

## Factors influencing practical training quality in Iranian agricultural higher education

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### ABSTRACT

This paper presents an analysis of the factors influencing the practical training quality of agricultural higher education programmes from the senior students' perspective. The study was conducted in two public universities located in the north-west of Iran using a cross-sectional survey and structured interviews with a randomised sample of 254 agricultural senior students. The students reported that they received low-quality practical training throughout their agricultural courses. In order for there to be an improvement in the quality of practical training, three elements are essential: active participation of academic staff, effective inter-organisational communication with private and public institutions, and active participation of students in the curriculum. Establishing a strong linkage between universities and relevant institutions could provide the required facilities and an effective learning environment for the students through internship opportunities outside universities and would prepare them for the labour market.

### KEYWORDS

Agriculture; higher education; Iran; practical training; quality

### Introduction

The main problems linked to the provision of higher education in agriculture are limited experiential learning opportunities for agricultural students and the inability of agricultural higher education systems to respond quickly to labour market needs. Nowadays, education must include knowing how to solve problems, how to work collaboratively, and how to think innovatively. These are essential skills. Ideally, higher education should be assessed according to output indicators, such as the graduate employment rate (Lee & Chung, 2015). In fact, the low employment rate of graduates is a worldwide phenomenon that many governments are trying to respond to by enhancing higher education quality (Alibaygi, Barani, Karamidehkordi, & Pouya, 2013; Lee & Chung, 2015). Gaining work experience during the course of a study programme to complement the traditional form of classroom learning has been the practice in many academic curricula. Such practices, known as placement, internship, cooperative education, experiential education, or work-integrated learning in different

academic institutions, are believed to be important to help students to gain hands-on experience in the workplace, practise textbook theories and skills, and reflect upon their future career development (Tse, Wong, & Luk, 2008).

Although agricultural higher education systems play a basic role in the preparation of expert graduates, the bitter truth in Iran is that agricultural higher education systems, for the most part, have focused on theory rather than focusing holistically and equally on both practical and theoretical aspects. This has led to the graduation of thousands of educated young people becoming available to society, though no significant success has been recorded in workforce supply and graduate recruitment (Bahrami & Zamani, 2000; Moghanizadeh, 1997; Noorossana, Saghaei, Shadalouie, & Samimi, 2008; Shahbazi, 1996; Shahbazi & Alibaygi, 2006). Therefore, agricultural higher education systems have been criticised for neglecting the practical aspects of education. This has led to undesirable consequences, such as incompetent and unemployed agricultural college graduates, their inability to respond to labour market needs, and their dissatisfaction with educational systems (feelings of having wasted their valuable time). Human capital ineffectiveness in agricultural research, extension and services organisations, and the loss of valuable resources can also be included among these issues (Menon, 2008; Samavi, Baradaran, & Rezaei Moghaddam, 2008; Shariatzadeh, Chizari, Malek Mohammadi, & Nowrozi, 2006; Veisi, Rezvanfar, Hejazi, & Paykani, 2011).

Studies by Sadeghi, Sharifzadeh, Movahed Mohammadi, and Moridsadat (2008) and Movahhed Mohammadi, Sadeghi, Sharifzadeh, and Morid Alsadat (2008) have identified some of the characteristics affecting the efficiency of practical training, such as the best choices of internship environment compatible with academic disciplines, easy access to internship location, and trainees' satisfaction with study skills courses. The most important factors affecting practical learning effectiveness, as categorised by Monfared (2007), consist of providing an appropriate practical training environment, instructors' practical teaching and management skills, and the provision of appropriate facilities for learning through regular supervision of students by teachers and complementing practical learning with theoretical lessons.

In order to improve quality of practical agricultural training, curricula should be reformed through assigning six months of farm work to students, admitting students to agriculture on the basis of their interests, and creating proper incentives for students to learn and do practical work (Yaghoobi, Salmanzadeh, Safa, & Khoshnodifar, 2006). In addition to increasing the period of agricultural courses, some studies have identified the need for an increased presence of teachers in educational environments and taking the practicality of agricultural courses into proper consideration, as prerequisites to improving agricultural practical training quality (Amini, Alizadeh, & Farzaneh, 2002). Research conducted by Fatehifar (1998) revealed that improving agricultural higher education systems depends on reforming educational planning programme by universities, preparing and compiling with proper syllabus for internship, defining subject matters of internship by faculty staff, and preparing a guideline for internship courses. Other crucial aspects are also internship location to academic field, teachers' visits to internship places, proper approach to student employment, and the availability and use of training facilities as important factors to enhance agricultural higher education systems.

