THE RELATIONSHIP BETWEEN NURSING STUDENTS' LIFE-LONG LEARNING TENDENCIES AND SELF-DIRECTED LEARNING READINESS

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ABSTRACT

Frequent and diverse developments and changes in the nursing profession make lifelong learning and self-learning compulsory for this profession. It is important to develop lifelong learning and self-learning skills in order to cope with new developments and changes in nursing and to maintain professional development.

The aim of the study was to determine the relationship between nursing students' lifelong learning tendencies and their readiness for self-directed. The study was conducted with 926 students. The data were collected by using an Information Form, the Life-Long Learning Tendencies Scale and the Self-Directed Learning Readiness Scale. The validity and reliability of the scales were tested by Cronbach's alpha analysis. The datas; were analyzed by using means, standard deviation, t-Test, one-way ANOVA, post hoc tests of Bonferroni, Tukey's tests, Pearson's correlation test. The maximum score of the participants in the LLLTS was 162, while their minimum score was 41, with a mean score of 98.42±18.08. The maximum score of the participants in the SDLRS was 200, while their minimum score was 40, with a mean score of 163.81±27.61. There was a weak, positive and significant relationship between the LLL tendencies of the participants and their SDLR levels (r= .157** p= .000). In the light of these results, it may be recommended; to structure nursing education programs in a way that would improve their LLLS and readiness for SDL, for educators to utilize instruction methods and techniques that will support the personal development of students such as role playing, case analysis, projects, creative drama and reflection.

Key words: Self-directed learning, Life-long learning, Nursing education, Nursing students

HEMŞIRELİK ÖĞRENCİLERİNİN YAŞAM BOYU ÖĞRENME EĞİLİMLERİ İLE KENDİ KENDİNE ÖĞRENMEYE HAZIR OLUŞLUKLARI ARASINDAKİ İLİŞKİ

ÖZ

Hemşirelik mesleğindeki sık ve çeşitli gelişmeler ve değişimler, yaşam boyu öğrenmeyi ve kendi kendine öğrenmeyi bu meslek için zorunlu kılmaktadır. Hemşirelikte yeni gelişme ve değişimlerle baş edebilmek ve mesleki gelişimi sürdürebilmek için yaşam boyu öğrenme ve kendi kendine öğrenme becerilerinin geliştirilmesi önemlidir. Çalışmanın amacı, hemşirelik öğrencilerinin yaşam boyu öğrenme eğilimleri ile öz-yönetime hazır bulunuşlukları arasındaki ilişkiyi belirlemektir. Çalışma 926 öğrenci ile yürütülmüştür. Veriler Bilgi Formu, Yaşam Boyu Öğrenme Eğilimleri Ölçeği ve Kendi Kendine Öğrenmeye Hazır Oluşluk Ölçeği kullanılarak toplanmıştır. Ölçeklerin geçerlilik ve güvenilirliği Cronbach alfa analizi ile test edilmiştir. Veriler; ortalama, standart sapma, t-Testi, tek yönlü ANOVA, Bonferroni'nin post hoc testleri, Tukey'in testleri, Pearson'un korelasyon testi kullanılarak analiz edilmiştir. Katılımcıların LLLTS'den aldıkları maksimum puan 162, minimum puan 41 ve ortalama puan 98,42±18,08'dir. Katılımcıların SDLRS'den aldıkları maksimum puan 200, minimum puan 40 ve ortalama puan 163,81±27,61'dir. Katılımcıların YDÖ eğilimleri ile SDLR düzeyleri arasında zayıf, pozitif ve anlamlı bir ilişki bulunmuştur (r= .157** p= .000). Bu sonuçlar ışığında; hemşirelik eğitim programlarının yaşamboyu öğrenme eğilimlerini ve kendi kendine öğrenmeye hazir olma durumlarını geliştirecek şekilde yapılandırılması, eğitimcilerin rol oynama, vaka analizi, proje, yaratıcı drama ve yansıtma gibi öğrencilerin kişisel gelişimlerini destekleyecek öğretim yöntem ve tekniklerini kullanmaları önerilebilir.

Anahtar Kelimeler: Yaşam boyu öğrenme, Kendi kendine öğrenme, Hemşirelik eğitimi, Hemşirelik öğrencileri

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INTRODUCTION

Factors such as changes, developments in scientific knowledge, technology, healthcare services lead the professional knowledge insufficient in time. (1, 2). This situation necessitates nurses to constantly update their professional knowledge and skills, or in other words, gain life-long learning skills (LLLS) (1).

