Journal of Social Sciences of Mus Alparslan University

anemon

Derginin ana sayfası: http://dergipark.gov.tr/anemon

Araştırma Makalesi ● Research Article

A Study on the Deep (Meaningful) Learning Perceptions of the Teacher Candidates in the Philosophy of Education Course Carried Out with Blended Learning

Öğretmen Adaylarının Harmanlanmış Öğrenme ile Yürütülen Eğitim Felsefesi Dersindeki Derin (Anlamlı) Öğrenme Algıları Üzerine Bir Çalışma

Cemal Tatlı[*], Bülent Uğur Koca[**]

Öz: Bu çalışmada, öğretmen adaylarının harmanlanmış öğrenme ile yürütülen eğitim felsefesi dersindeki derin (anlamlı) öğrenme algı düzeylerinin belirlenmesi amaçlanmıştır. Bu amaç çerçevesinde öğrenme ve öğretme etkinlikleri tersdüz öğrenme yöntemine dayalı geliştirilen öğrenme ortamında gerçekleştirilmiştir. Araştırmada öğretmen adaylarının derin öğrenme algı düzeyleri çeşitli değişkenler açısından incelenmiştir. Yarı deneysel desenle gerçekleştirilen araştırma Matematik ve Fen bilimleri Eğitimi, Türkçe ve Sosyal Bilimler Eğitimi ve Temel Eğitim olmak üzere üç grup üzerinde yürütülmüştür. Araştırmaya Matematik ve Fen bilimleri Eğitimi bölümünde 42 (%33.3), Türkçe ve Sosyal Bilimler Eğitimi bölümünden 40 (%31.7) ve Temel Eğitim bölümünden ise 44 (%34.9) öğretmen adayı katılmıştır. Araştırma verilerini elde etmek için Tatlı (2022) tarafından geliştirilen "Deep (Meaningful) Learning Perception Scale" kullanılmıştır. Araştırma sonucunda, öğretmen adaylarının derin öğrenme algı düzeyleri ile cinsiyet, bölüm, teorik ve uygulamalı ders tercihi, internet erişiminde kullandığı teknolojiler ve öğrenme kaynakları tercihi arasında anlamlı bir farklılık olmadığı tespit edilmiştir. Araştırmada çalışma gruplarındaki öğretmen adaylarının derin öğrenme algı düzeylerinin yüksek ve birbirlerine yakın olduğu sonucuna varılmıştır. Araştırmanın Etik Kurul Raporu; Muş Alparslan Üniversitesi, Bilimsel Araştırma ve Yayın Etiği Kurulu'ndan 11.05.2022 tarih, 07 nolu toplantı sayısı ve 59 nolu kararıyla alınmıştır.

Anahtar Kelimeler: Harmanlanmış Öğrenme, Derin Öğrenme, Tersdüz Öğrenme, Öğrenme Algısı, Öğretmen Adayları

Abstract: In this study, it was aimed to determine the deep (meaningful) learning perception levels of teacher candidates in the philosophy of education course conducted with blended learning. Within the framework of this purpose, learning and teaching activities were carried out in a learning environment developed based on the flipped learning method. In the study, the deep learning perception levels of teacher candidates were examined in terms of various variables. The research, which was carried out with a quasi-experimental design, was carried out on three groups: Mathematics and Science Education, Turkish and Social Sciences Education, and Elementary

[*] Dr., Muş Alparslan University, Faculty of Education, Department of Educational Sciences
ORCID: 0000-0002-3261-394X, cml.ttl30@gmail.com (corresponding author)
[**] Dr., Muş Alparslan University, Faculty of education, Department of educational sciences
ORCID: 0000-0001-8908-7525, bu.koca@alparslan.edu.tr
Cite as/ Atıf: Tatlı, C. & Koca, B. U. (2022). A study on the deep (meaningful) learning perceptions of the teacher candidates in the philosophy of education course carried out with blended learning. *Anemon Muş Alparslan Üniversitesi Sosyal Bilimler Dergisi*, *10*(2), 769-779. http://dx.doi.org/10.18506/anemon.1096710
Received/Geliş: 31 March/Mart 2022
Accepted/Kabul: 18 June/Haziran 2022
Published/Yayın: 30 August/Ağustos 2022

e-ISSN: 2149-4622.

