Do Individual Innovation Characteristics Affect Readiness Online Learning?*

Bireysel Yenilikçilik Özellikleri Çevrim İçi Öğrenmeye Hazır Bulunuşluğu Etkiliyor mu?*

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ABSTRACT

This study was conducted as a descriptive study to determine the effect of individual innovativeness of nursing students on the readiness of online learning. This study has a total of 1040 students who were enrolled in Erciyes University Health Sciences Faculty Department of Nursing in the 2017-2018 academic year. The number of students included in the study according to the known universal sample was calculated as 300, but the study was completed with 573 students voluntarily participating in the study. Erciyes University, Social Sciences and Humanities written permission was taken from the Ethics Committee and written informed consent was taken from students. The data were collected by the researchers using the Personal Information Form, the Individual Innovation Scale, and the readiness to online learning scale. The analysis of the data, descriptive statistics, Kruskal-Wallis and posthoc Bonferroni, Mann Witney U, Spearman correlation analysis were used. The mean age of the students was 21.0± 2.8. Of the students; 32.8% were in the fourth grade, 81.3% were women, and 62.1% were living in the province center. Of the nursing students; 54.8% selected voluntarily nursing profession, 45.9% selected nursing profession because of job opportunities. The mean scores of the Individual Innovativeness Scale (ISS) and Online Learning Readiness Scale (OLRS) respectively were 58.20±12.24 and 50.86±18.95. When the individual innovation scale and the subscale scores of the students were compared according to their classrooms, it was determined that the total score averages of the fourth-grade students were higher than the other classes. ($p<0.05$). When the average scores OLRS were compared, average scores of first-grade students were higher than the other grades ($p<0.05$). Nursing student's level of readiness for online learning with their individual innovativeness features was low; there was a positive relationship between individual innovation and online learning readiness. Students are more likely to be ready for online learning in the first year; innovations develop as class levels increase. It is suggested to add to the course content of innovation related skills in order to enhance students' readiness for online learning.

Keywords: Individual innovation, Nursing, Online learning

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ÖZ

Bu çalışma hemşirelik öğrencilerinin bireysel yenilikçilik özelliklerinin çevrim içi öğrenmeye hazır bulunuşluğa etkisini belirlemek amacıyla tanımlayıcı olarak yapılmıştır. Tanımlayıcı tipteki bu çalışmanın evrenini 2017-2018 eğitim-öğretim yılında hemşirelik bölümünde okuyan toplam 1040 öğrenci oluşturmuştur. Evreni bilinen örneklem hesabına göre çalışmaya dahil edilecek öğrenci sayısı 300 olarak hesaplanmıştır, ancak uygulama sırasında çalışmaya katılmaya gönüllü olan 573 öğrenci ile çalışma tamamlanmıştır. Araştırmaya başlamadan önce Erciyes Üniversitesi Sosyal ve Beşeri Bilimler Etik Kurulu'ndan yazılı izin, öğrencilerden yazılı onay alınmıştır. Veriler araştırmacılar tarafından Kişisel Bilgi Formu, Bireysel Yenilikçilik Ölçeği ve Çevrim içi öğrenmeye hazır bulunuşluk ölçeği kullanılarak toplanmıştır. Verilerin analizinde tanımlayıcı istatistikler, Mann Witney U testi, Kruskal-Wallis ve posthoc Bonferroni, Spearman korelasyon analizi kullanılmıştır. Araştırmaya katılan öğrencilerin yaş ortalaması 21.0±2.8 olup, %32.8'inin dördüncü sınıf, %81.3'ünün kadın, %62.1'inin il merkezinde yaşadığı saptanmıştır. Öğrencilerin %54.8'inin hemşirelik mesleğini isteyerek seçtiği, %45.9'unun hemşireliği iş bulma kolaylığı nedeniyle seçtiği belirlenmiştir. Öğrencilerin Bireysel Yenilikçilik Ölçeği ve Çevrim içi öğrenmeye hazır bulunuşluk ölçeği puan ortalamaları sırasıyla 58.20±12.24 ve 50.86±18.95 olarak tespit edilmiştir. Öğrencilerin sınıflarına göre Bireysel Yenilikçilik Ölçeği ve alt ölçek puan ortalamaları karşılaştırıldığında dördüncü sınıf öğrencilerinin bireysel yenilikçilik ölçeği ve fikir önderliği, değişime direnç alt ölçeği toplam puan ortalamalarının diğer sınıflardan daha yüksek olduğu belirlenmiştir (*p*<0.05). Çevrim içi öğrenmeye hazır bulunuşluk ölçeği puan ortalamaları karşılaştırıldığında birinci sınıf öğrencilerinin toplam puan ortalamalarının diğer sınıflardan daha yüksek olduğu bulunmuştur (*p*<0.05). Çalışmanın sonucunda hemşirelik öğrencilerinin bireysel yenilikçilik özellikleri ile çevrim içi öğrenmeye hazır bulunuşluk düzeylerinin düşük olduğu, bireysel yenilikçilik ile çevrim içi hazırbulunuşluk arasında zayıf düzeyde pozitif yönlü bir ilişki olduğu saptanmıştır. Öğrencilerin ilk sınıflarda çevrim içi öğrenmeye hazır bulunuşluklarının yüksek olduğu, sınıf düzeyleri arttıkça yenilikçiliklerinin geliştiği tespit edilmiştir. Öğrencilerin çevrim içi öğrenmeye hazır oluşluklarının artırılması için ders içeriklerine yenilikçilik konularının eklenmesi ve bu konularda öğrencilerde farkındalık oluşturulması önerilebilir.