Tse et al. (2008) showed that workplace environment has a significant effect on students' attitude and their professional views. The study by Holmes (2006) on museum volunteers identified that the best period of skill learning occurs when the responsibilities of the actors involved (the student, the university, and the employer) are clear. Volunteers think a worthwhile work experience placement depends on luck and finding a mentor. This means voluntary experience is likely to be about developing contacts rather than just learning specific skills and knowledge. In this situation, trainees not only gain relevant work experience, but can also obtain other benefits such as support for their academic study, opportunities for paid work, and the chance to get good references, when applying for paid positions.

Five principal components of success in internship programmes have been outlined by Henry, Rehwaltd, and Vineyard (2001), comprising the objectives of the programme, the trainee's readiness, identifying the exact location of the internship, the assessment of internship, and the evaluation of the internship programme. Internships provide real-world experiences for students in academic programmes. They require three-way communication between the educational institution, the student intern, and the business or industry worksite supervisor. Researchers such as Daresh (2006) and Baugh (2003) have emphasised issues such as time, place, situation, quality of performance, the amount of guidance and monitoring carried out, the executive structure of the internship, the extent of educational functions, and the compliance with the standards and practices of cooperation by university students to meet the needs of workgroup. Harrison and Kennedy (1996) have stressed the partnership between students, employers, and universities in the process of design, implementation, and evaluation of experimental skill courses.

Navarro (2004) says that students should learn and gain experience in environmental preparation for competing in the dynamic workplace. Demonstrations, if conducted by students with the assistance of a field supervisor, can add practical value to the academic training received by students. The role of tertiary education is to produce highly competent human resources for national economic development in the public and private sectors, and all other places in the diverse economy. Companies want graduates with cross-cultural experience and 'inclusive' agricultural farms. Therefore, students' education should include at least the development of broad thinking skills to initiate problem solving. These broad thinking skills should also shape and develop their knowledge, skills, and attitudes, to take advantage of outside classroom activities, to interact with professionals, and to develop meaningful relationships. In order to meet the diverse needs and to create new employment opportunities, new courses should be developed and the content of the existing courses should be modified. Universities should improve conditions for developing students' practical skills by establishing practical laboratories, both inside and outside universities, and strengthen university-industry relationships. The influential factors for increasing agricultural practical training quality have been categorised as follows:

- (1) Formulating a proper syllabus for skill learning courses;
- (2) The effective participation of students, employers, and universities in the process of planning and evaluating of study skill courses;
- (3) The improvement of interaction between employers and students;

- (4) Considering visiting professors for study skill sites;
- (5) Providing a practical training area;
- (6) Providing appropriate facilities and equipment in the workplace; and
- (7) Increasing practical lessons teaching skills.

This study was conducted to identify and analyse the factors influencing the quality of practical training from the perspectives of senior agricultural students at the University of Zanjan and the Zanjan branch of Payame Noor University (identified hereafter as 'Zanjan' and 'Payame Noor'). The theoretical framework is depicted in [Figure 1](#). This has been based on the empirical studies mentioned above.

## Materials and methods

A survey using a descriptive correlational methodology was utilised to identify and analyse the factors influencing the practical training quality from the perspective of agricultural senior students. The research team selected two public universities located in the Zanjan Province, in the north-west of Iran. A sample of 347 out of the 514 senior agricultural students in these universities was determined utilising the Krejcie and Morgan's formula (Krejcie & Morgan, 1970), with a sampling error of 3%, a variance of 0.25 ( $pq$ ) and a  $p$  value of 0.05. A stratified sampling technique was used to select the sample randomly and the data were collected through a supervised self-completion questionnaire. The authors handed out questionnaires (with return envelopes) to the