Education. 42 (%33.33) teacher candidates from the Mathematics and Science Education department, 40 (%31.74) teacher candidates from the Turkish and Social Sciences Education department, and 44 (%34.92) teacher candidates from the Elementary Education department participated in the research. “Deep (Meaningful) Learning Perception Scale” developed by Tatli (2022) was used to obtain research data. As a result of the research, it has been determined that there is no significant difference between the deep learning perception levels of teacher candidates and their gender, department, theoretical and applied course preferences, technologies used in internet access and learning resources. In the study, it was concluded that the deep learning perception levels of the teacher candidates in the study groups were high and close to each other. Ethics Committee Report of the Research; It has been taken from the Scientific Research and Publication Ethics Committee of Mus Alparslan University, with the meeting number 07 and decision 59, dated 11.05.2022.

Keywords: Blended Learning, Deep Learning, Flipped Learning, Learning Perception, Teacher Candidates

Introduction

How the meanings are formed in the human mind, how the person perceives the facts and events, and what the factors are in this interpretation process are extremely important in terms of learning. These issues have been one of the main subjects of learning theories. These are mostly discussed under the title of cognitive development. The ability to remember or transfer abstract symbols that add information value to people depends only on the individual's understanding of the stimuli (Koca, 2018). While arranging educational practices, it is important to determine the learning approaches of individuals and to ensure the realization of high-level permanent learning (Özkan & Sezgin Selçuk, 2014). Meaning; it emerges as a result of the relationship between ideas, events, concepts, and objects. For this reason, meaningful learning is built on the idea of discovering these relationships and transferring them when necessary.

The first thinker to study meaningful learning, American psychologist David Ausubel (1918-2008), is seen to have an important place in meaningful learning, which he developed to establish a cognitive theory against rote verbal learning (Çakıcı, Alver & Ada, 2006). It is a learning approach based on Ausubel's theory of meaningful learning, constructivism theory, and cognitive learning. According to Ausubel (1965), the density of knowledge that people must acquire throughout life makes it almost impossible to learn each piece of knowledge by discovery. For this reason, he thinks that much information can be learned through meaningful learning to the individual rather than the way of discovery. Ausubel states that the most important factor in learning processes is the bond that individuals have established between their past experiences and knowledge. In order for meaningful learning to take place, the individual should be able to establish a link between his old knowledge and new knowledge by making use of his past experiences. In the learning-teaching processes, it is important to illuminate and make understandable the dark points of the two knowledge, which complement each other, with the help of new approaches. The most important factor affecting learning in meaningful learning is the knowledge that students have learned before. This information should be remembered, and teaching should be planned appropriately. Learning becomes meaningful only when newly learned information is built on old information. If the student cannot integrate his old knowledge with his new knowledge and cannot establish a meaningful connection between them, meaningful learning cannot be realized.

One of the most important conditions for the realization of meaningful learning is that the information necessary for establishing a relationship has been learned fully and accurately beforehand. Meaningful learning cannot be built on wrong and incomplete information. If previously learned information is wrong or incomplete, this information cannot be integrated with new information, and activities for structuring such as linking, and merging will be ineffective (Asubel, 1968). Meaningful learning is not synonymous with learning potentially meaningful material. Although the learning material consists of logically meaningful components, even meaningful material can be learned by rote if the learner's learning set is not meaningful (Ausubel, 1965). At the same time, meaningful learning aims at the realization of learning by taking place in social, collaborative, deliberate, natural and active environments of the individual. In this type of learning, the individual's learning emerges as the product of active mental and social processes. For this reason, meaningful learning occurs when an individual

learns in a natural environment, interacting with his/her social environment, making sense of objects and structuring knowledge (Jonassen & Strobel, 2006).