Life-long learning (LLL), which is seen to be used in the literature interchangeably with concepts such as limitless learning, continuous learning and living learning, is a supporting process that increases and strengthens individuals' knowledge, attitudes and skills they acquire through their lives and allows them to be able to apply these in real life. In the literature, it is emphasized that LLL is a necessity for nursing, and it is needed to improve these skills through education programs (3).

Self-directed learning (SDL), which is one of the main characteristics of LLL, is a learning skill in which the individual takes on the responsibility of learning by themselves from the planning to the assessment of the learning-teaching process and decides on what to learn how, where and when (4-7). In other words, SDL is an approach where the individual organizes their own learning process in connection with their self-regulatory learning, self-efficacy and self-control.

In the literature, it was stated that SDL is a characteristic that forms the basis of LLL (8-11) and it was emphasized that individuals who have LLLS and SDL skills (SDLS) will show LLLS whenever they feel the need to learn and think that it will serve a purpose, they will be able to take on responsibility for their learning process, they will be able to actively participate in the learning process and display independence.

While there are studies in the literature which discussed the concepts of LLL and SDL separately, no study which revealed the relationship between these two basic skills was encountered. It was determined that there is a gap in the literature regarding the studies examining the relationship between these skills in order to determine and improve the current situation regarding the SDLR and LLL skills of nursing students and to provide a basis for further studies. In this context, this study aimed to reveal the relationship between these two basic skills nursing students need to have. In the light of these explanations, the study has significance in terms of providing data that will shed light on structuring education programs that have the qualifications to develop LLLS and SDLS in nursing students.

METHODS

Aim

The aim of the study was to determine the relationship between nursing students' lifelong learning education and their readiness for self-directed learning.

In line with this aim, answers to the following questions were sought;

1. What is the lifelong learning tendency of students?
2. What is the students' readiness for self-directed learning?
3. Is there a relationship between students' lifelong learning disposition and their readiness for self-directed learning?

4. Do students' lifelong learning disposition and readiness for self-directed learning differ according to their descriptive characteristics?

Design

This study had a descriptive and relationship-seeking design.

Population and Sample

The population of the study consisted of a total of 1223 undergraduate students enrolled at the Faculty of Nursing of a state university (1. class: 357, 2. class: 273, 3. class: 284, 4. class: 309 student). According to the sample size calculation formula, the number of students targeted to be reached was calculated as 310, but it was aimed to reach the entire population without sample selection. As a result of the power analysis, the population was calculated with a 95% confidence interval determined with an effect size of 0.05 and a bias level of 5% with the known sample calculation. The sample of the study was planned to consist of at least 318 students with the power to represent the population. Voluntary participation was utilized for the study. The study was carried out with 926 students who voluntarily agreed to participate and were present at the school where the study was carried out in the process of research. In this study, 75.7% of the students who formed the population of the study were reached.

Data Collection Tools

The data were collected by using an Information Form, the Life-long Learning Tendencies Scale (LLLTS) and the Self-Directed Learning Readiness Scale (SDLRS).

Information Form: It was developed by the researchers in line with the literature (1, 10, 12). The form consisted of 6 questions that aimed to determine the students' descriptive characteristics (age, gender, marital status, school of graduation) and their statuses of believing the importance of LLL and SDL in nursing.

Life-long Learning Tendencies Scale (LLLTS): The scale that was developed by Coşkun (2009) (1) consists of 27 items and four sub-scales as motivation (6 items), persistence (6 items), deficiency in regulating learning (6 items) and lack of curiosity (9 items). The 6-point Likert-type scale has response options ranging from "highly suitable" (6) to "not suitable at all" (1). The items of the deficiency in regulating learning and lack of curiosity sub-scales are inversely scored. The maximum possible score that can be achieved in each of the motivation, deficiency in regulating learning and persistence sub-scales is 36, while the minimum possible score is 6. The minimum and maximum possible scores in the lack of curiosity sub-scale are respectively 9 and 54. For the total scale score, the minimum possible value is 27, while the maximum possible value is 162. Higher scores in the scale show higher LLLT. The Cronbach's alpha value of the scale was found as 0.94 (13). In this study, the Cronbach's alpha value of the scale was 0.878, while this value for the sub-scales was found as 0.891 for motivation, 0.881 for persistence, 0.884 for deficiency in regulating learning and 0.938 for lack of curiosity.