Anahtar Sözcükler: Bireysel yenilikçilik, Hemşirelik, Çevrim içi öğrenme

INTRODUCTION

Health is the right of every human being. For health protection, development, treatment/care and rehabilitation, nurses need to renew themselves in parallel with scientific, technological, economic, social and communal changes and developments (Dil, Uzun, & Aykanat, 2012).

Innovation is transforming a new and valuable thought or knowledge into a society-useful product or process (Ertuğ & Kaya, 2017). Nowadays, continuous change in information and technology requires continuous learning and renewal. This process shows that the concept of self-learn is a feature that individuals should gain. In addition, individuals living in the period of technology are expected to know the ways of accessing information, could use the information they have reached and could produce new information (Özer, 2003).

Online learning or e-learning is one of the internet's fastest usage areas. Online learning also includes career development training. It also creates a significant advantage when the workforce is applied to all training areas and new labor force programs. Online learning can be called a web-based training system offered on the internet or on a computer network (Aslan, 2006).

Due to the continuous development of information and communication technologies, individuals should be able to use new technologies and improve their innovation to achieve new knowledge. For this, trainers need to plan training-related teaching activities to promote individual innovation and to participate in research on these issues (Xu, 2010).

Teaching staff, students and nurses working in the field could use innovative training methods that keeping up with technology, supported by evidence-based scientific studies in order to meet the requirements of the future health care system and the needs of the students. To determine and improve the effectiveness of innovative educational methods, determining the students' situation and planning educational activities according to their needs will increase development.

The aim of this study was to determine the effect of individual innovation characteristics of nursing students on online readiness.

MATERIAL and METHOD

The study was conducted as a descriptive study with nursing students studying the Faculty of Health Sciences of a university. In the study, sample selection was not made and the study was conducted with 573 nursing students who agreed to participate in the study because it was based on volunteerism. The data were collected using the socio-demographic characteristics form, the Individual Innovation Scale (IIS) and the scale of readiness for online learning (OLRS).

Socio-Demographic Characteristics Form: It consists of 13 questions including socio-demographic characteristics of the students and created by researchers by reviewing related literature (6,13-14).

Individual Innovation Scale (IIS): The scale was done the validity and reliability of the Turkish version by Sarıoğlu-Kemer and Altuntaş (2017) and was developed by Hurt et al. (1977). In the Turkish version of the scale, the Cronbach alpha coefficient

343

was calculated as 0.82 and the study was found as 0.90. The Turkish version of the Individual Innovation Scale, which has a five-point likert (Strongly Agree-5, Strongly Disagree-1), consists of 18 items and 3 subscales (opinion leadership (OL) , resistance to change (RC) and risk taking (RT)). While 11 items of the scale (1, 2, 3, 5, 8, 9, 11, 12, 16, 18, 19) are positive, seven items (6, 7, 10, 13, 15, 17, 20) consist of negative statements. More than 82 points are categorized as innovative, 75-82 points pioneer, 66-74 points questioning, 58-65 skeptical, and ≤ 57 points are traditional. In the calculation of the IIS total score, firstly the scores of the positive items were collected and then the negative items points were collected (Sarıoğlu-Kemer & Altuntaş 2017).