Meaningful learning is the starting point for other learning and a learning approach that involves transferring knowledge and using it in another situation. Learning makes learning meaningful when the individual knows what the information is useful for in his daily life. In order to determine whether the information is useful in daily life, individuals need to benefit from their past information. Therefore, past knowledge has an important place in meaningful learning. The basic principles of meaningful learning are establishing a connection between old knowledge and new knowledge, considering the connections between topics and concepts, paying attention to the sequential relationship between these two, keeping the topics consistent and compatible with previous knowledge, and using the deductive method. Deduction has a special importance in the execution of meaningful learning activities. For this reason, first the rules and then the examples are transferred to the learner in a systematic way (Kara & Özgün-Koca, 2004). We can learn what the concept itself means only by learning what its criterion qualities are and what they mean (Ausubel, 2000). Snowman and Biehler (2003) listed the techniques that facilitate meaningful learning as follows:

•Use of introductory activities that will provide meaningful context to new knowledge.

•Supporting information with maps, graphics, pictures and three-dimensional visuals,

•Using knowledge by transferring it to other subjects,

Some students' difficulties in understanding and making sense of abstract and theoretical subjects have increased the importance of studies on learning approach. The concept of learning approach was first introduced by Marton and Saljo (1976). Marton and Saljo (1976) considered learning approaches in two groups and named the first learning approach for memorization as "superficial" and the second approach for making sense and relating as "deep". Chan (2003) defined students with a surface learning approach as individuals who accept the information as it is, receive it without interpreting it from the person who conveys it, have a uniform learning ability, and memorize the information. According to him, students with a meaningful and deep learning approach try to make sense of the information and associate it with each other, transfer it instead of imitating it, and reconstruct it by associating it with previous information instead of taking it directly. Ramsden (2003) stated that surface learners are task-oriented, they memorize information in the context of the exam, they prefer copying without making sense, and they consider learning as a temporary task. According to Trigweel and Prosser (1991), individuals with surface learning achieve low learning outcomes, while individuals with deep and meaningful learning achieve higher quality learning outcomes. According to Entwistle (1994), students with a deep and meaningful learning approach tend to transform knowledge into a new form. According to him, the characteristics of these students are:

• Tendency to understand learning material

• Actively engage with course content

• Linking ideas with prior knowledge and experience

• Searching for patterns and basic principles

• Checking evidence and linking it to results

• Grasp the logic, examine the argument carefully and critically

According to Mayer (2010), deep learning involves coordinating all five types of knowledge. In this context, while the learner develops procedures, schemas, mental models, cognitive and metacognitive strategies, he also has a productive level about learning. The learner develops not only the facts and procedures that support retention, but also transferable knowledge. Tatli (2022) evaluated the deep learning approach within the framework of the literature and discussed the features of the deep learning approach as follows:

- Linking ideas and experiences with previous ones
- Focus on the main idea or concepts
- Willingness to understand the learning material on one's own
- To be able to establish a relationship between course content and real life.
- Discovering and using principles from ideas
- Actively engage with course content
- Checking evidence and linking it to results
- Activating cognitive processes
- Discovering and using principles to unify ideas
- Examine the idea and argument carefully and critically
- Tendency to understand subject content
- Searching for patterns and basic principles
- Taking an active role in associating the course content with real life

Many students especially have difficulties in understanding and making sense of abstract and theoretical subjects. This situation has made it necessary to carry out original studies on deep and meaningful learning, to associate learned information with other information, and to focus on strategies and methods that will facilitate transfer. In this context, a learning environment based on flipped learning method was designed in the research. It was aimed to determine the levels of deep learning perceptions of teacher candidates in the philosophy of education course conducted with distance education and based on reverse learning method. Students enrolled in these learning environments were provided with a twelve-week learning experience. In this context, the deep learning perception levels of teacher candidates' learning in an environment based on flipped learning method were determined in the research. In the study, deep learning perception levels were also examined in terms of gender, department, theoretical course preference, applied course preference, technologies used and learning preference status.

