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# An Investigation of Self-Directed Learning Skills among the Iranian Agricultural Students (Case of Agricultural College, Tarbiat Modares University)

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## ABSTRACT

**The readiness for self-directed learning among the students and its role in improving life-long learning skills has been emphasized recently. The present descriptive study aimed at analyzing the self-directed learning skills possessed by the students of agriculture at Tarbiat Modares University, Tehran, Iran (N= 414). As far as methodological design is concerned, the study has utilized Krejcie and Morgan's (1970) table, and stratified random sampling technique, through which 201 students were selected as sample (n= 201). From this, 193 students filled and returned the research instrument (Return rate= 96%). A set of open ended questionnaires was developed, which was considered to be the main tool for the collection of required data. This prepared questionnaire was validated by a panel of experts of agricultural extension and education, subsequently; its reliability was also checked and confirmed by Cronbach's Alpha coefficient (0.78-0.83). The results showed that the students could perceive the range of 'moderate to high' for all dimensions underlying self-directed learning skills. Based upon another part of results, the students with different educational levels, majors and grade point averages had different self-directed learning skills. It can be concluded that readiness for self-directed learning is a crucial factor for all students and should be taken into consideration in education planning with regard to each field. It is necessary to state that the educational system seeks to develop such skills to promote self-management, self-monitoring, and self-motivating as well as SDL skills among the students.**

**Keywords:** Agricultural students, Iran, Life-long learning, Self-Directed Learning (SDL).

## INTRODUCTION

In the era of the technological advancements in agriculture, a body of traditional knowledge and skills can no longer ensure success, but the ability to learn new techniques and develop new skills can guarantee it (Kordneqabi, 1999). Recent shifts in education due to the appearance of knowledge-based economies have resulted in an ever-increasing and unprecedented pressure on universities to deliver employable graduates (Alibaygi *et al.,* 2013). Thus, The massive amplification in 'body of knowledge' and advancement of technological innovation have changed the status of information making it ephemeral and temporary. For that reason, only well-equipped students are capable to deal with this new challenging circumstance whilenot

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conveying a body of knowledge. Thus, strategically, it is necessary to help students out with all possible means to become life-long learners (Poorsafar *et al.*, 2004).

We are living in an interdependent world where a citizen in any one country is compelled to learn about other countries and nations. To be successful in this diverse society, one is in need of skills, knowledge, and sensitivity (Namdar and Pezeshki Rad, 2010). The necessity of readiness of students for lifelong learning has made Self-Directed Learning (SDL) an obligation (Cheng *et al.,* 2010). It goes without saying that when the students enter such an environment, wherein, they are forced to update their knowledge to achieve success, they could simultaneously attain SDL skills (Roberson, 2005). Therefore, it is stated that the development of SDL skills is a major goal in any education system and it is a crucial asset in this 21$^{th}$ century (Williamson, 2007; Murray and Lawrence, 2000).

In order to provide better learning experiences for adults in the future, agricultural educators must understand to what extent students and adult learners are satisfied with their previous educational experiences (Pezeshki Rad *et al.*, 2009). In agriculture and its related subfields, the ability to direct one's learning and experiences is essential for achieving success. In this regard, improving the students' SDL skills has become a major task of every responsible educatorsince the reality is that the gained knowledge of a considerable number of students (of agriculture, for instance) becomes obsolete by the time when they start working in the field. SDL enables students to constantly upgrade their knowledge even long after graduation (Cleary *et al.*, 2005). In fact, self-directedness of the students of agriculture has become so important presently, that the capability of the educators and instructors in imparting training to the self directed learners and making assessment of the potential of agricultural educational programs become a crucial resource (Medical School Objectives Writing Group, 1999). To achieve this competence, it is essential that agricultural higher education institutions pay enough attention to providing the students with a friendly environment for the development of SDL skills; this favorable learning environment is highly desired because compared to other educational institutions, the students of higher education institutions are more concerned about their/her abilities (Nadi and Sajjadian, 2011).

SDL skills are internally related to life-long learning. In fact, self-directedness and its related skills are a prerequisite to life-long learning. In the literature, SDL has been defined in various ways; the most influential definition, however, has been proposed by Knowles (1975) who defined SDL as a procedure, where learners, with or without the help of others, learn, adjust their learning goals, find resources, take action, and carry out necessary evaluations (Arasteh and Mahmudi Rad, 2003). This self-directedness can also be defined as self-management (including the management of social environment, resources, and functions) and self-evaluation (with which a learner is able to adjust, evaluate, and revise his/her approaches) (Arasteh and Mahmudi Rad, 2003). Further, the students' readiness for SDL has been defined as the degree of having the attitudes, skills, and personal traits, all considered to be prerequisites to SDL (Fisher and King, 2001).

