

Original Article

Opinions of Midwifery and Nursing Students about the Level of Individual Innovativeness and Innovation in Education

Feyza Reyhan

Eskisehir Osmangazi University Faculty of Health Sciences, Midwifery Department, Turkey

Esra Nur Kabakci

Eskisehir Osmangazi University Faculty of Health Sciences, Midwifery Department, Turkey

Nese Celik

Eskisehir Osmangazi University Faculty of Health Sciences, Midwifery Department, Turkey

Fatma Deniz Sayiner

Eskisehir Osmangazi University Faculty of Health Sciences, Midwifery Department, Turkey

Correspondence: Feyza Reyhan, Eskisehir Osmangazi University Faculty of Health Sciences Midwifery Department, Turkey *E-mail:* fyz.aktas@gmail.com

Abstract

Objective: This study was carried out to determine the individual innovativeness levels of midwifery and nursing students and their views on innovation in education

Method: Designed in descriptive type, this study was conducted on 590 (62%) students attending a state university in Turkey. The data of the study were collected using a questionnaire form gathering information about the socio-demographic features of the students and their opinions on innovation in education, and the Individual Innovativeness Scale (IIS). In the analysis of the data, frequency distribution, Independent Samples t-test and One-way ANOVA test were used.

Findings: The overall mean score that the students got from IIS was 63.71 ± 10.18 . According to the IIS, the individual innovativeness level of the majority of the students was in the 'interrogator' category with 37.8 % (n = 276). In general, students (64-88%) agreed that innovation-based applications and studies should be carried out and supported in their education.

Conclusion: In this study, the level of midwifery and nursing students' innovativeness was found to be low and in the 'interrogator' category. It was observed that the students thought there had to be changes in their education in terms of innovation.

Keywords: Innovation; Individual innovativeness; midwifery student, nursing student

Introduction

The concept of innovation was derived from the Latin word 'innovare' which means 'to do something new and different'. Innovation is defined as 'renewing science and technology to provide economic and social benefits, creating inventions, and being different' (Yamac, 2011). According to the Turkish Language Institute, innovation is a kind of novelty defined as making something new or presenting something in a different way (<http://www.tdk.gov.tr>, Access Date: February 2018). What innovation refers to is not only the technological innovation or invention but it also covers the fields of administration, production, education, and health care (Szmytkowski, 2005).

Constant and unpredictable social and technological development affects educational institutions as well as all institutions. Educational institutions, which are responsible for responding to the increasing needs resulting from these changes, should develop more flexible and innovative practices in this process compared to the past (Fidan, 2015).

In this regard, Betz emphasized the need for new applications developed with an effective strategy to be able to foresee and be prepared for the changing needs (Betz F & Sensoy, 2010).

Innovation that can also be defined as the willingness to experience the change and novelty is a necessary feature for individuals to adapt to

the development and novelty that takes place in every domain of the society. The innovativeness process will work more effectively in individuals with higher levels of individual innovativeness and will lead to successful outcomes in the system (Kocak & Onen, 2012).

The importance of scientific knowledge along with technological developments in recent years has been increasing constantly and education models have been changing rapidly. In addition, the developments in technology and the changes in the expectations of the students in higher education have also revealed the need for innovation in education. Higher education programs around the world are expanding their educational capacities by implementing innovative strategies to meet future labor needs. In this context, the International Nurses Association (INA) and the European Union (EU) declared 2009 as the "Year of Innovation" as an absolute goal to increase the competitiveness of countries and make scientific institutions open to development in every aspects (Unlukaplan, 2009).

New generation students, defined as digital natives, are seen to follow technological developments more closely and adjust to innovations more easily. For this reason, it is very important to create educational environments which are practice oriented in line with the needs of the changing world, offer education with the most advanced technological possibilities, open to change and innovation, and have the highest level of student and staff satisfaction (Arkun, 2011).

This study was carried out to determine the individual innovativeness levels of midwifery and nursing students, who will be future health professionals, and their opinions on innovation in education.