Method

This research was planned and carried out in a quasi-experimental design. The research was designed and implemented as a twelve-week instructional practice. In the experimental process of the research, the effect of teacher candidates' learning in learning environments designed based on the flipped learning method on their deep learning perceptions was investigated. It has been taken from the Scientific Research and Publication Ethics Committee of Mus Alparslan University, with the meeting number 07 and decision 59, dated 11.05.2022.

Participants of the Study

This research was carried out with 126 first-year teacher candidates studying at Muş Alparslan University Faculty of Education, Mathematics and Science, Turkish and Social Sciences Education and Elementary Education departments in the fall semester of the 2021-2022 academic year. In the research, "Purposeful Sampling", one of the non-probabilistic sampling methods, was used. Mathematics and Science, Turkish and Social Sciences education and teacher candidates studying in Elementary Education departments formed three experimental study groups of the research. 31% of the 126 teacher candidates in the study groups are male and 69% are female. The descriptive statistics of the participants in the study groups are shown in Table 1:

Table 1. Descriptive Statistics of the Participants in the Study Groups

Departments	N	%
Mathematics and Science	42	33.3
Elementary Education	44	34.9
Turkish and Social Sciences Education	40	31.7
Total	126	100

Data Collection Tools

In the research, "Deep (Meaningful) Learning Perception Scale" and demographic information form were used as data collection tools. The scale was developed by Tatli (2022) to determine students' perception of deep (meaningful) learning. Tatli (2022), during the validity and reliability study of the scale, conducted Explanatory Factor Analysis for construct validity. It was determined that the scale consisted of a single factor structure and 9 items. The Cronbach Alpha (α) internal consistency coefficient of the scale was calculated as 0.89. The scale is 5-point Likert type (1-I strongly disagree, 2-I do not agree, 3-I am undecided, 4-I agree, 5-I completely agree). There is no reverse item in the scale items. In the demographic information form, there are gender, department, preferences to take applied and theoretical courses, learning source preferences and technologies they use for internet access.

Data Analysis

Descriptive statistics regarding the mean and standard deviation values of the deep learning perception scores obtained from the three study groups were calculated. In the analysis of the deep (meaningful) learning perception scores of these groups, the distribution of the data was examined. Normality test was performed in order to determine whether the obtained data fulfilled the normality assumption. According to Pallant (2016), normality can be measured by observing skewness and kurtosis values. In the study, skewness and kurtosis values were evaluated for normality. The values of kurtosis and skewness were checked for the normality of the distribution of the data of each group. It was stated by Tabachnick and Fidell (2013) that if the skewness and kurtosis values of the sample data remain in the range of -1/+1, the scores do not show a significant deviation from the normal distribution. In this study, the range of -1/+1 was taken as acceptable for kurtosis and skewness values. Parametric tests were used in cases where the data showed a normal distribution, and non-parametric tests were used in cases where the data did not show a normal distribution. Statistical significance level was accepted as $p<0.05$. The data were analyzed using statistical package programs.

Teaching Material

Three learning environments were developed in the study. Learning environments are designed on Canvas learning management system. Participants were included in the educational practice in three groups according to the departments they studied. Learning environments are designed based on the flipped learning method within the framework of the teaching of the philosophy of education course. Learning-teaching activities were carried out in a similar way in three groups. Twelve-week videos have been prepared for flipped learning. Theoretical information on the subject was presented to the student through videos, accompanied by concept maps and diagrams.