Different models for evaluating SDL skills are being utilized by many academicians and researchers. Williamson's (2007) model is the most popular and widely used model, which has drawn more attention of many researchers. This self-evaluative instrument originally included 40 statements with more statements to the original model added today. Self-directedness, according to this model, is evaluated with five dimensions as follows:

- Awareness: the ability to detect the need for learning;
- Learning strategies: strategies that one employs in different situations to develop one's learning;





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- Learning activities: various activities that individuals employ in their learning;
- Evaluation: the ability to evaluate one's learning in different situations and gaining feedback from learning;
- Communication skills: the ability to communicate with other people for expanding the volume of learning.

Many researchers have utilized the above mentioned model as the crucial foundation and technical framework for their researches. Candy (1991) believes that SDL depends especially on one's scientific course, thinking method, skills, and knowledge, which can be developed by planned educational interventions. This intervention pays attention to the differences among the individual students. Many scientific studies on 'medical and dental students' showed that their learning styles perfectly depended on their 'age' and their 'pre-university education' (Long, 2000; Fisher and King, 2010).

The study results of the dental students, adult schoolers, and high schoolers revealed that the potential for SDL of the students between 30 to 50 years of age is more than the students of the younger age group. This study claims that there is an evolution in the potential for SDL with regard to the age. In other words, readiness for SDL significantly increases from adolescence to the age of 50 for both genders. Based on another part of results, there were no significant differences between SDL skills of male and female students, but the interaction between gender and age implied that younger females are more likely to have higher potentials (Reio, 2005). Loyens *et al.* (2008) found that self-directedness and self-adjustment in learning are complementary procedures, in which "self" plays the crucial role. Their findings also revealed that the problem-oriented education could lead to developing SDL skills (Loyens *et al.*, 2008). While reviewing their study, Maung *et al.* (2007) found that the pre-university education, learning styles and university resources could positively affect self-directedness learning of the students of higher education. In conjunction with these studies, Bolhuis (2003) confirmed that process-oriented education, cultural and social experiences, background knowledge, and emotional dimensions of learning are the crucial factors that contribute to the development of SDL.

The sample study conducted by the US Commission (which has a major goal to provide the students with best possible instructions and practices) on Change and Innovation in Dental Education reveals that in order to enhance the students' mental capacity, a set of 'specialized performances' needs to be developed comprising critical thinking, problem solving, and SDL. It is believed that this special performance itself could make the students to be specialists with great expertise and it enables them to continue the learning process even long after graduation (Hendricson *et al.*, 2006). Moreover, the research findings of Iranian scholars Nadi and Sajjadian (2011) clearly revealed that there was a direct relationship between readiness for SDL and Grade Point Average (GPA). Based on the other part of results, there were significant differences between demographic characteristics and SDL skills. Through the comprehensive literature review, it can be concluded that, there has been no study conducted on the issue of SDL in the Iranian agricultural students. Therefore, the major goal of the study is to investigate SDL skills among the graduate students of agriculture at Tarbiat Modares University. Consequently, the followings are the crucial objectives of the study:

Describing (critical analyzing) the students' level of SDL skills,

Comparing the SDL skills of the students with different personal and educational demographics.

## MATERIALS AND METHODS

The research method was descriptive and causal comparative and it was carried out through survey method. The population consisted of all graduate students of





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agriculture at Tarbiat Modares University who had started their studies any year from 2007 to 2010 (N= 414). Using Krejcie and Morgan's (1970) table and stratified random sampling technique 201 students were selected as sample (n= 201). From them, 193 students filled and returned the research instrument (Return rate= 96%) which was administrated via paper-pencil form. The questionnaire was the main tool for data collection. This questionnaire consisted of two main parts: Parts I and II. In the first part (Part I) Williamson's (2001) inventory was employed to assess the students' SDL skills. This Part I consisted of 60 items including awareness (12 items), learning strategies (12 items), learning activities (12 items), evaluation (12 items), and communication skills (12 items). All of these items ranged on a five-point Likert scale (1: Never; 2: Rarely; 3: Sometimes; 4: Often, and 5: Always).