Material and Methods

This descriptive study designed in cross-sectional type was carried out on students at Eskisehir Osmangazi University, Faculty of Health Sciences, Midwifery and Nursing Departments between 10 April and 30 May 2017.

Universe and Sampling

There were 298 Midwifery and 631 Nursing Department students at Eskisehir Osmangazi University, Faculty of Health Sciences during the 2016-2017 academic year. A total of 590 students (62%) who were available at school during the

data collection process and agreed to participate in the study formed the study group.

Data Collection Tools

As the data collection tools, a 30-item questionnaire (Yamac, 2011; Kilicer & Odabasi, 2010; Kurtulus; 2012) which was developed based on the related literature to collect demographic information about the students and assess their knowledge and opinions on innovation in education and the Individual Innovativeness Scale (IIS) evaluating the general innovativeness level of individuals were used.

Individual Innovativeness Scale (IIS): This scale was developed by Hurt et al. in 1977 to assess the innovativeness level of individuals in general terms. The Turkish adaptation and validity and reliability studies of the scale were conducted by Kilicer & Odabasi (2010). The lowest score that can be obtained from the 5-point Likert type scale is 14 and the highest score is 94. The scores calculated on the scale are classified into 5 categories. Scores greater than 80 are interpreted as 'Innovative'; between 69 and 80 as 'Pioneer'; between 57 and 68 as 'Interrogator'; between 46 and 56 as 'Skeptical'; and less than 46 as 'Traditionalist'. According to the overall score obtained from the scale, individuals with a score of 68 or higher are considered 'highly innovative', whereas those who score below 68 are interpreted as 'decrease in innovativeness'. The internal consistency coefficient for the whole scale is 0.82 and the test-retest reliability is 0.87 (Kilicer & Odabasi, 2010). In this study, the internal consistency coefficient for the whole scale was found to be 0.78.

Data Collection Procedure

The students studying at Eskisehir Osmangazi University, Faculty of Health Sciences, Department of Midwifery and Nursing gathered in separate classrooms. They were informed about the topic and purpose of the study. The written consent of the students who agreed to participate in the study was obtained. The questionnaire forms were handed out to the students and they were filled in by the students themselves under the supervision of the researcher. This process took approximately 10-15 minutes.

Legal and Ethical Issues

The written permission of Eskisehir Osmangazi University, Faculty of Health Sciences was obtained. The participants were informed about

the procedures and their verbal consents were obtained.

Data Analysis

In data evaluation phase of the study, SPSS 21 software program was used. Frequency distribution, Independent Samples t-test, and One-way ANOVA test were employed for the analysis. Statistical significance was accepted as $p < 0.05$.

Results

The mean age of the participants was determined to be 20.56 ± 1.62 and the average academic achievement was 2.45 ± 0.58 . When the socio-demographic characteristics of the students were examined, it was found that 58.5% of the students ($n = 345$) were from midwifery department and 41.5% were from the nursing department ($n = 245$). In addition, 30.7% were found to be first-year students ($n = 181$), 24.9% second year ($n = 147$), 21.7% third year ($n = 128$), and 22.7% fourth year students ($n = 134$). 87.6% ($n=517$) of the participants were found to be females and the longest dwelled place of 54.1% ($n=319$) was determined to be a city center. 59.2% had Type A personality (enthusiastic, impulsive). 65.9% ($n = 389$) read 1 or 2 books monthly. 21.4% ($n=126$) were found to read a newspaper/magazine. Additionally, 52% ($n=307$) of the students were determined to use the Internet 6 hours or more a day, while 62.9% ($n=371$) used the Internet for communication. 35.1% ($n = 207$) of the students stated that they followed professional publications and 41% ($n = 242$) said they attended scientific meetings. 52.4% of the participants ($n=309$) defined innovation as 'novelty', 25.9% ($n = 153$) as 'creativity', and 2.4% ($n = 14$) as 'invention' (Table 1).