Self-Directed Learning Readiness Scale (SDLRS): The scale, which was developed by Fisher, King and Tague (2001), was tested for validity and reliability in Turkish by Kocaman et al. (2006) (14,15). The scale consists of 40 items and three sub-scales as self-management (13 items), willingness to

learn (12 items) and self-regulation (15 items). The 5-point Likert-type scale has response options ranging from "strongly agree" (5) to "strongly disagree" (1). There are no inversely scored items in the scale. The minimum possible score in the scale is 40, the maximum possible score is 200, and the threshold value is 150. Higher scores indicate increased SDLS (14). The Cronbach's alpha value of the scale was found as 0.92, while this value in the sub-scales was found as 0.85 for self-management, 0.84 for willingness to learn and 0.83 for self-regulation. In the validity and reliability study, the Cronbach's alpha value of the total scale was found as 0.94, while the sub-scale coefficients were found respectively as 0.87, 0.86 and 0.88 for self-management, willingness to learn and self-regulation (15). In this study, the Cronbach's alpha value of the scale was found as 0.977, while this value in the sub-scales was 0.925 for self-management, 0.944 for willingness to learn and 0.950 for self-regulation.

Data Analysis

The data that were obtained were analyzed by using the IBM SPSS 20.0 (Statistical Package for the Social Sciences) software. Shapiro-Wilk and Kolmogorov-Smirnov tests were used to test normality. A kurtosis value between ±2.0 is accepted as a normal distribution (16). Skewness A measure of the symmetry of a distribution; in most cases the comparison is with the normal distribution. A positively skewed distribution has relatively few large values and tails to the right, and a negatively skewed distribution has relatively few small values and tails to the left. Skewness values outside the range of -1 to +1 are considered a skewed distribution (17). The validity and reliability of the scales were tested by Cronbach's alpha analysis. The continuous variables were analyzed by using means, standard deviations, minimum and maximum values, while the categorical ones were analyzed based on percentages. t-Test was used to compare the mean values of two groups to determine whether ~~or not~~ the scores the participants obtained from the scales and their sub-scales differed based on the variables, while one-way ANOVA was used to compare three or more groups. To determine the direction of the difference in the results that were significant, post hoc tests of Bonferroni and Tukey's tests were carried out, while Pearson's correlation test was utilized to determine the relationship between the scores of the scales. The results were analyzed in a 95% confidence interval and a significance level of $p<0.05$ (18).

Results

Among the participants, 18.6% were first-year, 27.6% were second-year, 26.8% were third-year and 27.0% were fourth-year students. Their mean age was 20.89±1.59. The participants 61.6% graduated from Anatolian high schools, while 31.5% graduated from standard high schools (Table 1).

The participants 85.7% stated that it is highly important for a nurse to have LLLS, and 75.9% said it is highly important for a nurse to SDLS (Table 1).

The maximum score of the participants in the LLLTS was 162, while their minimum score was 41, with a mean score of 98.42±18.08. Among the sub-scales, the highest mean scores were in the motivation (32.23±3.96) and persistence (29.32±4.98) sub-scales, while the lowest mean scores were in the lack of curiosity (22.78±11.82) and deficiency in regulating learning (14.07±8.01) sub-scales (Table 2).

Table 1. Descriptive characteristics of the nursing students (n: 926)

Descriptive Characteristics		n	%
Age	Min:18 Max: 30	Avg.: 20.89±1.59	
Graduated Schools	Anatolian high schools	570	61.6
	Standard high schools	292	31.5
	Technical and Vocational High School	36	3.9
	Science High School	16	1.7
	Other	12	1.3
Lifelong learning ability of the nurse	Most important	794	85.7
	Important	128	13.8
	Not important	4	0.4
Self-Directed learning ability of the nurse	Most important	703	75.9
	Important	219	23.7
	Not important	4	0.4

The maximum score of the participants in the SDLRS was 200, while their minimum score was 40, with a mean score of 163.81±27.61. Among the sub-scales, the highest mean scores were in the willingness to learn (50.14±8.87) and self-regulation (62.35±10.90) sub-scales, while the lowest mean score was in the self-management (51.32±9.34) sub-scale (Table 2).