The second part of the questionnaire measured student's personal and professional characteristics, including gender, educational level, major, year of entrance to the university and GPA. The reliability of the questionnaire was confirmed by calculating Cronbach's Alpha coefficient, which ranged from 0.78 to 0.83 (Table 1). The face and content validity of the questionnaire was verified by a panel of seven agricultural extension and education experts. Because the English version of Williamson's (2001) questionnaire was used, in order to increase the validity of the questionnaire the original version was translated to Farsi, then again to English to be compared with the original English version by a panel of seven agricultural extension and education experts who provided comments to make necessary changes. The collected data were analyzed by utilizing SPSS Win19. For the first objective of the research, which was related to the describing the personal and educational characteristics of the students, descriptive statistics (like frequency, percentage and mean) were used. To meet the second research objective, which was about describing the students' level of SDL skills, a descriptive statistical method was used to compute means, standard deviations and Coefficients of Variation (CV) for SDL dimensions. *CV* was used to rank the dimensions and items of each dimension. To determine the level of participants' responses to each item based on the five point Likert-type scale, the following classifications were used as per the directed techniques of Khasawneh *et al.* 2007, which includes the classified ranges like 1–1.99: Low; 2–2.99: Low-to moderate; 3–3.99: Moderate-to-high, 4–5: High-to-very high.

To reach out to the third research objective related to the significant differences in SDL skills, independent *t*-tests and analysis of variance (ANOVA) based on demographic characteristics of the students including their gender, educational level, GPA and year of entrance to the university, were used for the statistical computation. However, one-way analysis of variance was used to determine whether there are differences between the students with different fields of study and GPA. Finally, a Kruskal-Wallis nonparametric test was used to test whether there are differences between SDL skills of the students with different entrance years to the university.

**Table 1.** The dimensions and values for Cronbach's Alpha in different sections of the questionnaire.

| Dimension | Number of items | Cronbach's Alpha |
|---|---|---|
| Awareness | 12 | 0.82 |
| Learning strategies | 12 | 0.78 |
| Learning activities | 12 | 0.80 |
| Evaluation | 12 | 0.83 |
| Communication skills | 12 | 0.81 |
| Total | 60 | 0.81 |





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## RESULTS AND DISCUSSION

### Demographic Characteristics of the Respondents

The sample distribution was 109 males (56.5%) and 84 females (43.5%). There were 94 M.Sc. (48.7%) and 99 PhD. students (51.3%). As far as the majority of the respondents is concerned, 30 students (15.1%) were studying water and soil, 28 students (14.5%) were studying economics and extension, 28 students (14.5%) were studying agricultural machinery and food industry, while 57 students (29.5%) were from farm and horticulture sciences, 23 students (11.9%) were majoring livestock and 27 students (14.1%) were studying plant protection. Most of the respondents had entered to the university in the year of 2010. Out of 193 respondents, 27 (11.9%) had GPA within the range of 14-16, 124 (66.3%) were between16.01-18, while the remaining 38 (19.7%) had GPAs within the range of 18.01-20 (where 20 is the maximum limit). The mean of the student's age was 27.35 years, ranging from 23 to 42, with a standard deviation of 3.37. (Table2)

**Table 3.** Overall ranking of self-directed learning dimensions (n= 193).

| Dimension | Mean[a] | SD | Rank |
|---|---|---|---|
| Communication skills | 3.79 | 0.87 | 1 |
| Learning strategies | 3.77 | 0.87 | 2 |
| Evaluation | 3.73 | 0.88 | 3 |
| Awareness | 3.72 | 0.89 | 4 |
| Learning activities | 3.69 | 0.89 | 5 |
| Total | 3.74 | 0.88 | - |

[a] 1= Never; 2= Rarely; 3= Sometimes; 4= Often, 5= Always.