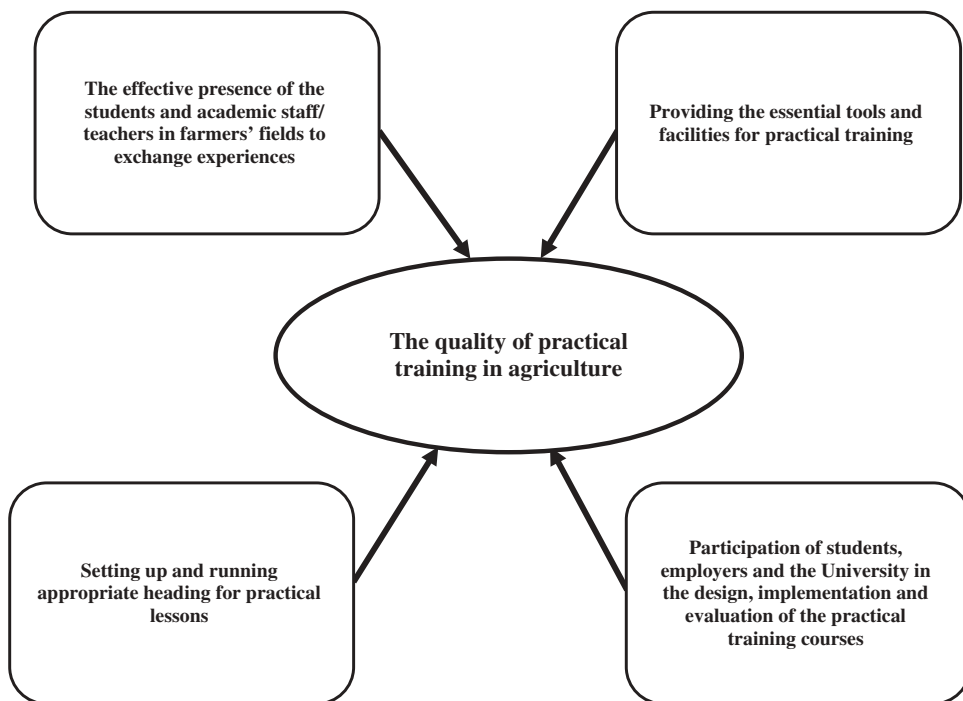


Figure 1. Research conceptual framework.

sample students in each class and asked for the questionnaires to be returned to the relevant departmental offices. Students returned 254 questionnaires, all of which were analysed, representing a response rate of 73.2%. According to the sample size formula put forward by Krejcie and Morgan (1970), the sampling error for these returned questionnaires was calculated to be 4.4%, which is acceptable for generalisation.

The content and face validity of the questionnaire was validated by an academic panel of agricultural extension and education experts. Moreover, a pilot test with 30 students was utilised to test the questionnaire and its reliability for the practical training quality scale. This was measured to be 0.98 out of 1.00 using the Cronbach alpha coefficient. The questionnaire had three parts: (1) personal characteristics of college students, (2) the practical training quality scale (25 items with the rating scale of none = zero, very low = one, low = two, moderate = three, high = four, and very high = five), and (3) influencing factors of improving the practical training quality in agriculture.

In this study, the practical training quality scale was measured according to the studies by Baugh (2003) and Daresh (2006), via reviewing predetermined standards, as well as the mission and its purpose. As a result, the practical lessons of the main syllabuses of agricultural units and the target of the projected in any of these lessons were used as standards. Subsequently, 25 items were extracted from the syllabuses, to be defined as the educational goals in order to assess the ability of college students in the practical lessons in the framework of quality indicators. Finally, the rating mean of this index was considered as a criterion to evaluate the practical training quality in agriculture. Due to the limitations of this study, it was not possible to assess the practical training quality through practical examinations in the field. Therefore, the self-judgement method was the only approach that the authors utilised for measuring the quality of practical training. The data were analysed with SPSS software, using descriptive statistics and factor analysis.

## Results and discussion

Taking students from both universities, 30.7% of the respondents were male, while 69.3% were female students. Their average age was 22.73 years. The birthplaces and living locations of over 90% of students were urban areas. Approximately 71% of students and 85.9% of their parents had no job experience in agriculture and none of them had formal qualifications in agriculture. This shows that most of the students had no rural origins or agricultural experience to support their field of study. This is an important issue because scientific and practical experience in agriculture can lead to exchange of these experiences with other students and increase their agricultural education effectiveness (Alibaygi et al., 2013). At the time of undertaking this research, the educational status of these undergraduate students indicated that the students had completed 119 out of 135 credits on average, with a grade point average of 14.89 out of 20.00.