Table 2. Life-long learning tendencies and self-directed learning readiness of nursing students (n: 926)

		Min	Max	Avg.
Life-Long Learning Tendency	Motivation	12.00	36.00	32.23±3.96
	Persistence	11.00	36.00	29.32±4.98
	Deficiency in regulating learning	6.00	36.00	14.07±8.01
	Lack of curiosity	9.00	54.00	22.78±11.82
	TOTAL	41.00	162.00	98.42±18.08
Self-Directed Learning Readiness	Self-management	13.00	65.00	51.32±9.34
	Willingness to learn	12.00	60.00	50.14±8.87
	Self-regulation	15.00	75.00	62.35±10.90
	TOTAL	40.00	200.00	163.81±27.61

There was a weak, positive and significant relationship between the LLL tendenciesof the participants and their SDLR levels (r= .157** p= .000) (Table 3).

There were weak, positive and significant relationships between the motivation and persistence sub-scale scores of the LLLTS and the total and sub-scale SDLR scores ($p<0.05$). There were weak, negative and significant relationships between the deficiency in regulating learning and lack of curiosity sub-scale scores of the LLLTS and the total and all sub-scale scores of the SDLR Scale ($p<0.05$) (Table 3).

Table 3. The relationship between nursing students' lifelong learning tendency and their readiness to self-directed learning (n: 926)

SDLR \ LLT		Motivation	Persistence	Deficiency in regulating learning	Lack of curiosity	TOTAL
Self-management	r	.373	.405**	-.199**	-.289**	.084*
	p	.000	.000	.000	.000	.010
Willingness to learn	r	.398**	.374**	-.321**	-.373**	.196**
	p	.000	.000	.000	.000	.000
Self-regulation	r	.354**	.336**	-.298**	-.312**	.166**
	p	.000	.000	.000	.000	.000
TOTAL	r	.394**	.390**	-.288**	-.341**	.157**
	p	.000	.000	.000	.000	.000

There was a significant relationship between the participants' years of study and their total LLL tendency scores and scores in the motivation and persistence sub-scales ($p<0.05$). The mean score of the 4th-year students was higher than those of the 2nd- and 3rd-year students. There was no statistically significant relationship between the participants' years of study and their mean deficiency in regulating learning and lack of curiosity sub-scale scores ($p>0.05$) (Table 4).

There was a significant relationship between the statuses of the participants in terms of believing in the importance of nurses having LLLS and their LLL tendency total and all sub-scale scores ($p<0.05$). The scale total, motivation and persistence scores of those who believed that it is highly important for a nurse to have LLLS were higher than those who believed that it is moderately important, while the deficiency in regulating learning and lack of curiosity scores of those who believed it is moderately important were higher than those who believed it is highly important (Table 4).

There was a significant relationship between the statuses of the participants in terms of believing in the importance of nurses having SDLS and their LLL tendency scores in all sub-scales ($p<0.05$). The scale total, motivation and persistence scores of those who believed that it is highly important for a nurse to have SDLS were higher than those who believed that it is moderately important or not important, while the deficiency in regulating learning

and lack of curiosity scores of those who believed it is moderately important were higher than those who believed it is highly important. There was no significant relationship between their statuses of believing in the importance of nurses having SDLS and their total scores in the scale (p>0.05) (Table 4).

Table 4. Comparison of nursing students' descriptive characteristics and lifelong learning tendencies (n: 926)