### Description of SDL Skills of the Students

The first research objective was to describe the students' level of SDL skills. To attain the objective, means and standard deviations were used. The following Table 3 shows that the lowest mean for the SDL dimensions is 3.69 for learning activities and the highest mean is 3.79 for communication skills. The overall mean score for all dimensions is 3.74. Based on the Khasawneh *et al.* (2007) classification,

**Table 2.** Personal and professional characteristics of the respondents (n= 193).

| Variable | Sub-variables | Frequency | Percentage |
|---|---|---|---|
| Gender | Female | 84 | 43.5 |
| | Male | 109 | 56.5 |
| Educational level | Master | 94 | 48.7 |
| | Ph.D. | 99 | 51.3 |
| Major | Water and Soil Sciences | 30 | 15.5 |
| | Agricultural Economics and Extension | 28 | 14.5 |
| | Agricultural Machinery and food Industry | 28 | 14.5 |
| | Farm and horticulture sciences | 57 | 29.5 |
| | Livestock | 23 | 11.9 |
| | Plant protection | 27 | 14.1 |
| Entrance year to the university | 2007 | 19 | 9.8 |
| | 2008 | 20 | 10.4 |
| | 2009 | 23 | 11.9 |
| | 2010 | 131 | 67.9 |
| GPA | 14- 16 | 27 | 11.9 |
| | 16.01 – 18 | 124 | 66.3 |
| | 18.01 – 20 | 38 | 19.7 |





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the students' SDL skills status (in whole) and for each of the dimensions is moderate-to high.

Means, standard deviations and ranks of SDL skills items for each dimension are shown in Table 4 and discussed in the following section.

For the first SDL skill, in the dimension of communication skills, there were 12 items. The mean values, standard deviations and ranks for students' responses are presented in Table 4. The overall mean score for all items was 3.79, indicating moderate-to-high having this skill by the students. This result is in line with the results of Nadi and Sajadian (2011). While the item "communication skill with others helps me to broaden my perspectives with regard to learning plan" had the highest rank (Mean= 4.07), the item entitled "learning in a new cultural environment is challenging" had the lowest rank (Mean= 3.44).

The means of the items regarding learning strategies ranged between 3.51 and 4.01. The highest mean was scored by item 13 "*I believe interactive instruction is much more effective than lecturing*". The lowest mean corresponded item 24 "*I plan my learning with an eye to the overall pattern that it will bring about through my life*". The overall rating of 12 items was 3.77, indicating moderate-to-high perception of this dimension. This result is consistent with previous researches Nadi *et al.* (2011), Long (2000), Williamson (2007) and Song and Hill (2007).

Participants responded to 12 items within the category of evaluation. The overall mean value for all items was 3.73, indicating moderate- to-high perception of this dimension by the students. This result is not in line with the results of other studies conducted by Fisher and King (2010), but it mostly follow the line with Nadi and Sajadian (2011) and Petrides (2002). While item 25 namely "*Others' successes inspire me*" had the highest rank (Mean= 4.03), the item 36 such as "I evaluate myself before receiving feedback from the instructor" had the lowest rank (Mean= 3.34).

The overall mean score for all items of Awareness was 3.73, indicating moderate-to-high having this dimension by the students. This result is consistent with previous researches conducted by Arasteh and Mahmudi Rad (2003), Nadi *et al.* (2011) and Loyens *et al.* (2008). While item "*I am responsible for identifying my weaknesses*" had the highest rank (Mean= 4.07), the item "I think I can learn independent of instructors" had the lowest tank (3.18).

Finally, with regard to the fifth SDL skill, learning activities, mean of 12 items was 3.69, indicating moderate-to-high having this dimension in the university environment. This entire finding is consistent with previous researches of Loyens *et al.* (2008) and Reio (2010). As shown in Table 4, the highest rank was for item 49 "*I enjoy learning about things that are not part of the course*" (Mean= 4.05) while, the item 60 "*I review new lessons*" had the lowest rank (Mean= 3.30).

The overall rank of all the items of SDL skills is also shown in Table 4. Based on the results, item 1 "*Communicating with others helps me to broaden my perspectives with regard to learning plans*" from communication skills dimension with a mean of 4.07 is in the lead and item 48 "*I think I can learn independent of instructors*" from awareness dimension with mean 3.18 had the lowest rank.

## Self-directed Learning Skills and Demographics

The third research objective was to determine whether there were significant differences in the students' perceptions about the SDL dimensions based on gender, educational level, major, GPA and year of entrance to the university. A *t*-test for independent samples was used to examine the difference between SDL skills of the male and female, and MSc. and PhD. students. Table 9 shows that there were no significant differences in SDL skills of male and female respondents. The result is





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**Table 4.** Means, standard deviations and ranks of SDL skills items (n= 193).