The assessment of students' perception towards their undergraduate programme showed that 46.6% were satisfied with their field at high or very high levels and 37.2% at an average level, while only 16.2% had low interest in their field. The students' familiarity with their field at time of arrival at university showed that 30.6% had no

information regarding their discipline, 36.9% had poor or very poor knowledge, and only 6.7% had high or very high levels of information about their field.

The practical training quality or the students' acquired skills through the agricultural engineering lessons were assessed as shown in Table 1. Overall, none of the students rated their skills at high or very high levels. The highest scores of students' acquired skills were related to the Internet use ability (mean = 3.08 out of 5) and understanding different kinds of modern irrigation methods (mean = 2.57 out of 5), rated at a medium level. However, the skills rated as low or very low were the identification of the appropriate time and method for irrigation; producing horticultural crops (planting, growing, and harvesting); utilising Microsoft Office software; taking plant samples; soil sampling and recognising soil composition; tractor driving, servicing, and maintenance; and measuring the amount of water needed for plants. Other low-rated responses were the ability to work with agricultural machinery; the diagnosis of pest insects, weeds and plant diseases and controlling them; the reproduction of fruit trees, flowers, and vegetables; the measurement of various climatic parameters; the ability to work with a variety of pesticide sprayers; and the measurement of mineral and organic matter of soil.

The lowest students' skills were related to items such as the ability to work with surveying and mapping equipment; the diagnosis of pesticides for plant insects and diseases; the correct operation of milking livestock; the proper way to administer an injection and giving medicines to livestock and poultry; and commonly used methods to artificially inseminate cattle.

The aggregated score of these 25 items, showing the total skills of a respondent or the practical training quality index, was calculated to be between zero ( $25 \times 0 = 0$ ) and 125

**Table 1.** Skills or practical training quality items of agricultural students.

Items	Mean*	SD	Rank
Using from Internet (searching Web, sending electronic mail, etc.)	3.08	1.69	1
Understanding different kinds of modern irrigation methods	2.57	1.51	2
Identification of the appropriate time for irrigation	2.37	1.32	3
Ability of the best irrigation method recommendations	2.33	1.46	4
Planting, growing, and harvesting horticultural products	2.22	1.41	5
Utilising the Microsoft Office software package	2.12	1.80	6
Taking samples from different plant organs	2.09	1.38	7
Preparation of soil sampling, recognising soil composition	2.07	1.41	8
Driving, servicing, and maintenance of tractor	2.04	1.49	9
Measuring the amount of water needed for plants	2.02	1.35	1
Identification of weed	2.02	1.39	11
Ability to work with agricultural machineries	1.85	1.48	12
Diagnosis of plant diseases and controlling them	1.78	1.32	13
Reproduction of fruit trees, forest trees, flowers, and vegetables	1.78	1.40	14
Identification of important plant pests	1.73	1.40	15
Measurement of various climatic parameters	1.72	1.40	16
Ability to work with a variety of pesticide sprayers	1.70	1.46	17
Diagnosis of plant pathogenic factors	1.61	1.30	18
Measurement of mineral and organic matter of soil	1.59	1.34	19
Identification of herbicides and their application	1.55	1.45	20
Ability to work with surveying and mapping equipment	1.47	1.46	21
Diagnosis of pesticides for insects and plant diseases	1.37	1.17	22
Correct operation of milking livestock	0.94	1.29	23
Proper way to administer an injection, giving medicines to livestock and poultry	0.90	1.37	24
Commonly used methods to artificially inseminate cattle	0.68	1.10	25

\* Rating scale: (no = 0; very low = 1; low = 2; moderate = 3; high = 4; and very high = 5).

**Table 2.** Aggregated score of students' viewpoints towards the practical training quality.

Quality of education*	Frequency	Per cent	Cumulative per cent
Very low	71	32.6	32.6
Low	63	28.4	61.0
Moderate	80	36.7	97.7
High	5	2.3	100

Mean = 2.09, SD = 1.405.

\*Quality score: very low = 0–25, low = 26–50, moderate = 51–75, high = 76–100, and very high = 101–125.