		Motivation	Persistence	Deficiency in regulating learning	Lack of curiosity	TOTAL
Years of study	First[a]	31.39±4.02	28.00±5.28	14.95±7.48	24.56±11.31	98.92±16.86
	Second[b]	32.28±3.59	29.01±5.00	13.15±6.74	22.50±10.67	96.95±15.32
	Third[c]	31.91±4.58	29.22±5.01	13.99±7.85	21.76±11.78	96.90±17.36
	Fourth[d]	33.09±3.44	30.63±4.40	14.50±9.54	22.86±13.19	101.08±21.64
		F=7.15 .000 d>c d>a	F=10.42 .000 d>c d>b d>a	F= 2.06 .103	F=1.97 .117	F=3.01 .029 d>c d>b
Lifelong learning ability of the nurse	Most important[a]	28.75±6.34	24.75±4.92	14.00±8.12	23.00±11.57	90.50±12.47
	Important[b]	30.05±4.44	27.45±5.06	17.45±7.63	26.82±11.70	101.78±17.3
	Not important[c]	32.60±3.74	29.64±4.89	13.53±7.95	22.13±11.73	97.92±18.18
		F=25.711 p .000 c>b	F=12.681 p .000 c>b	F=13.519 p .000 b>c	F=8.801 p .000 b>c	F=2.906 p .050 c>b
Self-Directed learning ability of the nurse	Most important[a]	23.00±3.16	22.50±2.64	20.75±1.25	33.75±3.09	100.00±8.67
	Important[b]	30.19±4.45	27.17±5.24	15.23±7.36	25.38±11.58	97.98±16.74
	Not important[c]	32.92±3.49	30.02±4.68	13.67±8.18	21.91±11.79	98.55±18.53
		F=56.790 .000 c>b>a	F=33.392 .000 c>b>a	F=4.577 .011 b>c	F=9.070 .000 b>c	F=.096 .908

There was a significant relationship between the participants' years of study and their total scores in the SDLR scale and scores in the sub-scales of self-management and self-regulation (p<0.05). The difference was found to be caused by the 4th-year participants (d>c>b>a). There was no significant difference in the mean willingness to learn scores of the participants based on their years of study (p>0.05) (Table 5).

There was a significant relationship between the statuses of the participants in terms of believing in the importance of nurses having LLLS and their total and all sub-scale scores in the SDLR Scale (p<0.05). The mean self-management sub-scale scores of those who believed that it is highly important for a nurse to have LLLS were higher than those who believed it is not important, while those who believed it is highly important also had higher scores in the willingness to learn and self-regulations sub-scales than those who thought it is moderately important (Table 5).

There was a significant relationship between the statuses of the participants in terms of believing in the importance of nurses having SDLS and their total and all sub-scale scores in the SDLR Scale (p<0.05). The mean total and sub-scale scores of those who believed it is highly important were higher than those who believed it is moderately important (Table 5).

No statistically significant difference was found between the participants' scores in the scales and sub-scales based on the type of high school they graduated from (p>0.05).

Table 5. Comparison of nursing students' descriptive characteristics and self-directed learning readiness (n: 926)

		Self-management	Willingness to learn	Self-regulation	TOTAL
Years of study	First[a]	49.67±8.23	49.69±7.36	61.48±8.96	160.84±21.98
	Second[b]	49.79±8.95	49.31±9.77	61.12±11.48	160.23±28.61
	Third[c]	51.74±10.17	50.37±9.59	62.49±11.92	164.60±30.54
	Fourth [d]	53.60±9.12	51.08±8.03	64.06±10.27	168.74±26.32
		F=9.425 .000 d>a d>b	F=1.885 .130	F= 3.539 .014 b>d	F=4.880 .002 d>b>a
Lifelong learning ability of the nurse	Most important[a]	21.09±10.54	21.80±10.90	27.14±13.57	69.72±34.86
	Important[b]	8.71±0.77	8.30±0.73	10.47±0.92	26.07±2.30
	Not important[c]	9.33±0.33	8.79±0.31	10.78±0.38	27.36±0.97
		F=25.711 p .000 c>a	F=12.681 p .000 c>b	F=13.519 p .000 b>c	F=2.906 p .050 c>b
Self-Directed learning ability of the nurse	Most important[a]	42.25±8.50	41.25±11.52	53.25±10.90	136.75±30.64
	Important[b]	49.49±8.76	47.80±8.85	59.61±10.52	156.91±26.48
	Not important[c]	51.94±9.43	50.92±8.72	63.25±10.87	166.12±27.54
		F=7.714 .000 c>b	F=12.647 .000 c>b	F=10.915 .000 c>b	F=11.455 .000 c>b

