Hacettepe Üniversitesi Eğitim Fakültesi Dergisi (H. U. Journal of Education) 42: 163-174 [2012]

# COGNITIVE SCENARIO WRITING AND CONCEPT-USING SKILLS ACCORDING TO COGNITIVE STYLES *

# BİLİŞSEL STİLLERE GÖRE BİLİŞSEL SENARYO YAZMA VE KAVRAM KULLANMA BECERİLERİ

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**ABSTRACT:** The purpose of this study is to investigate the effects of scenario-based learning on scenario writing and comprehension skills of the pre-service teachers having different cognitive styles. The study was designed according to single group pretest-posttest experimental model. The study group consists of 52 students from the departments of pre-school teacher education and painting and arts teaching of the education faculty in Muğla University in 2008-2009 academic year. Two types of data collection tools were used in the present study. In order to determine the cognitive styles of the students (field-dependent/field-independent) **The Group Embedded Figures Test (GEFT)** was used and cognitive scenario texts about distance education were used to evaluate the cognitive scenario writing skills of the students. The findings of the study revealed that there is a significant difference between cognitive scenario generation skills and concept usage levels favoring the students having field-independent style.

**Key Words:** Cognitive style, cognitive scenario, concept usage

**ÖZET:** Bu çalışmanın amacı bilişsel senaryo temelli öğrenmenin, farklı bilişsel stillere sahip öğretmen adaylarının senaryo yazma ve kavram kullanma becerilerine etkisini incelemektir. Araştırma tek gurup öntest-sontest deneysel modele göre tasarlanmıştır. Çalışma grubu 2008-2009 eğitim-öğretim yılında Muğla Üniversitesi, Eğitim Fakültesi, Okul Öncesi Öğretmenliği ve Resim-iş Eğitiminde öğrenim gören 52 öğrenciden oluşmaktadır. Bu araştırmada iki tür veri toplama aracı kullanılmıştır. Öğrencilerin bilişsel stillerini (alan bağımlı/alan bağımsız) belirlemek amacıyla **"Saklı Şekiller Grup Testi (The Group Embedded Figures Test –GEFT)"** ile bilişsel senaryo yazma becerilerini ölçmek amacıyla uzaktan eğitim konusunu içeren bilişsel senaryo metinleri kullanılmıştır. Sonuçlara göre alan bağımsız bilişsel stile sahip olan öğrenciler lehine bilişsel senaryo oluşturma ve kavram kullanma durumları arasında anlamlı bir farklılaşma bulunmuştur.

**Anahtar Sözcükler:** Bilişsel stil, bilişsel senaryo, kavram kullanma

## 1. INTRODUCTION

Student-centered learning methods are used to take individual differences into account and design learning environment according to these individual differences. In student-centered learning approaches, learning activities are designed according to students' individual characteristics. On the basis of these activities lies the conception of facilitating the learning by integrating the learned information. Making deductions for the integration of the learned information requires cognitive processing skills.

In terms of cognitive processes, learning is defined as the transmission of events and phenomena happening around to the central nervous system. This transmission is a kind of affective recording. The processes following the recording of the stimuli through sensory organs consist of perception, storing and integration etc. These processes occurring inside the person may vary depending on the person's own affective recording, arousal, perception and arrangement. These differences can also be called cognitive style. Cognitive style of a person usually indicates the person's way of approaching to problems (Witkin et al., 1977; cited in Güven, 2007).

Witkin et al., defined two cognitive styles as field-dependent and field-independent. The characteristics of field-dependent and field-independent learners can be summarized as follows (Saracho, 1988; Miller, 1997; Oh & Lim, 2005);

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* Bu makale 18. Ulusal Eitim Bilimleri Kurultayı'nda sözlü bildiri olarak sunulmuştur.