In the classroom environment, the relevant topic of each week was discussed in detail. Class discussions were provided at each stage, taking into account the learning outcomes of the course. Learning and teaching activities in the developed learning environments were carried out within the framework of six teaching strategies: "informing about the target", "attracting attention", "lecturing", "discussion", "summarizing" and "evaluation". These teaching strategies and contents are as follows:
In the videos prepared, firstly, necessary information was presented for teacher candidates to be aware of the target. In order to draw attention to the subject, current problems have been brought to the agenda as questions. The lecture is enriched with visual materials. In the content of the subject, attention was

paid to provide content for the discussions to be carried out in the classroom environment. Attention was drawn to the subject by watching short videos of a few minutes as a case study in the classroom environment. Current questions and problems that students can discuss are included in the content of the case studies. Brainstorming technique was used in class discussions. The teacher candidates were given the opportunity to express their views on the subject in a sufficient time. The different views in the discussions were summarized and recorded. Through the discussion, it is aimed to direct students to think about the subject, to increase their awareness about the subject, to deepen their thinking, to see possible deficiencies and to share their thoughts on the adequacy of the materials provided. Discussions were deepened by using mostly the Socratic questioning technique.

In the last stage of the discussion, the thoughts that were considered inconsistent among the previously recorded opinions were eliminated. Then, the advantages and disadvantages of a few basic ideas are discussed. In the evaluation phase, a quiz was conducted to evaluate the students' learning. After the quiz, the students were provided with feedback and guidance regarding the evaluation. Thus, students were informed about their learning and feedback was provided.

Findings and Comments

In this section, the findings about the deep learning perception levels of the teacher candidates in the three learning environments and their comments are given. In addition, the deep learning perception levels of teacher candidates were discussed in terms of demographic (gender, department, preferences for taking applied and theoretical courses, learning resource preferences and technologies they use for internet access) variables. In this context, findings and comments on whether the deep learning perception levels of teacher candidates change depending on the mentioned variables are also included.

Deep learning perception levels of teacher candidates in the study groups were determined after the experimental application. The descriptive statistics of the group mean scores obtained from the applied "Deep (meaningful) Learning Perception Scale" are given in Table 2:

Table 2. Descriptive Statistics on Deep Learning Perception Scores of Study Groups

	Deep (Meaningful) Learning Perception				
Groups	N	$\bar{X}$	SS	Min	Max
Mathematics and Science	42	3.645	0.608	2.00	4.89
Elementary Education	44	3.563	0.648	1.89	5.00
Turkish and Social Sciences Education	40	3.569	0.691	1.33	4.78
Total	126	3.592	0.645	1.33	5.00

As can be seen in Table 2, the deep learning perception score average of the Mathematics and Science group is 3.64, 3.56 for the Elementary Education group, and 3.56 for the Turkish and Social Sciences Education group. The mean score of deep learning perceptions of all students in three of the groups was calculated as 3.59. Accordingly, it can be said that the deep learning perception levels of teacher candidates are close to each other and high in all three learning environments.

One-Way ANOVA was conducted to determine whether there was a significant difference between the deep learning perception mean scores of the study groups. The assumptions necessary for this analysis have been tested. The single-factor analysis of variance (ANOVA) results regarding the deep learning perception scores of the study groups are given in Table 3:

Table 3. Teacher Candidates' Perception of Deep Learning by Study Groups One-Way ANOVA Results

Source of Variance	Sum of Squares	sd	Mean Squares	F	p
Between groups	0.177	2	0.89	0.210	0.811
Within groups	51.897	123	0.422		

As can be seen from Table 3, as a result of the One-Way ANOVA applied, it was seen that there was no significant difference between the deep learning perception mean scores of the three study groups [F (2, 123)=0.210; p>0.05]. Accordingly, it can be said that the deep learning perception levels of the teacher candidates participating in the learning process in different experimental environments are close to each other.