Discussion

Today, globalization, changes and developments in scientific knowledge and technology, healthcare services and patient care and treatment processes have necessitated nurses to constantly update the knowledge and skills they need for professional and social development. This issue makes it necessary to provide students with skills such as learning to learn and LLL during their education process and ensure that they graduate with these skills (1,19-22). Not only the European Qualifications Framework, which was created as a part of the Bologna Process, and Turkish Higher Education Qualifications Framework but also organizations and institutions such as American Association of Critical-Care Nurses (AACN), National League for Nursing Accrediting Commission (NLNAC) and Accreditation Committee for Undergraduate Nursing Programs stated that LLL is a basic skill that needs to be provided to students within undergraduate and postgraduate nursing education programs, and this skill is an indispensable part of higher education activities (23-25). Relevant studies have emphasized that students believed in the importance and necessity of LLL for them to increase the quality of the care they provide, adapt to individual and professional changes and developments and update their knowledge and skills, but they were not on a desired level in terms of considering gaining new knowledge and skills as an indispensable part of their lives, or in other words, they had low tendencies towards LLL (20,21,26,27). Considering the maximum and minimum respective values of 162 and 27 in the study and that the mean total scale score of the participants was higher than the median value, it was determined that the participants had medium levels of LLL tendencies (Table 2). This finding is concerning as it showed that the participants could experience problems in following up-to-date information and technologies with the purpose of maintaining their individual and professional development and increasing the quality of the healthcare

services they would provide. This result suggested that nursing curricula should be structured in a way that will improve the LLL and SDLS of students.

Motivation, persistence, regulating learning and curiosity towards learning carry importance for continuation of LLL (26). Motivation is the most important factor for a student to want to learn (1). It plays an important role in the student's LLL by helping them in being open and willing to learn constantly, overcoming the problems they encounter throughout their life and actively participating in the learning process (1,29,30). Persistence refers to insisting on reaching a goal, focusing on success and maintaining this insistence even while facing a problem and showing effort to participate in the learning process and relevant learning activities (1,30). In this study, the motivation and persistence sub-scale scores of the participants were found to be high (Table 2). This finding was considered to be a positive outcome in terms of the participants having two of the main characteristics necessary for being life-long learners.

Regulation of learning covers regulation of the student's own thoughts and feelings and their display of the capacities that are necessary for them to continue their individual and professional development also after formal education. Harpe and Rodloff (2000) emphasized that, for LLL to be achieved, education programs should be organized in a manner where students are able to regulate their own learning and decide upon what they need and how much of it they need for learning (31). Curiosity is the necessity and desire to gain knowledge, while a curious individual tries to learn more things about themselves and their environment, is persistent while researching a topic and spends effort to have new experiences (1,31). In this study, the deficiency in regulating learning and lack of curiosity sub-scale scores of the participants were found to be low (Table 2). This suggested that the participants would not be willing and curious about learning new things, they were deficient in terms of regulating their own learning, and they would not spend enough effort when they encounter problems in learning.

Studies (5,8,9,11,32-33) reported that the SDLR levels of students were high. Considering that the cutoff point for the SDLR Scale is 150, and the maximum possible score is 200, it may be stated that, although the participants in this study had promising results about their readiness for SDL, these skills of theirs are open to improvement (Table 2). This finding was interpreted as that the participants would actively participate in the learning-teaching process, they would not hesitate to take responsibility in this process, they would show effort to solve problems, they would be able to transfer what they have learned into their personal and professional lives, and they would be individuals who are curious for learning and willing to change, or in other words, they would be individuals and members of the profession who are ready for SDL.

Willingness to learn, self-management and self-regulation carry importance in terms of the continuity of readiness for SDL (15). Willingness to learn refers to a student being curious and willing to gain new knowledge, considering new ideas and points of view critically and researching about the issue before making a decision. Self-regulation means that the student determines their own learning goals, takes responsibility in the learning process, is

aware of their own limitations, makes their own decisions, and their life is under their control. Self-management refers to an individual planning their own learning, using time effectively and having good management skills (5,9,11,15,32). In this study, the participants were found to have high mean sub-scale scores of willingness to learn, self-regulation and self-management (Table 2). This finding may be interpreted as a positive one which suggested that the participants would determine their learning goals, actively participate in the learning-teaching process, have high willingness to learn, take responsibility in their learning, be able to regulate their times of studying, make their own decisions and determine what they will learn, where, when and how by themselves.