While individual innovativeness levels of the students did not indicate any significant difference according to department, gender, class, the longest dwelled place, personality type, following professional publications, and participation in scientific meetings ($p > 0.05$ for each), it was found that there was a significant difference in terms of the frequency of monthly reading, following newspaper / magazines, the frequency of internet use, the aim of internet use, and personal definition of innovation ($p < 0.05$ for each) (Table 1).

The overall mean score that the students got from the IIS was 63.71 ± 10.18 . According to IIS, the individual innovativeness levels of the students were in 'interrogator' category with 37.8% ($n = 276$) (Table 2).

It was found that 64.1% ($n = 378$) of the students who participated in the study thought the innovative courses given at school would improve their reasoning skills; 77.8% ($n = 459$) stated the laboratory possibilities and technical equipment at schools should be adequate for innovation; 69.42% ($n=408$) said innovation-based applications should be carried out at schools; 76.8% ($n=453$) thought the education given at school should be supported with evidence-based theoretical and practical information; 75.4% ($n = 445$) wanted satisfactory foreign language education at school; and that 88.3% ($n = 521$) stated the efforts of professional organizations (associations, etc.) had an important role in making innovative applications and practices widespread in education. It was determined that there was a significant difference between the students' individual innovativeness levels and thinking that the efforts of professional organizations was important in the spread of innovative applications ($p < 0.05$) (Table 3).

Discussion

Individual innovativeness forms a basis for high performance, enhances competitiveness and promotes long-term success (Isik & Turkmendag, 2016). It has become compulsory for individuals to develop themselves in order to adapt to the new changes that are constantly being experienced. In the face of this necessity, individual innovativeness is an important feature in the name of being willing to change and adapting to innovations (Oktug & Ozden, 2013).

In this study, the individual innovativeness levels and educational innovation-related opinions of midwifery and nursing department students, candidates of future health professionals, were investigated. The mean score of the students obtained from IIS was 63.71 ± 10.18 . Accordingly, the students were determined as individuals with low level of innovativeness and classified into 'interrogator' category. Students were reported to have a low level of innovativeness in similar studies (Bodur, 2018; Ertug & Kaya, 2017; Demiralay, Bayir & Gelibolu, 2016; Adiguzel, 2012).

Table 1. The distribution of the IIS mean scores by demographic characteristics of the students

Characteristics	n (%)	IIS $\bar{x} \pm SD$	Test value f / t	p
Department				
Midwifery	345 (58.5)	63.60±9.98	0.488	0.626
Nursing	245 (41.5)	64.02±10.47		
Year				
1.	181 (30.7)	63.65±9.66	1.963	0.118
2.	147 (24.9)	63.55±10.31		
3.	128 (21.7)	62.29±11.62		
4.	134 (22.7)	65.32±9.06		
Gender				
Female	517 (87.6)	63.86±9.93	1.026	0.305
Male	73 (12.4)	62.61±11.81		
The longest dwelled place				
Province	319 (54.1)	63.81±10.05	0.605	0.558
Town-Village	271 (45.9)	63.10±10.92		
Personality type				
A type (enthusiastic, impulsive)	349 (59.2)	63.89±10.62	0.509	0.206
B type (clam. organized)	241 (40.8)	63.45±9.52		
Frequency of reading				
Never	94 (15.9)	61.19±9.22	6.071	0.001
1 or 2	389 (65.9)	63.58±10.10		
3 or 4	88 (14.9)	66.84±9.90		
5 and over	19 (3.2)	68.47±17.06		
Following newspapers/magazines				
Yes	126 (21.4)	65.78±11.00	2.588	0.010
No	464 (78.6)	63.15±9.88		
Frequency of internet use				
0-1 hour	25 (4.2)	61.88±10.63	2.749	0.042
2-3 hours	97 (16.4)	61.24±12.05		
4-5 hours	161 (27.3)	64.31±9.70		
6 hours and over	307 (52.0)	64.32±9.64		
Aim of internet use				
Searching for information	68 (11.5)	61.51±13.63	5.655	0.001
Communication	371 (62.9)	63.02±9.44		
Game-entertainment	104 (17.6)	65.80±9.66		
Getting information	47 (8.0)	67.72±9.58		
Following professional publications				
Yes	207 (35.1)	66.01±10.15	0.353	0.552
No	383 (64.9)	62.47±9.99		
Participating in job-related scientific meetings				
Yes	242 (41.0)	64.04±10.30	0.623	0.430
No	348 (59.0)	63.47±10.10		
How innovation is identified				
Novelty	309 (52.4)	65.21±9.24	6.274	0.001
Creativity	153 (25.9)	63.20±11.41		
Invention	14 (2.4)	60.64±10.68		
No idea	114 (19.3)	60.70±11.03		
Total	590 (100.0)	63.71±10.18 (minimum-maximum 18-90)		