Online Learning Readiness Scale (OLRS): OLRS was developed by Hung, Chou, Chen, & Own (2010) and was done by Turkish Validity and Confidence by Ilhan and Çetin (2013). It consists of 18 items and five subscales (Self-Efficacy of Computer and Internet Use (SECIE), Self Learning (SL), Learning Control (LC), Learning Motivation (LM) and Self-Efficacy of Online Communication (SEOC)) (Hung et al., 2010; İlhan & Çetin, 2013). It is taken from the scale scores between 18 and 90. The Cronbach's alpha coefficient of the scale ranged from 0.73 to 0.87 for all subscales. In this study, reliability Cronbach's alpha coefficients for all subscales is 0.53-0.93.

The Ethical Dimension of Research

The permission of the institution, Ethical Committee (No: 24), written consents of students participating in the study were obtained.

Data Analysis

Statistical analyses were performed using SPSS for Windows version 21 (IBM, SPSS Statistics 20). The descriptive statistics (number, percentage, mean, standard deviation), Shapiro-Wilk, Mann Witney U test, Kruskal-Wallis test, posthoc tests, Spearman correlation tests were used for analyses. The significance was set as $p<0.05$.

RESULTS

The mean age of the students who participated in the study was 21.0±2.18, 32.8% were fourth grade, 81.3% were female, family income level of 92.3% were in the middle, and 46.8% of them lived with their family members at home. 54.8% of the students chose the profession of nursing voluntarily, 45.9% chose the profession of nursing due to job opportunities, 52.5% of the participants stated that their participation in social activities was partially adequate and 81.8% of them stated that they did not have difficulty in their interpersonal relations in daily life (Table 1).

The mean IIS and OLRS total score of student was respectively 58.20±12.24 and 50.86±18.95 (Table 2). According to IIS, 40.7% of the students were traditionalist, 29.8% were skeptical, 21.1 were questioning, 7.5% were pioneers and 0.9% were in the innovative category.

The mean individual innovation scores (IIS) of students who have chosen the profession of nursing voluntarily, the 4th grade

Table 1: Descriptive Characteristics

Descriptive Characteristics	*n*	%
Grade		
1st Grade	120	20.9
2nd Grade	89	15.6
3th Grade	176	30.7
4th Grade	**188**	**32.8**
Gender		
Female	**466**	**81.3**
Male	107	18.7
Family Income Level		
High	11	1.9
Middle	**529**	**92.3**
Low	33	5.8
Choosing Voluntarily the Profession of Nursing		
Yes	**314**	**54.8**
No	259	45.2
The Reason for Choosing the Profession of Nursing		
Family request	96	16.8
Employment opportunities	**263**	**45.9**
Meet the university entrance score	60	10.5
For helping people	154	26.8
Participation in Social Activities		
Adequate	66	11.5
Partially adequate	**301**	**52.5**
Inadequate	206	36.0
Difficulty in Interpersonal Relations in Daily Life		
Yes	104	18.2
No	**469**	**81.8**
Total	**573**	**100.0**

Table 2: The Mean IIS, OLRS and their Subscales Scores of the Students

Scales	Min-Max	Mean±SD
IIS Total	24-88	58.20±12.24
Idea Leadership	9-35	22.98±5.33
Resistance to Change	7-34	21.4±5.23
Risk Taking	4-20	13.78±4.23
OLRS Total	18-90	50.86±18.95
Self-Efficacy of Computer and Internet Use	3-25	8.82±3.73
Self Learning	5-25	14.27±5.99
Learning Control	3-15	10.47±2.28
Learning Motivation	4-20	10.76±5.59
Self-Efficacy of Online Communication	3-15	8.19±4.04

students and did not have difficulty in their interpersonal relations in daily life were significantly higher ($p<0.05$). The mean IIS in the 4th grade students was different from the 2nd and 3rd grade students. The mean subscale OL, RC and RT scores of students who have chosen the profession of nursing voluntarily ($p>0.05$), the 4th grade students and did not have difficulty in their interpersonal relations in daily life were higher (Table 3).