In the literature, studies have reported that LLL is closely related to SDL, which is necessary for the student to continue LLL for individual and professional development and forms the foundation of LLL (8-11,17,33). In this study, a positive and weak relationship was found between the LLL tendencies of the participants and their SDLR levels ($r= .157^{**}$ p=.000). Moreover, there was a negative and weak relationship between the SDLR scores of the participants and their sub-scale scores in the deficiency in regulating learning and lack of curiosity dimensions of LLL (p=0.000) (Table 3). That is, as the deficiency of the participants in regulating learning and their lack of curiosity increased, their self-management, willingness to learn and self-regulation decreased. This finding, which showed that LLL and SDL are related to each other, and SDL predicted life-long learning, suggested that students who have high levels of SDLR could be more successful in maintaining their personal and professional development. This is why it is believed that nursing education programs should be structured in a way to develop these two interrelated skills. For achieving this, the education process should include instruction methods and techniques that will support the personal development of students such as role playing, case analysis, projects, creative drama and reflection.

Studies (1,34) determined that LLL tendencies were higher among 4th-year students in comparison to students in earlier years of their study. Likewise, in this study, the LLL tendency scores of the 4th-year students were higher than those of the 2nd- and 3rd-year students ($p<0.05$) (Table 4). This finding was interpreted as that the 2nd- and 3rd-year students might not yet be aware that the main responsibility of their learning process is in their hands, and they could have a tendency to consider this responsibility to belong to their institution, educators, etc. The high levels of the 4th-year students in terms of their LLL tendency could be attributed to their internship practice required in their last year of training, and this was interpreted as a positive outcome in terms of continuing professional development.

Furthermore, although the LLLS of students are expected to increase throughout their higher education process, these skills did not linearly and continuously increase from the 1st year to the 4th year, which showed the necessity of reviewing nursing education programs in a way to improve LLLS.

The participants who believed that it is highly important for a nurse to have LLLS had a higher mean total LLL score that those who believed that it is moderately

important ($p<0.05$). This finding was interpreted as a positive one in terms of the probability of students who believe LLLS are highly important to become life-long-learning individuals and members of the profession.

Yuan et al. (2012) found that the SDLR scores of senior nursing students were higher than those of freshman nursing students. Likewise, in this study, the SDLR levels of the 4th-year participants were higher than those in their earlier years of study ($p<0.05$) (Table 4) (35). This finding suggested that the SDLR levels of the participants increased throughout their education, and education provided a positive contribution to their readiness for SDL. Nevertheless, considering that the maximum possible score in the scale in question is 200, it is believed that there is a need to review/structure nursing education programs in a way that will improve the SDLR levels of students.

It was determined that the SDLR levels of the participants who believed it is highly important for a nurse to have LLLS were higher than those who believed it is moderately important ($p<0.05$) (Table 5). The SDLR levels of the participants who believed it is highly important for a nurse to have SDLS were higher than those who believed it is moderately important ($p<0.05$) (Table 5). These findings were interpreted as positive ones in terms of the possibility of students who believe in the importance of LLL and SDL to have these characteristics.

Conclusion and Recommendation

The results of the study showed that there is a need to improve the LLL tendencies and SDLR levels of students, and there was a positive, weak and significant relationship between the participant's LLL tendencies and their readiness for SDL.

In the light of these results, it may be recommended;

- to structure nursing education programs in a way that would improve their LLLS and readiness for SDL,
- for educators to utilize instruction methods and techniques that will support the personal development of students such as role playing, case analysis, projects, creative drama and reflection,
- to conduct an in-depth analysis of the views of students on LLL and SDL in different samples or a larger sample by comparison of different variables in qualitative and longitudinal studies.

Highlights

- Each day, it is going to be more important for nurses to develop their knowledge and skills.
- The frequent and varied development and changes in the nursing profession make lifelong learning and self-directed learning compulsory for this profession.
- It is the necessity of the nurses to develop their knowledge and skills through the profession by self-directed learning.
- The development of self-directed learning skills is important for lifelong learning.

Conflict of interest: The authors declare no potential conflicts of interest with respect to the research, authorship, and/or publication of this article.

Limitations

The study was limited to the students studying at the Faculty of Nursing of a state university who agreed to participate in the study and their self-reports.

Ethical approval: Ethics board approval was obtained for the study with the decision date of 04.17.2018 and decision number of 144169 from the X. Written permission was obtained from Coşkun Diker to use LLLT and from Gülseren Kocaman to use SDLRS. Written permission was obtained from the Dean's office of the Nursing School where the data would be collected, and verbal consent was received from the participants.

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Author Contributions

- Study design: EŞ, NKY
- Data collection: EŞ, HK
- Data analysis: EŞ, HK, NKY
- Manuscript writing: EŞ, HK, NKY

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