Table 2. The distribution of students' IIS Score and category

IIS		N	(%)	IIS $\bar{x} \pm SD$
Innovativeness Categories				
Innovative	(80>)	28	4,7	83.25±2.08
Pioneer	(69-80)	153	20.9	73.33±3.52
Interrogator	(57-68)	276	37.8	63.00±3.36
Skeptical	(46-56)	108	14.8	52.28±2.90
Traditional	(46<)	25	3.4	38.88±7.24
Total / Overall score		590	100.0	63.71±10.18

Table 3. The distribution of IIS mean scores by the students' thoughts on innovation in their education

Propositions	n (%)	IIS $\bar{x} \pm SD$	Test value f / t	p
Employing innovative applications in lessons enhances reasoning skills.				
Yes	378 (64.1)	63.89±10.34	0.021	0.554
No	212 (35.9)	63.38±9.90		
Laboratory possibilities and equipment should be satisfactory for innovation.				
Yes	459 (77.8)	63.57±10.36	1.177	0.537
No	131 (22.2)	64.19±9.52		
At school, innovation-oriented practices should be carried out.				
Yes	408 (69.42)	63.35±10.72	7.599	0.198
No	182 (30.8)	64.52±8.81		
Lessons should be supported with evidence-based theoretical and practical information.				
Yes	453 (76.8)	64.14±10.67	0.603	0.062
No	137 (23.2)	62.29±10.05		
Foreign language teaching should be satisfactory.				
Yes	445 (75.4)	63.80±10.70	16.586	0.697
No	145 (24.6)	63.42±8.41		
The efforts and projects of vocational organizations are important for the spread of innovative applications.				
Yes	521 (88.3)	64.35±10.06	0.016	<0.001
No	69 (11.7)	58.88±9.86		

It was also observed in different studies using IIS carried out on candidates from different professions such as nurses, teachers, and tourism agents that the students were determined to be in 'interrogator' category (Ertug & Kaya, 2017; Korucu & Olpak, 2015; Cuhadar, Bulbul & Ilgaz, 2013; Kilicer, 2011). This finding of the study was consistent with the literature. Interrogation is one of the sub-concepts that form the basis of critical thinking (Ozturk-Yurtseven & Aldan-Karademir, 2017). In Roger's classification for innovativeness, the 'interrogator' category was defined as 'being cautious about accepting new ideas' (Kilicer & Odabasi, 2010). It is thought that the low level of students' innovativeness was due to different variables such as inadequate personal development, the inadequacy of educational institutions, low education, and low-income families. Students are not far from innovativeness, but they are not able to challenge the innovation or take the lead.