The effect of teacher candidates' genders on their perceptions of deep learning was tried to be determined. For this, Mann-Whitney U test was used. In this test, it was applied because the normality of the parametric test assumptions was not met. The results of the Mann-Whitney U Test are given in Table 4:

Table 4. Teacher Candidates' Perception of Deep Learning by Gender Mann-Whitney U test Results

Gender	N	Mean Rank	Sum of Ranks	U	p
Male	39	70.96	2767.50	1405.50	0.124
Female	87	60.16	5233.50		

As can be seen in Table 4, it was determined that there was no significant difference between gender and the teacher candidates' deep learning perception total score average with p=0.124 (p>0.05) level. In this case, it can be said that the perception of deep learning does not change according to the gender of the teacher candidates.

Teachers candidates were asked about their preference of taking applied courses through distance or face-to-face education. In this context, it was tried to determine whether there was a significant difference between the candidates' deep learning perception average scores. For this purpose, the Mann-Whitney U test was performed. This test was applied because the normality of the parametric test assumptions was not met. The results of the Mann Whitney U Test are given in Table 5:

Table 5. Teacher Candidates' Perception of Deep Learning on Applied Course Preference Mann-Whitney U Test Results

Applied Course Method Preference	N	Rank Rank	Sum of Ranks	U	p
Face to Face Education	99	64.00	6336.00	1287.00	0.768
Distance Education	27	61.67	1665.50		

As can be seen in Table 5, it was determined that there was no significant difference between the teacher candidates' preferences for taking applied courses face-to-face or through distance education and the total score average of their deep learning perception, with a level of p=0.768 (p>0.05). From this point of view, it can be said that deep learning perceptions of teacher candidates do not change according to their preferences of taking applied courses face-to-face or through distance education.

Teachers candidates were asked about their preference for taking the theoretical courses through distance or face-to-face education. It has been tried to reveal whether there is a significant difference between the candidates' deep learning perception average scores. To determine this, independent samples t-test was performed. The assumptions necessary for this analysis have been tested. Independent samples t-test analysis results are presented in Table 6:

Table 6. Teacher Candidates' Perception of Deep Learning on Theoretical Course Preference Independent Samples T -Test Results

Theoretical Course Method Preference	N	$\bar{X}$	SD	df	t	p
Face to Face Education	58	3.63	0.599	124	0.634	0.527
Distance Education	68	3.55	0.684			

As can be seen from Table 6, as a result of the independent samples t-test analysis, it was determined that there was no significant difference between the preferences of the teachers candidates to take the theoretical courses face-to-face or through distance education and the total score average of the perception of deep learning (t (124)=0.634; p=0.527). . Within the framework of these results, it can be stated that the perception of deep learning does not change according to the preferences of teacher candidates to take the theoretical courses face-to-face or through distance education.

It was investigated whether there is a significant difference between the teacher candidates' preference for teachers or other resources (books, videos, digital documents, etc.) in terms of learning resources and their deep learning perception average score. To determine this, independent samples t-test was performed. The assumptions necessary for this analysis have been tested. Independent samples t-test analysis results are presented in Table 7:

Table 7. Teacher Candidates' Perception of Deep Learning on Learning Resources Preference Independent Samples T-Test Results

Learning Resources Prefence	N	$\bar{X}$	SD	df	t	p
Teacher	95	3.65	0.583	124	1.882	0.62
Other Resources	31	3.40	0.788			

As can be seen from Table 7, as a result of the independent sample t-test analysis, it was determined that there was no significant difference between the teacher candidates' preference for teachers or other sources as learning resources and the total score average of deep learning perception (t (124)=1.882; p=0.62). It has been observed that the number of teacher candidates who want to learn from the teacher is high. On the other hand, it can be said that preferring teachers or other resources as a learning resource does not make a significant difference between their deep learning perception levels.

It has been tried to determine the effects of the technologies used by the teacher candidates in their internet access on their deep learning perceptions. For this, the Kruskal-Wallis Test was used. This test was applied because the normality of the parametric test assumptions was not met. The Kruskal-Wallis Test results are given in Table 8:

Table 8. Teacher Candidates' Perception of Deep Learning on the Technologies They Use For İnternet Access Kruskal-Wallis Test Results

Technologies	N	Mean Rank	df	$\chi 2$	p
Laptop	28	53.09	2	4.324	0.115
Desktop	6	49.50			
Smart phone	92	67.58			

As can be seen in Table 8, as a result of the Kruskal-Wallis Test applied, it was seen that there was no statistically (p=0.115; p>0.05) significant difference between the technologies used by the teacher candidates for internet access and their deep learning perception mean scores. It can be said that the deep learning perception of teacher candidates does not change depending on the technologies they use for internet access.