In terms of the distribution of the mean scores of the OLRS and subscale SL, LM, SEOC it was found that the mean scores of the first grade students, and those living at home together with their families were significantly higher. It was found that the mean scores of the subscale LC, students who don't difficulty in interpersonal relations in daily life were significantly higher ($p<0.05$) (Table 4).

When the distribution of the means of ISS items were evaluated, it was determined that the highest score was taken from the desire to try new things, being open to new ideas and directing the unanswered questions to the solution seeking behavior (Table 5).

When the distribution of the means of OLRS items were evaluated, it was determined that highest score was taken from the items respectively "Online training process, other online activities (chat, surf the web) do not distract me", "I

trust my knowledge and skills about how to manage online learning software."and "I trust myself how to use the basic functions of Microsoft Office programs (MS Word, MS Excel, ve MS PowerPoint)." (Table 6).

There was a weak positive correlation between the mean OLRS, IIS and subscales of IIS scores of the students ($p<0.01$) (Table 7).

DISCUSSION and CONCLUSION

Advances in health, migration, the increase in the elderly population, and the increase in the value given to ethical principles resulted in a transition from traditional roles to contemporary roles in the presentation and organization of nursing services (Dayhoff & Moore, 2002; Boz-Yüksekdağ, 2002). Nursing is an applied professional group that renews itself with scientific, technological and socio-cultural changes all over the world. For this purpose, individual innovation has gained importance in making nursing care more qualified and updated (Boz-Yüksekdağ, 2002). Nurses around the world are obliged to carry out innovative activities in order to improve patient care outcomes, prevent diseases and reduce patient care costs. Students receiving nursing education should be trained to be open to innovation and adapt to change throughout their education (International Council of Nurses, 2009). In the study, the individual innovation mean

Table 3: The Mean IIS and It's Subscale According to the Descriptive Characteristics of Students

Descriptive Characteristics	IIS Total Mean±SD	OL Mean±SD	RC Mean±SD	RT Mean±SD
Choosing Voluntarily the Profession of Nursing				
Yes	59.22±11.90	23.36±5.08	21.75±5.17	14.09±4.11
No	56.97±12.55	22.51±5.61	21.05±5.28	13.40±4.35
p	**0.033**	0.075	0.135	0.122
Grade				
1st Grade	63.79±7.58 [AC]	24.81±4.44 [A]	22.70±4.77 [A]	16.27±2.35 [A]
2nd Grade	62.56±6.71 [A]	25.44±4.33 [A]	21.10±5.46 [A]	16.01±2.03 [A]
3th Grade	43.63±6.80 [B]	17.60±3.41 [B]	17.73±4.07 [B]	8.28±1.99 [B]
4th Grade	66.23±7.97 [C]	25.68±3.91 [A]	24.26±4.21 [C]	16.29±2.15 [A]
p*	**0.000**	**0.000**	**0.000**	**0.000**
Accomodation				
The Dormitory	57.24±12.32	22.44±5.30	21.42±5.23	13.37±4.28
Home	58.48±12.11	23.25±5.27	21.15±5.28	14.07±4.15
Other	60.27±12.32	23.71±5.56	22.50±4.96	14.05±4.31
p*	0.065	0.097	0.187	0.273
Difficulty in Interpersonal Relations in Daily Life				
Yes	55.59±11.29	21.78±5.23	20.74±4.94	13.06±4.02
No	58.78±12.38	23.24±5.32	21.59±5.29	13.94±4.27
p	**0.004**	**0.006**	0.131	**0.018**

*Mann Whitney U test was performed.
**Kruskal Wallis analysis and Bonferroni analysis were performed.
***The same letters indicate that there is no difference and different letters show a difference.