(125 = 25 × 5), according to the above the six-item Likert-type scale and the number of items constituting this index. Then, the range of the practical training quality index or the level of students' skills was assessed through these obtained scores. As shown in Table 2, the practical training quality index was also classified according to the scores into five categories: very low quality (0–25), low quality (26–50), moderate quality (51–75), high quality (76–100), and very high quality (101–125). The concept of low quality was considered equal to very low acquired skills, while high quality was equal to high and very high levels of learned skills by agricultural students.

The aggregated scores show that 61% of respondents had an attitude that they had obtained low or very low skills from their universities; in other words, the quality of practical education was so poor that could not give them enough skills in agricultural disciplines. However, 36.7% and 2.3% of agricultural students had a moderate and high opinion respectively about the quality of these practical education courses. The average score of this index was calculated to be 2.09 out of 5, which shows both two universities have not been able to satisfy their students in terms of practical education.

The students were asked to identify the items that could affect their practical abilities. Their responses were prioritised according to the rating mean of each item (Table 3). The items with the highest priorities were related to the skills and interests of academic staff, providing courses that were attractive to students, the student–teacher interaction, involving instructors in the field, establishing a practical training centre on campus, supervised practical assignments for students, understanding students' occupational needs, defining behavioural objectives, and inter-organisational relationship between the university and other institutions. On the other hand, three items were assessed as being the factors with the lowest priority: suitable ratio of practical instructors to students, specifying instructors and students' duties in practical training courses, and the use of rural students' experience in the practical training.

An exploratory factor analysis technique, as a multivariate analysis method, was utilised to reduce the factors affecting the practical training quality to relevant components. The value of the Kaiser-Mayer-Olkin (KMO) measure of sampling was obtained to be 0.958 and the amount of Bartlett's test was calculated as 4404.751 ( $p = 0.000$ ). This verified the data suitability for the factor analysis test (Elliott & Woodward, 2007; Gray & Kinnear, 2012; Hooman & Asgari, 2005).

Using the Principle Component Analysis, three factors with an eigenvalue higher than 1.0 were constructed out of 25 variables, as three main abilities obtained through practical training and education. This extraction was based on the Kaiser rule suggesting dropping components with eigenvalues less than 1.0. The Varimax rotation technique was also utilised to identify the variables belonging to each factor and their better flexibility of interpretation. The criteria for relating variables to these three factors were



**Table 3.** Prioritising items affecting the improvement of practical ability.

Items	Mean*	SD	Rank
Academic staff/teachers' skills in providing practical education	4.00	1.23	1
Providing courses being attractive for students	3.83	1.37	2
Effective interaction between students and teachers	3.79	1.25	3
Teachers' interest in the practical training area	3.78	1.31	4
Active involvement of instructors in the field	3.78	1.39	5
Considering a specific location in campus as a practical training centre	3.64	1.55	6
Assignment of specialised practical activities to students under the supervision of relevant teachers	3.61	1.39	7
Teachers' familiarity with students' occupational needs	3.57	1.37	8
Expression of the goals by instructors before the start of practical training	3.56	1.32	9
Proper relationship between the university and the institutions providing agricultural services	3.55	1.51	10
Learning both theoretical subjects and practical activities	3.53	1.37	11
Clarity and transparency of practical training objectives	3.52	1.34	12
Providing required facilities, resources, and inputs for practical training in the field	3.52	1.46	13
Positive attitude of students towards practical education and its importance	3.51	1.30	14
Sufficient time for practical lessons	3.51	1.49	15
Identification of students' practical needs and the implementation of relevant educational programmes	3.48	1.42	16
Accessibility of teachers to provide required advice to learners	3.48	1.43	17
Courses' contents being in consistent with academic abilities and skills needed by students	3.47	1.43	18
Observance of the educational syllabus in practical courses of agriculture	3.45	1.44	19
Providing practical learning opportunities for students through private and commercial agricultural institutions	3.45	1.54	20
Inviting experienced producers to attend the practical training area	3.44	1.72	21
Effective participation of students in the practical training	3.42	1.29	22
Suitable ratio of practical instructors to students	3.36	1.40	23
Specifying instructors and students' duties in the practical training	3.35	1.41	24
Use of rural students' experience in the practical training	2.86	1.45	25

\*Rating scale: (no = 0; very low = 1; low = 2; moderate = 3; high = 4; and very high = 5).