Conclusion and Discussion

This research, planned as a quasi-experimental, was carried out to determine the deep learning perception levels of teacher candidates and the effects of these perceptions in terms of various variables (gender, department, theoretical and applied course preferences, technologies used in internet access and learning resources preference).

It was determined that teacher candidates' deep learning perception average scores were high in all three learning environments. It was observed that there was no significant difference between the deep learning perception mean scores of the study groups. Accordingly, it was found that the deep learning perception levels of the teacher candidates who participated in the learning process in different experimental environments were close to each other and high. In this context, it has been observed that

deep learning occurs in the philosophy of education course, which is based on flipped learning, regardless of the department they study. From this point of view, it can be said that there is no difference between the deep learning of the teacher candidates according to the verbal, numerical or equal weight score type. Similarly, Tatlı (2021), as a result of his quasi-experimental study, found that there was no difference between the three learning groups on which he conducted the research.

It was observed that the deep learning perception mean scores of the teacher candidates in the study groups did not differ significantly according to the gender variable. Accordingly, it was found that the deep learning perception levels of male and female teacher candidates were close to each other. It is a matter of debate whether there is a difference in learning in terms of the gender of individuals in courses that require abstract thinking, such as the philosophy of education course (Dilci & Mermer, 2013). Based on this result of the research, it can be said that gender does not make any difference in the perception of deep learning in disciplines that require abstract thinking. Similarly, Dilci and Mermer (2013) concluded in their study that the gender of individuals does not make a significant difference in terms of abstract thinking. It has been observed that there are more teacher candidates who prefer to take applied courses face-to-face and theoretical courses remotely. Despite this, it was determined that the preferences of teacher candidates to take applied and theoretical courses face-to-face or through distance education did not make a significant difference in their deep learning perception levels. It can be explained by the fact that the courses in the departments of the teacher candidates on which the research was conducted were mostly theoretical.

It has been concluded that the number of teacher candidates who want to learn from the teacher is high. Although this number is high, it was determined that the teacher candidates' preference of teachers or other resources as a learning source did not make a significant difference in their deep learning perception levels. This situation can be explained by the high level of deep learning perception of teacher candidates regarding the learning experiences provided to them.

It was concluded that the device that teacher candidates used most for internet access did not make a significant difference between their deep learning perception levels. It has been observed that the deep learning perception of teacher candidates does not change depending on the technologies they use for internet access. It was concluded that teacher candidates mostly access learning activities via smart phones. From this point of view, it can be said that the participants' easy access to learning activities keeps their participation rates at a high level. It can be thought that this situation ensures that the deep learning perception levels of teacher candidates are high.

Suggestions

- Instructional applications based on flipped learning were carried out within the framework of blended learning in the research. In this context, it was found that the deep learning perceptions of the learners were high. Based on this result, while designing educational applications, applications based on the flipped learning method can be created within the framework of blended learning.
- The research focused on the deep learning perceptions of the learners. Future research can also focus on learners' achievement, attitudes, and satisfaction.
- In this study, deep learning perception levels of teacher candidates were found to be high. Participants took the philosophy of education course in the first semester of their undergraduate education. However, it is predicted that their deep learning perception levels will be higher if they take this course after taking the basic courses related to educational sciences. For this reason, it is thought that it is more appropriate to give the philosophy of education course after the basic courses related to educational sciences are taken.
- This research can be a source in terms of providing content for the studies to be done on the perception of deep learning and presenting a perspective on related researches.