| Row | Dimensions | Items | Mean[a] | SD | Rank in each dimension | Overall rank |
|---|---|---|---|---|---|---|
| 1 | Communication skills | Communicating with others helps me to broaden my perspectives with regard to learning plans | 4.07 | 0.76 | 1 | 1 |
| 2 | | I can communicate with others well | 3.99 | 0.88 | 2 | 8 |
| 3 | | I can identify my role in a group | 3.92 | 0.78 | 3 | 10 |
| 4 | | I need interdisciplinary links to maintain my social balance | 3.90 | 0.82 | 4 | 14 |
| 5 | | I need to share my information with others | 3.84 | 0.89 | 5 | 22 |
| 6 | | I can express my views effectively in writing | 3.76 | 0.83 | 6 | 27 |
| 7 | | Group work is easy for me | 3.76 | 1.02 | 7 | 28 |
| 8 | | I am able to make good verbal communication | 3.75 | 0.94 | 8 | 30 |
| 9 | | I make use of any opportunities I come across | 3.73 | 0.92 | 9 | 33 |
| 10 | | I intend to learn about cultures which I am involved with | 3.70 | 0.88 | 10 | 35 |
| 11 | | I am able to express my ideas freely anf effectively in writing | 3.67 | 0.93 | 11 | 39 |
| 12 | | Learning in a new cultural environment is challenging | 3.44 | 0.99 | 12 | 56 |
| | | Dimension total | 3.79 | 0.87 | - | - |
| 13 | Learning strategies | I believe interactive instruction is much more effective than lecturing | 4.01 | 0.93 | 1 | 7 |
| 14 | | I believe simulation is an effective method of learning/teaching | 3.92 | 0.92 | 2 | 11 |
| 15 | | Internal motivation pushes me toward learning more | 3.91 | 0.95 | 3 | 13 |
| 16 | | I believe case study is an effective method of learning | 3.88 | 0.85 | 4 | 18 |
| 17 | | I believe concept mapping is an effective method of learning | 3.88 | 0.86 | 5 | 19 |
| 18 | | I can make decisions regarding my learning strategies by myself | 3.84 | 0.77 | 6 | 21 |
| 19 | | I believe learning from peers is an effective method of learning | 3.74 | 0.99 | 7 | 32 |
| 20 | | New interactive educational technology facilitates my learning | 3.67 | 0.81 | 8 | 38 |
| 21 | | I participate in group discussions | 3.64 | 1.00 | 9 | 44 |
| 22 | | I believe role-playing is an effective method of learning | 3.62 | 0.83 | 10 | 46 |
| 23 | | I look at problems as challenges on the way to learning | 3.56 | 0.78 | 11 | 52 |
| 24 | | I plan my learning with an eye to the overall pattern that it will bring about through my life | 3.51 | 0.87 | 12 | 55 |
| | | Dimension total | 3.77 | 0.88 | - | - |
| 25 | Evaluation | Others' successes inspire me | 4.03 | 0.95 | 1 | 6 |
| 26 | | I take criticisms seriously to improve my learning | 3.89 | 0.91 | 2 | 15 |
| 27 | | I improve my learning by identifying my success and my failure | 3.88 | 0.82 | 3 | 17 |
| 28 | | I am grateful to my friends when they evaluate my performance | 3.87 | 0.93 | 4 | 20 |
| 29 | | I can identify my strengths and my weaknesses | 3.76 | 0.80 | 5 | 25 |
| 30 | | I can monitor my learning | 3.76 | 0.81 | 6 | 26 |
| 31 | | I evaluate to what point I have achieved my learning goals | 3.70 | 0.84 | 7 | 34 |
| 332 | | I always try to develop activities that I have previously employed | 3.63 | 0.92 | 8 | 45 |
| 33 | | I review my past work to evaluate my success in learning | 3.60 | 0.95 | 9 | 49 |
| 34 | | I review my learning activities and take feedback | 3.58 | .087 | 10 | 51 |
| 35 | | Learning new things is challenging to me | 3.56 | 0.99 | 11 | 53 |
| 36 | | I evaluate myself before receiving feedback from the instructor | 3.34 | 0.85 | 12 | 57 |
| | | Dimension total | 3.73 | 0.88 | - | - |
| 37 | | am responsible for identifying my weaknesses | 4.07 | 0.88 | 1 | 2 |
| 38 | | I am responsible for my learning | 4.05 | 0.89 | 2 | 3.5 |
| 39 | | I give myself a rest during long sessions of study or research | 4.03 | 0.91 | 3 | 5 |
| 40 | | I am able to keep motivated | 3.91 | 0.93 | 4 | 12 |
| 41 | | I link my experiences to new information by myself | 3.82 | 0.81 | 5 | 23 |
| 42 | | I identify my learning needs by myself | 3.75 | 0.78 | 6 | 29 |
| 43 | | I need to separate my learning activities from my daily activities | 3.75 | 0.96 | 7 | 31 |
| 44 | | I see teachers as facilitators of learning, not providers of information | 3.67 | 0.99 | 8 | 40 |
| 45 | | I am able to plan and adjust my learning goals | 3.66 | 0.83 | 9 | 41 |
| 46 | | I am able to find the best methods of learning by myself | 3.64 | 0.82 | 10 | 43 |
| 47 | | I update my resources | 3.29 | 0.98 | 11 | 59 |
| 48 | | I think I can learn independent of instructors | 3.18 | 1.00 | 12 | 60 |
| | | Dimension total | 3.73 | 0.89 | - | - |