345

Table 4: The Mean Score of OLRS and It's Subscale According to the Descriptive Characteristics of Students

Descriptive Characteristics	OLRS Total Mean±SD	SECIE Mean±SD	SL Mean±SD	LC Mean±SD	LM Mean±SD	SEOC Mean±SD
Choosing Voluntarily the Profession of Nursing						
Yes	51.00±19.37	8.71±3.82	14.25±6.17	10.35±2.16	10.92±5.78	8.24±4.10
No	50.68±18.46	8.95±3.61	14.14±5.77	10.61±2.41	10.57±5.37	8.13±3.98
p *	0.966	0.384	0.981	0.139	0.683	0.814
Grade						
1st Grade	71.24±12.94 [A]	10.23±3.84 [A]	20.20±4.33 [A]	10.40±2.24	17.12±3.32 [A]	12.15±3.07 [A]
2nd Grade	67.58±13.68 [A]	10.43±3.56 [A]	18.89±4.90 [A]	10.42±2.35	16.12±3.90 [A]	11.37±3.42 [A]
3th Grade	43.20±11.53 [B]	8.53±3.42 [B]	12.00±4.19 [B]	10.36±2.28	7.96±3.21 [B]	6.72±3.02 [B]
4th Grade	37.11±11.61 [C]	7.42±3.42 [C]	10.20±3.97 [C]	10.63±2.27	6.78±3.00 [C]	5.55±2.48 [C]
p **	**0.000**	**0.000**	**0.000**	0.440	**0.000**	**0.000**
Accomodation						
The Dormitory	51.86±17.94 [A]	9.34±3.82 [A]	14.23±5.87 [A]	10.23±2.38	10.86±5.56 [A]	8.40±3.88 [A]
Home	52.21±19.97 [A]	8.59±3.65 [A]	14.76±6.13 [A]	10.52±2.24	11.38±5.73 [A]	8.48±4.27 [A]
Other	42.72±16.23 [B]	8.01±3.54 [B]	12.06±5.38 [B]	11.05±1.97	8.19±4.41 [B]	6.47±3.25 [B]
p **	**0.000**	**0.025**	**0.002**	0.052	**0.000**	**0.001**
Difficulty in Interpersonal Relations in Daily Life						
Yes	50.25±15.31	9.00±3.64	13.87±4.68	10.00±2.68	10.50±4.75	8.25±3.68
No	50.99±19.67	8.78±3.75	14.27±6.24	10.58±2.18	10.82±5.77	8.18±4.12
p *	0.826	0.627	0.929	**0.021**	0.897	0.579

Mann Whitney U test was performed.
**Kruskal Wallis analysis and Bonferroni analysis were performed.*
***The same letters indicate that there is no difference and different letters show a difference*

Table 5: The Distribution of Students according to Their Mean Scores from ISS Scale Items

IIS Items	Means
"My friends often get information and suggestions me because I follow the innovations."	3.25
"I like to try new things."	3.48
"While doing something, I investigate whether new roads."	3.37
"I usually find new ways to solve problems."	3.26
"I look with suspicion to new perspectives and new discoveries."	3.03
"I don't adopt new ideas until I see people around me accept it."	3.13
"I think I'm an easy person affects people about innovation."	3.19
"I think that my thoughts and behaviors are creative and original."	3.32
"I think I'm the last person to accept innovation among people around me."	3.22
"I think I'm a creative person."	3.32
"I like to lead the group on innovations."	3.24
"Until I see that subserve the people around me, I am reluctant to accept innovation."	3.10
"I think it's the best way to do the old way of life and work in the old ways."	3.07
"I fight against problems and uncertainties."	3.39
"Before I take into account the innovations, I would like to see other people use that innovation."	2.83
"I'm open to new ideas."	3.49
"Unanswered questions lead me to a solution."	3.41
"I'm skeptical towards new ideas."	3.03

Table 6: The Distribution of Students according to Their Mean Scores from OLRS Scale Items