References

Ausubel, D. P. (1965). Perception versus cognition in meaningful verbal learning, *The Journal of General Psychology*. 73, 185-187.

Ausubel, D. P. (1968). *Educational psychology: A cognitive view*. New York: Holt, Rinehart and Winston.

Ausubel, D. P. (2000). The acquisition and retention of knowledge: A cognitive view. *Springer Science & Business Media*.

Chan, K. (2003). Hong Kong teacher education students' epistemological beliefs and approaches to learning. *Research in Education*, 69, 36-50. https://doi.org/10.7227/RIE.69.4

Çakıcı, D., Alver, B. & Ada, Ş. (2006). The Application of meaningfull learning in teach. *Journal of Kazim Karabekir Education Faculty*, 13, 71-80.

Dilci, T., & Mermer, B. (2013). An examination of learned helplessness and abstract thinking in mathematics education of fifth graders in terms of some variables. *Cumhuriyet University Faculty of Letters Journal of Social Sciences*, 37(1), 87-106.

Entwistle, N. J. (1994). Experiences of understanding and strategic studying. [Conference presentation]. AERA 1994 New Orleans.

Jonassen, D. H. & Strobel, J. (2006). Modeling for meaningful learning. SpringerNetherlands.

Kara, Y. & Özgün-Koca, S. A. (2004). The application of discovery learning and meaningful learning approaches in mathematics classes: Two lesson plans on "the square of addition of two terms". *Elementary Education Online*, 3(1), 2-10.

Kaya. T. (2016). Erkek akil bati felsefesinde "erkek" ve "kadin". *Karadeniz Technical University E-Journal of Faculty of Communication*, *6*(2), 138-141.

Koca, B. U. (2018). The philosophical and Quranic bases of values and values education (Unpublished Doctoral Dissertation) Sivas Cumhuriyet University, Institute of Social Sciences, Sivas, Turkey.

Marton, F., & Saljo, R. (1976). On qualitative differences in learning: Outcome and process. *British Journal of Educational Psychology*, *46*(1), 4-11. https://doi.org/10.1111/j.2044-8279.1976.tb02980.x

Mayer, R. E. (2010). *Applying the science of learning*. Upper Saddle River, N J: Pearson.

Özkan, G., & Sezgin Selçuk, G. (2014). Determining the approaches of high school students to learning physics. *Necatibey Faculty of Education Electronic Journal of Science & Mathematics Education*, 8 (1). DOI No: 10.12973/nefmed.2014.8.1.a5

Pallant, J. (2016). *SPSS survival manual. A step by step guide to data analysis using IBM spss*. Balcı, S., & Ahi, B., (Ed). (6. Baskı). Anı publishing.

Ramsden, P. (2003). *Learnig to teaching in higher education* (2nd Edition). Routhladge.

Snowman, J. ve Biehler, R. (2003). *Psychology applied to teachingo Boston*: Houghton Miffiin Company.

Tabachnick, B. G., & Fidell, L. S. (2013). *Using multivariate statistics: International edition*. Pearson 2012.

Tatlı, C., & Şimşek, N. (2022). Deep (Meaningful) learning perception scale: validity and reliability. *Journal of STEM Teacher Institutes*, 2(1), 33-41.

Tatlı, C. (2021). Analysıs of the educational equivalences of different types of interaction in distance education.(Unpublished Doctoral Dissertation) Ankara University Institute of Education Sciences, Ankara, Turkey.

Trigweel, K., & Prosser, M. (1991). Relating approaches to study and quality of learning out-comes at the course level. *British Journal of Educational Psychology*, 61, 265-275. https://doi.org/10.1111/j.2044-8279.1991.tb00984.x

Disclosure Statements

1. Contribution rate statement of researchers: First author % 50, Second author % 50.

2. Conflict of interest: No potential conflict of interest was reported by the authors.

3. Since the "Deep (Meaningful) Learning Perception Scale" used in the study was developed by the responsible author, permission to use the scale was not required.