It was found in this study that the characteristics such as age, gender, department, and year of the students did not affect the IIS mean score. Similar results were reported in similar studies (Ertug & Kaya, 2017; Korucu & Olpak, 2015; Cuhadar, Bulbul & Ilgaz, 2013; Kilicer, 2011; Sahin-İzmirli & Gurbuz, 2017; Kert & Tekdal, 2012; Martin, Potocnik & Fras, 2017). It was reported in some studies that the level of individual innovativeness was found to be lower in female students (Ertug & Kaya, 2017; Deniz, 2016; Erdogan & Gunes, 2013), higher in those living in urban centers (Basaran & Keles, 2015) and higher in senior students (Adiguzel, 2012; Ozgur, 2013). Different outcomes may be due to differences in socio-cultural characteristics of students.

In this study, the students who had high reading frequency, followed periodicals such as newspapers and magazines, and used the Internet for getting information were found to have higher

IIS mean scores. It was determined in Yegin's study (2017) that the level of individual innovativeness did not indicate a significant difference in terms of reading habits of students or the purpose of using the Internet (Yegin, 2017). In the study of Korucu and Olpak (2015), there was no significant difference between the individual innovativeness levels of the students and the duration of their weekly internet use (Korucu & Olpak, 2015). This study was different from these two studies. In another study, students with a high level of innovativeness were reported to be interested in and open to new knowledge about nature, the world, and people; knowing people and showing respect to others; and the positive change in society (Mikhailova, 2015). Individuals who are open to self-development and information are also open to innovation. It is thought that activities such as reading books, following newspapers and magazines, or using the Internet for information are considered to have a positive effect on personal development and therefore they also affect the level of individual innovativeness.

The prevalence of innovative studies in midwifery and nursing education is increasing every other day and the search for providing qualified education for students is still going on. The determination of students' views on clinical practice contributes to the development of effective teaching strategies in student education (Dil, Uzun & Aykanat, 2012). In this context, our study also included student opinions about innovation in school education. The students who made up our study group also stated that the courses given in the school should be reinforcing the reasoning ability (64.1%) and that innovation-oriented studies were necessary to shape the vocational education and practices in the school (69.4%). One study reported that individual innovators and learning institutions were correlated (Yigit & Aksay, 2015). It is inevitable that innovation takes place in education and practices in the health field that is constantly evolving and changing. It is of great importance that faculty members, students and health professionals working in the field collaborate so that innovative studies can be carried out within the health system. Institutional midwifery and nursing education should be evidence-based, meeting student needs, strengthening problem-solving and reasoning skills, collaborative and compatible with technology (Bradshaw, 2007).

Individuals need an innovative education so that they can recognize opportunities in their lives, think creatively and critically, and develop their ability to create new ideas (Bodur, 2018; Deniz, 2016). At this point, qualified information should be used for an innovative education and education should be supported with research-oriented and evidence-based theory and practice (Dil, Uzun & Aykanat, 2012). Furthermore, the students in our study also stated that the education given in the school should be supported with evidence-based theoretical and practical knowledge (76.8%). The use of evidence-based knowledge in education will ensure that students, as future professionals, have up-to-date knowledge related to their fields.

Since innovativeness affects both practice dimension and other functions of education, it should be assessed multi-dimensionally, not on a single scale (Kocak & Onen, 2012). The development of professional skills as well as theoretical knowledge is of great importance in midwifery and nursing education, which educates the health professionals of the future. Students need to improve their professional skills in a virtual or laboratory setting before the actual patient care environment (Gurol, Akpinar & Apay, 2016) The students in our study stated that the laboratory conditions and technical equipment in the school should be satisfactory for innovation (77.8%). In the health sector, plenty of innovative educational materials are produced in parallel with technological developments. The use of these educational materials in the skills laboratories will have a positive effect on improving students' innovation and skill levels.

Today, scientific and technological developments are experienced at a great pace, and the importance of learning a foreign language has become a necessity beyond being a matter of discussion. Foreign language education in our country, which has to learn and absorb the science of the age and produce much more, is at the top of the issues list that has to be handled seriously (Haznedar, 2010) In our study, the students stated that foreign language education in the school should be adequate. In order to follow the innovations and changes in the literature and in the world, the students need to know the commonly used languages, and fortunately, the students are aware of it.