OLRS Items	Means
"I trust myself how to use the basic functions of Microsoft Office programs (MS Word, MS Excel, and MS PowerPoint)."	2.98
"I trust my knowledge and skills about how to manage online learning software."	3.05
"I trust my ability to use the internet (Google, Yahoo) to learn about online learning."	2.79
"I apply my own work plan."	2.74
"I call help when faced with learning problems."	2.78
"I manage time well."	2.96
"I detect my learning goals."	2.87
"I have high expectations about my learning performance."	2.83
"I can give direction to my own learning process."	2.82
"In the online training process, other online activities (chat, surf the web) do not distract me."	3.19
"I review online learning materials in line with my needs."	2.85
"I'm open to new ideas."	2.68
"I have a learning motivation."	2.72
"I learn from my mistakes."	2.72
"I like to share my ideas with others."	2.62
"I trust myself to use online tools (such as e-mail, chat / conversation) to communicate effectively with others."	2.70
"I trust myself in expressing myself (my feelings and my sense of humor) by correspondence."	2.72
"I trust myself to be able to ask questions in online discussions."	2.77

Table 7: Correlation of the Mean OLRS, IIS and Subscales Scores

	IIS Total	Idea Leadership	Resistance to Change	Risk Taking	OLRS Total
IIS Total	-				
Idea Leadership	0.860**	-			
Resistance to Change	0.739**	0.346**	-		
Risk Taking	0.893**	0.798**	0.465**	-	
OLRS Total	0.184**	0.190**	0.044	0.238**	-

**p<0.001

scores of nursing student was 58.20±12.24 and 40.7% were traditionalist. The traditionalist individuals are individuals who are prejudiced against change, do not have a tendency to adopt innovations, waiting for innovation to be tried by others and the results of innovation are observed before adopting innovation (Çuhadar, Bülbül, & Ilgaz, 2013). Unlike our study Ertuğ and Kaya (2017) found the mean scores of the nursing students were 63.92±10.061 and majority of the students were in the questioning category. It is thought that this may be caused by differences in education systems and differences in the region's culture and possibilities.

In our study, ISS mean scores of those choosing voluntarily the profession of nursing, those don't difficulties in interpersonal relationships in daily life and 4th grade nursing student was found to be higher (p<0.05). The subscale mean score of OL, RC and RT, 4th grade nursing student was found to be higher (p<0.05). Subscale mean score of OL and RT was found to be higher those students don't difficulties in interpersonal relationships in daily life (p<0.05). As class levels of the students increase, the increasement of their professional experience may originate from increasing renewal desire of deficiencies in nursing profession. High scores in the daily life of people who do not have difficulty in interpersonal relationships, suggests that human relations and communication have a positive impact on feature of innovation.

Statistically significant difference wasn't found between ISS and subscale mean scores and age, gender, parental education level and living place of nursing student. Similar to our findings, Özgür (2013), Çuhadar et al. (2013), Ertuğ and Kaya (2017) determined there was no significant difference between individual innovation score and gender. In the study of Özgür (2013), Ertuğ and Kaya (2017), found that there was no significant difference between individual innovation scores and the level of parent education. This may be due to the fact that individual innovation is influenced by personality rather than age, gender, and parental education.

The online learning environment is an important factor which provide the ability to use information and communication

technologies. In our study, mean score of OLRS of the nursing students was 50.86±18.95 and they had moderate level. In a study that was different from our study findings, the online learning scale mean scores of the university students was 65.77±11.38 and the readiness to online learning was high (Demiralay, Bayır, & Gelibolu, 2016).

Due to changing world and requirements, there have been differences between generations. These differences between generations can create difficulties or conveniences in the execution of certain tasks. The increasement of time spent on media and computer show to be increased online communication of them (Deneçli & Deneçli, 2012; Taş, Demirdöğmez, & Küçükoğlu, 2017). In our study, mean score of OLRS and subscale SL, LM and SEOC of the 1st class students were significantly higher than 4th class students. Furtermore mean score of subscale LC (Learning Control) were significantly higher who don't difficulties in interpersonal relationships in daily life. This suggests that success in human relations and communication facilitates learning control.

As a result, the individual innovation characteristics of nursing students and their readiness for online learning were low. Readiness for online learning of students in the first class are high. In addition, innovations levels of nursing students improve as class levels increase. As a result, in order to increase the readiness of the students for online learning, it can be suggested to add innovation topics to the course contents and to raise awareness in these subjects.

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