**Table 4.** Extracted factors with their eigenvalues and variance per cent.

Factors	Eigenvalue	Variance per cent	Cumulative per cent
Factor 1	7.48	29.90	29.90
Factor 2	7.01	28.04	57.94
Factor 3	2.91	11.65	69.59
Total	17.40	69.59	

factor loadings of each variable higher than 0.50. According to [Table 4](#), these three factors explained 69.59% of the variation related to 25 items, including 29.90% for factor 1, and 28.04% and 11.65% of variance for factors 2 and 3, respectively.

As illustrated in [Table 5](#), the results revealed that 12 variables were associated to the first factor, nine variables related to the second factor, and three variables associated to the third factor. The first factor was named as active participation of instructors, consisting of variables such as considering a specific location on campus as a practical training centre, effective presence of instructors in farms, sufficient time for practical courses, suitable ratio of practical instructors to students, and accessibility of teachers to provide required advice to learners. Sadeghi et al. (2008), Movahhed Mohammadi et al. (2008), Monfared (2007), Amini et al. (2002), Fatehifar (1998), and Harrison and Kennedy (1996) have also identified these items as influencing factors in increasing the practical training quality.

The second factor was named as effective organisational communication. It contained items such as more interaction between students and instructors, the assignment



**Table 5.** Factor loadings and variables related to each factor-after-factor rotation.

Variables	Factor loading	Factor name
Considering a specific location in campus as a practical training centre	0.593	Factor 1: Active participation of teachers
Active involvement of instructors in the field	0.748	
Sufficient time for practical lessons	0.785	
Suitable ratio of practical instructors to students	0.769	
Accessibility of teachers to provide required advice to learners	0.770	
Courses' contents being in consistent with academic abilities and skills needed by students	0.798	
Providing courses being attractive for students	0.543	
Teachers' interest in the practical training area	0.688	
Teachers' skills in providing practical education	0.610	
Identification of students' practical needs and the implementation of relevant educational programmes	0.618	
Inviting experienced producers to attend the practical training area	0.621	Factor 2: Effective organisational communication
Observance of the educational syllabus in practical courses of agriculture	0.615	
Effective interaction between students and faculties	0.600	
Assignment of specialised practical activities to students under the supervision of relevant teachers	0.707	
Teachers' familiarity with occupational needs of students	0.733	
Proper relationship between the university and the institutions providing agricultural services	0.745	
Providing practical learning opportunities for students through private and commercial agricultural institutions	0.808	
Clarity and transparency of practical training objectives	0.778	
Expression of the goals by instructors before the start of practical training	0.537	
Providing required facilities, resources, and inputs for practical training in the field	0.706	
Specifying instructors and students' duties in the practical training	0.654	Factor 3: Active participation of students
Use of rural students' experience in the practical training	0.846	
Effective participation of students in the practical training	0.729	
Learning both theoretical subjects and practical activities	0.523	

of specialised practical activities to students under the supervision of the relevant instructors, teachers' familiarity with occupational needs of students, proper relationship between the university and the institutions providing agricultural services, and providing practical learning opportunities for students through private and commercial agricultural institutions. Tse et al. (2008), Holmes (2006), Navarro (2004), Fatehifar (1998) and Harrison and Kennedy (1996) also identified this construct as an influencing factor for increasing the practical training quality. The third factor named as active participation of students consisted of variables such as rural students experience in the practical training, effective participation of students in the practical training, and learning both theoretical subjects and practical activities. This result supports the studies of Monfared (2007), Yaghobi et al. (2006), Baugh (2003), Daresh (2006), and Henry et al. (2001).

## Conclusions and recommendations

The influencing factors on the practical training quality can be categorised into three main groups. The active participation of instructors or teachers in the process of the practical training is the first important factor for enhancing the practical training quality. Hence, it is necessary to pay attention to issues such as considering specific

locations in a university campus as a practical training centre, effective involvement of instructors in the field, course time sufficiency for practical lessons, suitable ratio of practical instructors to students, and the accessibility of teachers to provide required advice to learners. It is also crucial to consider training courses' contents being in consistent with academic abilities and skills needed by students, provide courses being attractive for students, and invite skilful producers to present their experiences in the practical training courses. Developing the practical training programmes also depends on teachers' intentions, motivation, and skills to participate in this type of training. Because many academics have been involved in laboratory-based experimental research and international academic paper publishing, they may not be interested in 'getting their boots muddy' for on-farm research, to do action-oriented rural studies, and become involved in the practical training programmes. Moreover, it is essential to identify students' practical needs, implement relevant educational programmes, and observe the educational syllabus in practical courses of agriculture. Furthermore, the reconsideration of educational evaluation of agricultural students through their active participation in practice can encourage both students and universities to move towards the practical training courses. In other words, practical use of information provided through courses can be the criterion of evaluation, rather than testing students' memories by exam sheets.