Occupational organizations are the key forces that most clearly reflect organizational culture

and best support innovation (Dil, Uzun & Aykanat, 2012). In parallel with this fact, the students in our study were observed to think that the function and efforts of professional organizations (88.3%) were significant in the spread of innovative practices in education. The IIS scores of these students were found to be higher. The adoption of organizational culture is important for the spread of innovation-oriented practices during vocational training and professional life. In this context, important responsibilities such as promoting information exchange, being the fastest force delivering developments to the colleagues, and providing motivational power for encouraging vocational innovations fall on the shoulders of occupational organizations.

Conclusion

In this study, it was determined that the students had a low level of innovativeness and that they were in the 'interrogator' category. In order to ensure a high level of individual innovativeness in university students, studies promoting the personal development of students should be a part of the education from the first stage of school years.

Aknowledgemet

The authors wish to thank students who participated in study.

References

- Adiguzel A. (2012) The relation between candidate teachers' moral maturity levels and their individual innovativeness characteristics: A case study of Harran University Education Faculty. *Educational Research and Reviews* 7(25): 543.
- Arkun S. (2011) The development of a social media based model for faculty - school collaboration: School experiences case. Unpublished Doctoral Thesis, Hacettepe University Institute of Science and Technology. (in Turkish)
- Basaran S.D. & Keles S. (2015) Who Is Innovative? Examination of Teachers' Innovativeness Level]. *Hacettepe University Journal of Education* 30(4): 106-118. (in Turkish)
- Betz F. & Sensoy U. (2010) Management strategy: strategic management and information technology. *TUBITAK Popular Science Books*. (in Turkish)
- Bodur G. (2018) The Relationship Between Individual Innovativeness and Entrepreneurship Tendency of Nursing Students. *Journal of Health Science and Profession* 5(2): 139-148. (in Turkish)
- Bradshaw M.J. (2007) Effective learning: What teachers need to know. *Innovative teaching strategies in nursing and related health professions* 3-18.
- Cuhadar C., Bulbul T. & Ilgaz G. (2013) Exploring of the Relationship between Individual Innovativeness and Techno-pedagogical Education Competencies of Pre-service Teachers. *Elementary Education Online* 12(3), 797-807. (in Turkish)
- Demiralay R., Bayir E.A. & Gelibolu M.F. (2016) Investigation Of Relationship Between Students' Personal Innovativeness And Readiness For Online Learning. *Journal of Research in Education and Teaching* 5(1): 161,168. (in Turkish)
- Deniz S. (2016) Individualistic Innovative Characteristics of Pre-Service Teachers. *Electronic Turkish Studies* 11(9). (in Turkish)
- Dil S., Uzun M. & Aykanat B. (2012) Innovation in nursing education. *International Journal of Human Sciences* 9(2): 1217-1228. (in Turkish)
- Erdogan D.G. & Gunes D.Z. (2013) The relationship between individual innovativeness and change readiness conditions of students attending faculty of education. *Procedia-Social and Behavioral Sciences* 106: p. 3033-3040.
- Ertug N. & Kaya H. (2017) Investigating the Individual Innovativeness Profiles and Barriers to Innovativeness in Undergraduate Nursing Students. *Journal of Education and Research in Nursing* 14 (3): 192-197. (in Turkish)
- Fidan M. (2015) Organizational Value Management Levels in Classroom and Innovative Practices in Teaching Processes of Academics. *Bartın University Journal of Faculty of Education* 4(1): 151-162. (in Turkish)
- Gurok A., Akpınar R.B. & Apay S.E. (2016) The Effect of Simulation Applications on the Skill Levels of Students. *Kocatepe Medical Journal* 17:99-104. (in Turkish)
- Haznedar B. (2010) Foreign language education in Turkey: Reforms, trends and our teachers. in *International Conference on New Trends in Education and Their Implications*, Antalya, Turkey. Retrieved from <http://www.iconte.org/FileUpload/ks59689/File/166.pdf>. 2010. (in Turkish)
- Isik C. & Turkmendag T. (2016) Determinants of Individual Innovativeness Perception of Ataturk University Tourism Faculty Students. *Gazi University Journal of Tourism Faculty* 70-99. (in Turkish)
- Kert S.B. & Tekdal M. (2012) Comparison Of Individual Innovativeness Perception Of Students Attending Different Education Faculties. *University of Gaziantep Journal of Social Sciences* 11(4).
- Kilicer K. & Odabasi H.F. (2010) Individual Innovativeness Scale (Is): The Study Of Adaptation To Turkish, Validity And Reliability. *Hacettepe University Journal of Education* 38: 150-164. (in Turkish)