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| Field Independent | Field Dependent |
|---|---|
| They can do their own planning for learning activities and they can determine their goals and strategies themselves. | They opt for externally imposed goals and organizations; they are easily affected from the dominant situations. |
| They are competitive, independent and energetic individuals. | They are easy-going and sensitive to their environment. |
| They prefer individual projects, competition. | They prefer cooperation, group projects. |
| Their social skills are underdeveloped, they are usually isolated from the society. | They have developed social skills and usually they adapt to social environments. |
| They prefer active learning environments. | They are passive in learning. |
| They attach little importance to their dressing and hygiene. | They pay attention to their personal appearances. |
| They mostly read comics and science fiction for information. | They read fiction for pleasure. |
| They can rearrange clues and learning materials for themselves to enhance their recall and memorization skills. | They accept learning materials as they are. |

In learning-teaching processes and environments, field-dependent and field-independent learners have different learning characteristics. Teaching activities should be designed in such a way as to cater the needs of the students with different cognitive styles. For the cognitive styles where learning is based on transmission from hypotheses to concepts and then to the meanings of the concepts, generalizations, recalling and forming various memories, there is a need for teaching approaches at cognitive level because for every type of meaningful and permanent learning, use of different teaching approaches is suggested (Gagne, 1994). There are many learning-teaching strategies and methods based on cognitive approach and one of them is scenario-based learning-teaching method.

### 1.1. Scenario-based Learning

This is a kind of learning aiming to equip students with skills of thinking about a problem, using their information in real-life like situations, recognizing their information deficits, suggesting alternative solutions to a problem. Within the context of scenario-based learning, topics are turned into scenarios, they are put into forms that can draw students' attention and integrated into real life. In this way, the students are rendered active and they are encouraged to come up with solutions to the problems by activating their prior-knowledge. In a way, the real world is brought to the classroom in scenario-based learning and students are provided with opportunities to think about a problem, use their information in real-life like situations, recognize their information deficits and make research to compensate their shortcomings. The students working on a scenario activate many higher thinking processes such as solving, synthesis, evaluation and making decision etc. (Veznedaroğlu, 2005).

There are many techniques that can be capitalized on while using scenario-based learning in the classroom. For instance; "What would you do if you were?", "Role Play", "Sample Event-based Learning" techniques are used in scenario-based learning and teaching. Role play requires students to take the roles of imaginary characters and they behave and speak as they think the characters do (Watcyn-Jones, 1993, 10; cited in Ay, 1997). Role play is not enacting exactly the roles of characters in a play or film. It means taking roles and making improvisations (Tuluk, 2004). The technique of "What would you do if you were" makes students confronted with a problem and wants them to come up with their own solutions to the problem. Sample event is based on the idea of finding solutions to the real life problems with the contribution of the participants. The students are expected to improve their critical thinking, problem solving and decision-making skills (Gözütok, 2004).

### 1.2. Cognitive Scenario

The scenario generated in the mind about how an event occurred is called cognitive scenario (Veneziano, 2001). In the findings of cognitive research, it is emphasized that integration,

exemplifying and real life experiences are important in the construction of cognition (Peterson and Treaguest, 1998; Çalışkan and Şimşek, 2000; Keleş and Çepni, 2006; Duman, 2007). When the related literature is reviewed, the characteristics that should be possessed by cognitive scenario problems can be summarized as follows:

1. They are constructed from the improvisation of the problems complying with the real life experiences.
2. They should allow integrations.
3. They need to be suitable for supporting with examples.
4. They should make learners curious and think about the issue.
5. They should comply with the level of learners.
6. They should be functional for the daily life.
7. They need to make use of objective data without favoring any side.

They should contain problems whose solutions are not certain and that give opportunities to students to come up with original solutions.

There is a need for some certain criteria for the application of these above-mentioned conditions. The criteria that should be sought in such scenarios need to be based on these principles;