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**Continued of Table 4.** Means, standard deviations and ranks of SDL skills items (n= 193).

| Row | Dimensions | Items | Mean[a] | SD | Rank in each dimension | Overall rank |
|---|---|---|---|---|---|---|
| 49 | learning activities | I enjoy learning about things that are not part of the course | 4.05 | 0.89 | 1 | 3.5 |
| 50 | | I prefer to have a rest between every two learning activities | 3.96 | 0.77 | 2 | 9 |
| 51 | | I can identify important points when reading a book or paper | 3.89 | 0.92 | 3 | 16 |
| 52 | | My concentration increases when I am reading a complicated subject | 3.77 | 0.90 | 4 | 24 |
| 53 | | I keep my marginal notes and summaries | 3.69 | 1.00 | 5 | 36 |
| 54 | | I accept others' views | 3.68 | 0.83 | 6 | 37 |
| 55 | | I use concept mapping because it is an effective method for managing a wide range of information | 3.65 | 0.98 | 7 | 42 |
| 56 | | I can analyze new ideas, information, or experiences | 3.62 | 0.87 | 8 | 47 |
| 57 | | I ask appropriate and relevant question in learning sessions | 3.60 | 0.90 | 9 | 48 |
| 58 | | I can use information technology effectively | 3.59 | 0.86 | 10 | 50 |
| 59 | | I am able to link my knowledge to my work | 3.54 | 0.83 | 11 | 54 |
| 60 | | I review new lessons | 3.30 | 0.99 | 12 | 58 |
| | | Dimension total | 3.69 | 0.89 | - | - |
| | | Total | 3.74 | 0.88 | - | - |

[a] 1= Never; 2= Rarely; 3= Sometimes; 4= Often, 5= Always.

consistent with the results of Maung *et al.* (2007), Loyens *et al.* (2008), and Reio (2010). However, it is not consistent with those of Nadi and Sjjadian (2011). It clearly indicates that male and female students have the same level of SDL skills. However, there were significant differences in SDL skills dimensions of MSc. and Ph.D students. This result is consistent with those of Nadi and Sajjadian (2011), Loyens *et al.* (2008), Reio (2010) and Prabjandee and Inthachot (2013).

Based on the mean values, PhD. students (M= 225.05) have more SDL skills compared to M.Sc students. The value of Cohen's dshows that the size of the groups (MSc. and PhD.) did not produce any kind of affects to the results (as represented in Table 5 below).

Having utilized a one-way analysis of variance (as illustrated in the Table 6), it is found that there were significant differences between students with different 'major' and 'GPA'. As far as the SDL of different major of the students is concerned, it is evident that the livestock students had the lowest SDL skills (M= 212.34), on the other hand, the students of economics and extension (M= 230.64), the students of plant protection (M= 230.041), and water and soil (M= 228.36) had the highest levels of SDL skills, respectively. This finding is aligned with Candy (1991), Reio (2005), and Maung (2007), but it takes a separate line from Nadi and Sajjadian (2011). The results, also, showed that there were significant differences between SDL skills of the students with different GPA. This result is aligned with results of Safavi *et al.* (2010), who investigated learning methods and self-directedness in students of nursery, and Nadi *et al.* (2011). In this regard, the important point to be mentioned here is that the students possessing higher GPAs had more SDL skills. The results of the *LSD* test showed that students with GPAs between 18.01 and 20 (M= 231.34) had higher SDL skills than the other two groups.