- Kilicer K. (2011) Individual innovativeness profiles of prospective teachers in computer education and instructional technology. Unpublished Doctorate Thesis, Anadolu University Institute of Educational Sciences, Eskisehir. (in Turkish)
- Kocak C. & Onen A. (2012) Analysis On Reflective Thinking Tendencies Of Student Teachers According To Their Personal Innovativeness. Hacettepe University Journal of Education 2: 46-54. (in Turkish)
- Korucu A.T. & Olpak Y.Z. (2015) Examination of Teacher Candidates Individual Innovativeness Properties From The Different Variables. Educational Technology Theory and Practice 5(1): 111-127. (in Turkish)
- Kurtulus M. (2012) Innovation in education; teachers' and students' perspective of innovation and investigation of adequacy. Graduate Thesis, Gebze Advanced Technology Institute, Gebze. (in Turkish)
- Martin P., Potocnik K. & Fras A. (2017) Determinants of students' innovation in Higher Education. Studies in Higher Education 42(7): 1229-1243.
- Mikhailova O.V. (2015) The value-motivational structure of the innovativeness of young students. Psychology in Russia 8(1): p. 112.
- Oktug Z. & Ozden M.S. (2013) The Moderating Role of Intrinsic Motivation on the Relationship Between Individualism/Collectivism and Individual Innovativeness. Eskisehir Osmangazi University Journal of Social Sciences 14(2):1-22. (in Turkish)
- Ozturk-Yurtseven G. & Aldan-Karademir C. (2017) Individual Innovation Levels of Teacher Candidates in the Pedagogical Formation Education Certificate Program and Lifelong Learning Trends. Journal of Educational Sciences Research 7(2):189-206. (in Turkish)
- Ozgur H. (2013) Investigation of the relationship between the critical thinking tendencies of the prospective teachers of information technology and individual innovativeness characteristics in terms of various variables. Mersin University Journal of the Faculty of Education 9(2): 409-420.
- Sahin-Izmirli O. & Gurbuz O. (2017) An investigation of the relationship between the individual innovativeness and problem solving skills of teacher candidates: The case of Canakkale Onsekiz Mart University. SDU International Journal of Educational Studies 4(1), 29-43. (in Turkish)
- Szmytkowski D. (2005) Innovation definition comparative assessment. GNU Free Documentation License. Brussels.
- Turkish Language Society. <http://www.tdk.gov.tr> . Access Date: February 2018. (in Turkish)
- Unlukaplan I. (2009) The Specification of the Relationship Between Economic Development, Competitiveness and Innovation in European Union Using Canonical Correlation Analysis. Journal of Financial 157: 235-250. (in Turkish)
- Yamac K. (2011) What is this innovation?. Journal of Science Education and Thought 1(3): 6-8. (in Turkish)
- Yegin H.I. (2017) Individual Innovativeness Levels Of Divinity Faculty Students . Abant Izzet Baysal University Journal of Social Sciences Institute 17(4): 239-262. (in Turkish)
- Yigit S. & Aksay K. A. (2015) Comparison between Generation X and Generation Y in Terms of Individual Innovativeness Behavior: The Case of Turkish Health Professionals. International Journal of Business Administration 6(2): 106.