In addition, the effective management, particularly through policy making, developing the required programmes, and implementing them, is necessary to enhance the quality of these training programmes. Although all the educational systems' components have important roles in achieving the goals of agricultural higher education, management acts as the architect of these systems through the effective and intellectual use and integration of these components. In this context, university professors can play multiple roles, such as policy makers, programme managers, coordinators, learners, teachers, facilitators, and evaluators, in agricultural higher education systems to sustain the practical training programmes in terms of efficiency, efficacy, and effectiveness of relevant activities.

Effective communication inside and outside an institution is the second significant factor affecting the quality of the practical education and training courses. The internal organisational factors include issues such as high levels of interaction between students and teachers, the assignment of specialised practical activities to students under the supervision of relevant teachers, familiarity with the occupational needs of students, the clarity and transparency of practical education and training objectives, and stating the goals by instructors before the start of these courses. It is also important to provide the required facilities, resources, and inputs for these courses in the field and to specify the tasks of instructors and students. The external institutional factors comprise effective inter-organisational communications between a university and public and private agricultural service provider institutions, and providing practical learning opportunities for students through these institutions. This means that effective internal and external organisational communication is necessary for transferring required skills and experiences to students, who are to be responsible for the agricultural sector in the near future. Therefore, it is essential to enhance the quality of practical education and training courses through effective relationship among students, teachers, university

authorities, officials and experts of the ministry of agriculture, the producers of agricultural sector, and manufacturers with short- and long-term plans in required subjects.

It is essential to define the necessary conditions to carry out part-time internship in private and public agricultural institutions and farming communities, and at the same time, the students should obtain theoretical knowledge in the subjects taught by their agricultural faculties. This depends on how inter-organisational relationships have been coordinated. Agricultural practical education and training programmes should be developed to meet the needs of labour market: agricultural research and extension organisations, and farming communities. Moreover, students should be motivated to learn practically through providing employment opportunities, financial support of agricultural graduates by granting low-interest bank credits and loans to invest in agricultural occupations, and continuing education opportunities. Universities should be in direct communication with relevant institutions and agricultural research centres and apply specialists' and skilful farmers' views in the reform of agricultural higher education programmes. Organising professional committees in different fields of agriculture can also facilitate the revision of practical courses and their syllabus.

The active and meaningful participation of students is the third essential aspect influencing the quality of practical education and training courses. This factor consists of three variables: the involvement of rural students' experience, effective participation of these students in the practical courses, and learning both theoretical subjects and practical activities equally and co-ordinately. From a pragmatic perspective, agricultural knowledge is learned through practice, and the students with a rural or agricultural background obtain this knowledge through practice and experience acquired from their parents' farms. This can be a potential opportunity to invite them to present some of their valuable experiences to their classmates and friends under the supervision of their instructors. Through an interrelationship between rural and urban students, rural students can share their practical knowledge with their peers.

The actual and experiential learning depends on engaging in a job or profession practically, so students must be ready to work in the real-world situation of an occupation. Neither male nor female students must be worried about getting their clothes and boots dirty when they are to work in agricultural environments. These situations can provide an effective learning environment for students, when they participate in the practical education and training courses. This can lead to the accommodation and assimilation of practical activities with theoretical knowledge, by which the student may test and compare their learning and identify their learning strengths and weaknesses. Referring to the experiential learning theory, Kolb and Kolb (2012) have stated that through this process, the students can construct new knowledge from their experiences.

Agricultural students need to become familiar with modern machinery and agricultural technologies and they should know how to use this equipment in their agricultural faculties before graduating. To meet this demand, universities need appropriate facilities to equip educational farms, laboratories, and workshops for practical courses prior to the enrolment of students.

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