As the number of students in some groups was lower than 25, for instance, the SDL skills of the students of different entrance years to the university, the Kruskal-Wallis non-parametric test was employed. The results showed that there were no significant differences between the students. In other words, students with different entrance years have the same SDL skills (Table 7). This result confirms the results of Loyens *et al.* (2008), Reio (2010), Muang *et al.* (2007) and Soltani Arabshahi and Naeimi (2013.





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**Table 5.** Comparison of students' SDL skills based on their gender and educational level (n=193).

| Variable | | n | Mean | SD | *t* | Sig | Cohen's d |
|---|---|---|---|---|---|---|---|
| Gender | Female | 84 | 223.88 | 25.36 | 0.758 | 0.309 | - |
| | Male | 109 | 225.04 | 26.44 | | | |
| Educational level | MSc | 94 | 222.60 | 25.63 | 0.778* | 0.032 | 0.094 |
| | PhD | 99 | 225.05 | 26.03 | | | |

* $P \leq 0.05$.

**Table 6.** Comparison of students' SDL skills based on their major and GPA (n= 193).

| Variable | Level | n | Mean | SD | df | *F* | LSD |
|---|---|---|---|---|---|---|---|
| Major | Water and Soil (1) | 30 | 228.36 | 3.91 | 5 | 1.88* | 5< 1, 2, 6 |
| | Agricultural Economics and Extension (2) | 28 | 230.64 | 5.22 | | | |
| | Agricultural Machinery and Food Industry (3) | 28 | 221.01 | 5.07 | | | |
| | Farm and Horticulture Sciences (4) | 57 | 223.59 | 3.19 | | | |
| | Livestock (5) | 23 | 212.34 | 6.15 | | | |
| | Plant Protection (6) | 27 | 230.01 | 4.79 | | | |
| GPA | 14- 16 (1) | 27 | 218.60 | 22.39 | 2 | 2.03** | 3> 1, 2 |
| | 16.01 – 18 (2) | 124 | 223.96 | 26.15 | | | |
| | 18.01 – 20 (3) | 38 | 231.34 | 23.74 | | | |

* $P \leq 0.05$, ** $P \leq 0.05$.

**Table 7.** Comparison of students' SDL skills based on their entrance year (n= 193).

| Variable | | N | Ranking mean | df | *Chi*-square | Sig |
|---|---|---|---|---|---|---|
| Entrance year | 2007 | 19 | 74.82 | 3 | 4.212 | 0.239 |
| | 2008 | 20 | 93.78 | | | |
| | 2009 | 23 | 91.46 | | | |
| | 2010 | 131 | 101.68 | | | |

## CONCLUSIONS

The importance of SDL skills in lifelong learning has taken into account to conclude the entire study, which has presented a thorough investigation of the dimensions of SDL among the students of agriculture. The students in this particular university perceived moderate-to-high for all dimensions of SDL skills comprising communication skills, learning strategies, evaluation, awareness and learning activities and also their items. As far as the communication skills dimension is concerned, the students indicated that they were adequately equipped in communicating with others through their learning plans; they felt the need for interdisciplinary links and were able share their collected information and knowledge with others. In addition, they were capable of expressing their views effectively in writing and verbally. As far as learning strategies dimension in the study is concerned, the respondents indicated the strategic part of learning and different tools, which included case study, role-playing, simulation and concept mapping. Moreover, as it was reflected in the previous dimension of communication skills, the students believed in learning from their peers or different social groups and learning through group participation.

With regard to the evaluation, the students of Tarbiat Modares University were able to continuously monitor their learning, and could also identify their successes and failures within the learning process; and finally, they could use all these as an opportunity for future learning.





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They are willing to receive feedback from the peers and instructors concerning their learning activities and performance.

Regarding to awareness dimension, the students indicated that they are aware of their responsibility for learning. They can identify their learning needs, adjust their learning goals, select the best method of learning, balance between their learning and daily activities, update the learning resources and learn independently.

Finally, with regard to the fifth dimension reflecting on the learning activities, the students had different habits and they could use different activities to increase their learning performance. Some of these habits and activities included developing concept maps, reviewing the new lesson, taking note in class, putting efforts linking between gathered knowledge and their real practice, analyzing new ideas, collecting information, sharing experience, and doing extra-curricular activities. Another strand of results regarding demographic characteristics indicated that no significant differences existed in the perceptions of students about the five SDL skills dimension based on gender. This result indicated that both women and men have similar perceptions about SDL skills. This can be a result of the homogeneity of the students involved in the study in this university.

