitudes of extension agent. The standardized regression coefficient shows that one standard deviation change in the awareness caused a 0.979 standard deviation change of attitude of agricultural extension agents and experts toward problem-solving method. According to the significance of  $t$ , the effect of this variable on experts' attitude is significant. Also, regarding the amount of  $R^2$ , these variables totally can predict 99.5 percent of the changes in agricultural extension agent and experts' attitude toward problem-solving method. The above regression equation is as follows:

$$Y = 1.670 + 0.979X_1 + 0.227X_2 + 0.100X_3$$

In the above equation,  $X_1$  is the variable of awareness toward problem-solving method,  $X_2$  is the number of read journals, and  $X_3$  is the individual's job background.

**Table 6.** Multiple regression analysis to determine effective variables on attitude of extension agents toward problem-solving method

Variables	Sig. T	$\beta$	S.E. B	B
Awareness of extension agents toward problem solving method	0.0001	0.979	0.065	0.941
Number of read journals	0.0001	0.227	0.012	1.092
Individual's job background	0.0001	-0.100	0.003	-3.86
F=452.705·sig P =0.0001 ·R =0.959·R <sup>2</sup> =0.995·Adjust. R <sup>2</sup> =0.993				

## Conclusion

As the descriptive statistics showed, the awareness and attitude of extension agents toward the problem-solving method is so low and therefore they are prevent using this method in educational classes and courses. Also the inferential statistics showed that effective factors on the attitudes of extension agents are their awareness toward the problem-solving method and the number of the journals that they read which have positive effects on the amount of their attitudes and the job background has the negative effect. This is evident that experienced people have lower degree and lower knowledge toward new educational methods and causes the negativity of this variable. On the other hand, as most of the experts in this province have

recently employed, they have more knowledge toward this method. According to the above, there are some recommendations along with the increase of extension agents and teachers' awareness and attitude toward the problem-solving method to take a step along with the philosophy of adult education and sustainability of agriculture:

1- This educational methods should certainly be taught in the academic courses in bachelor degree and lower degree and even it is recommended that some courses and projects of students taught by this method.

2- Teaching of such methods aren't limited to the agricultural extension majors and include all the students of agriculture and natural resources because all of them will be involved in educational activities after employment.

3- Pre-service educational courses should be designed and performed about educational methods for accepted people in recruitment exams and such trainings are a part of exam score to increase the motivation of learning these methods.

4- In-service training is considered for the employed people in this case. This causes them to update their knowledge and change their attitude. Also, it should be tried as much as possible to apply this method for extension agents' training.

5- The number of experts' publication and journals should be increased and these publications should not be limited to the inputssuch as seeds, fertilizers, and etc. and educational methods and human and social factors should be discussed in them.

6- Annual seminars and conferences for extension agents and teachers should be held for them to become more familiar with the experienced professors of such methods and increase their motivation in applying them.

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