The results also indicated that students, based on their educational level, show significant differences in their SDL skills. According to the mean value, PhD. students have a higher mean. It can be said that PhD. students in Tarbiat Modares University, based on their experiences in learning and research, are becoming more motivated for learning and are more confident about their potentialities for further learning. In other words, compared to the M.Sc. students, the PhD. students possess better communication skills, are equipped with different strategies for learning, have become competent to evaluate their own learning, and can enrich themselves with a set of awareness of their responsibility for learning and above all they are able to get themselves involved in extracurricular activities.

Other results show that significant differences exist among the readiness of students for SDL skills with respect to their major. In this regard, the students of livestock have lower SDL skills than students in other fields (especially water and soil, economics and extension, and plant protection). Such difference might be a result of the difference in the subjects covered in different fields or personal characteristics of the students of that particular field.

The results of the present study also indicate that there is a significant difference between the means of students GPA scores and SDL skills. It comes to a conclusion that the higher the students' GPAs, the higher SDL skills.

The results also show that there is no significant effect of the entrance year of the students to the university on SDL skills. In other words, students who had entered the university from 2007 to 2010 showed the same level of SDL skills. In El-Gilany and Abusaad's research, the majority of nursing students had high levels of SDL skills. However none of the demographic variables and the academic level exert any significant effects on the level of SDL skills.

It can be concluded further by stating that readiness for SDL is a crucial factor for all students, especially graduates, and this should be taken into consideration in education planning with regard to each field. This factor, if paid enough attention to, can be an important expectable instrument for lifelong learning on the side of students and graduates having various GPAs, majors, and levels. If we consider the case of a good number of graduate students, who generally do not intend to continue studying voluntarily; it is necessary to state that the educational system seeks to develop such skills to promote self-management, self-monitoring, and self-motivating as well as SDL skills among the students. Finally, it can be mentioned here that this undertaken study is a kind of self- report study, through which, a set of identified groups of different levels of students have been assessed as per their SDL learning. Narrating this whole, it can be suggested further that to assess these various dimensions of learning concerns, other assessment methods, which are scientifically constituted for research can also be alternatively utilized in the study.

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## بررسی مهارت‌های یادگیری خودراهبر در بین دانشجویان کشاورزی ایران (مورد مطالعه دانشکده کشاورزی دانشگاه تربیت مدرس)

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## چکیده

آمادگی برای خودراهبری در یادگیری و نقش آن در بهبود مهارت‌های یادگیری مادام‌العمر دانشجویان مورد تأکید قرار گرفته است. هدف کلی این مطالعه توصیفی – همبستگی، تحلیل مهارت‌های یادگیری خودراهبر دانشجویان دانشکده کشاورزی دانشگاه تربیت مدرس بود. جامعه آماری مورد نظر شامل کلیه دانشجویان دانشکده کشاورزی دانشگاه تربیت مدرس بود (۴۱۴ .(=Nبا استفاده از جدول کرجسی و مورگان (۱۹۷۰) و نمونه‌گیری طبقه‌ای تناسبی، تعداد ۲۰۱ نفر به عنوان نمونه آماری انتخاب شدند (۲۰۱ .( =nاز میان آن‌ها ۱۹۳ نفر پرسشنامه‌های تحقیق را تکمیل و عودت دادند. ابزار جمع‌آوری اطلاعات، پرسشنامه‌ای بود که روایی آن با کسب نظرات متخصصان ترویج و آموزش کشاورزی مورد بررسی و اصلاحات لازم صورت گرفت. پایایی ابزار تحقیق با محاسبه ضریب آلفای کرونباخ بین ۰/۷۸ تا ۰/۸۳ محاسبه شد. نتایج نشان داد میانگین تمامی مهارت‌های یادگیری خودراهبر در بین دانشجویان کشاورزی در سطح بالایی قرار داشت. همچنین نتایج آزمون مقایسهٔ میانگین گروه‌ها نشان داد که بین دیدگاه دانشجویان در خصوص ابعاد یادگیری خودراهبر با مقطع تحصیلی، رشته تحصیلی و معدل تفاوت معنی داری وجود دارد. آمادگی برای یادگیری خودراهبر عامل مهمی است که باید در برنامه‌ریزی آموزشی مورد توجه قرار گیرد. در این راستا نظام آموزشی باید در راستای تقویت مهارت های خودمدیریتی، خودارزیابی و خودانگیزشی و همچنین تقویت مهارت‌های خودراهبری در یادگیری در بین دانشجویان اقدام نماید.





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