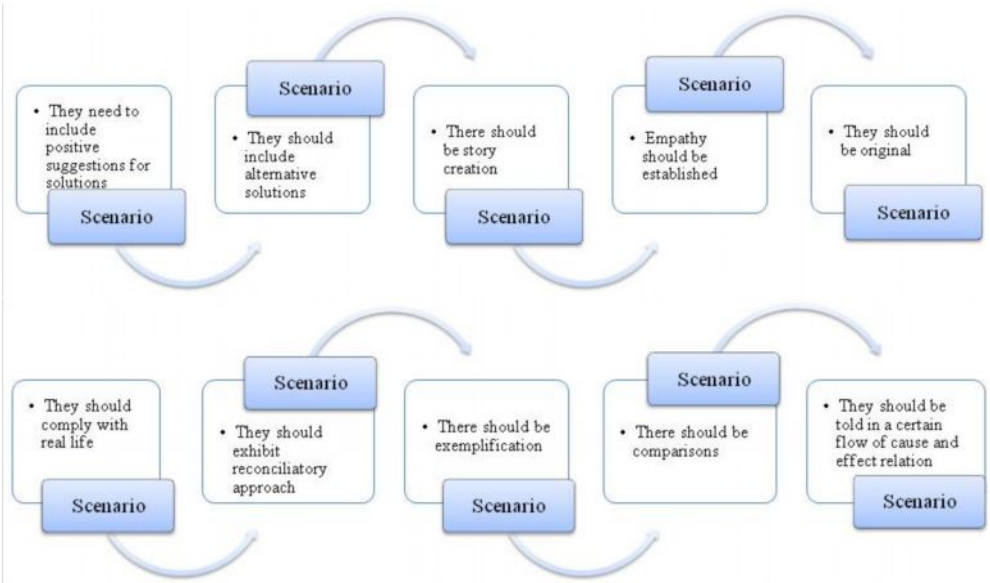



**Figure 1.** Principles of Cognitive Scenario

One of the main objectives of the contemporary learning-teaching approaches is to equip student with higher level thinking skills. The most important element in learning-teaching process in equipping students with higher level thinking skills is teaching approach and methods. Though there are many teaching approaches used to instill these skills in learners, due to factors stemming from the setting, program and student, the objectives can not be reached. Whether students take responsibility in their learning and actively participate in the process mostly depend on the method used. In learning-teaching processes, student-centered teaching methods that can draw students' attention, meet their expectations, and motivate them, and make them engaged in the alternative solutions to a problem should be opted for. In this context, students may need scenario-based teaching methods that require them to use their own cognitive skills to come up with solutions to real problems confronted.

When the related literature is reviewed, it is seen that though there are some studies carried out about the effectiveness of scenario-based teaching (Veznedaroğlu, 2005; Yaman, 2005; Chu & Leung, 2000), there is no study found dealing with the generation of cognitive scenario and concept usage in Turkey.

Does scenario-based teaching affect students' ability of cognitive scenario generation and concept usage? In order to find an answer to this question, how students with different cognitive styles (field dependent/field independent/semi-field dependent) generate cognitive scenarios and use

concepts in learning processes designed according to scenario-based learning approach should be investigated.

## 2. THE PURPOSE OF THE STUDY

The purpose of the present study is to investigate the effects of scenario-based learning on the scenario generation skills and concept usage levels of student with different cognitive styles.

In relation to this general purpose, answers were sought for the following questions.

**1.** Is there a significant difference between the cognitive scenario generation skills of pre-service teachers with different cognitive styles?

**2.** Is there a significant difference between the concept usage levels of pre-service teachers with different learning styles?

**3.** Is there a gender-based significant difference between the cognitive scenario generation skills of pre-service teachers with different cognitive styles?

**4.** Is there a gender-based significant difference between the concept usage levels of pre-service teachers with different cognitive styles?

## 3. METHOD

The study was designed according to single group pre-test post-test experimental design. The study was carried out with the students of pre-school teacher education and arts-painting department of the education faculty of Muğla University in 2008-2009 academic years. The reason why these departments were selected for the study is that the researcher was teaching courses in these departments. 36 students from the pre-school teacher education and 16 students from the arts-painting department participated in the study. The Group Embedded Figures Test developed by Witkin et al., (1971) was administered to these groups. 34 (65.4%) of the participants have filed-independent cognitive style, 8 (15.4%) have semi-field-dependent cognitive style and 10 (19.2%) have field-dependent cognitive style. 36 (69.2%) of the participants are females and 16 (30.8%) are males.

### 3.1. Data Collection Tools

Two types of data collection tools were used in the present study. One of them is "The Group Embedded Figures Test" (GEFT) developed by Witkin et al., (1971) and adapted to Turkish by Fişek Okman (1979) after reliability and validity works were carried out. This test was administered to the students to solicit their cognitive styles (filed dependent/field independent). The other data collection instrument used in the study is the cognitive scenario texts generated by the pre-service teachers themselves. In order to test the scenario writing skills of the pre-service teachers, texts with distance education content were used. In relation to this content, the students were asked a question about how they can develop solutions to a question.

### 3.2. Data Analysis

Spearman-Brown test reliability coefficient of The Group Embedded Figures Test developed by Witkin et al., (1971) and adapted to Turkish by Fişek Okman (1979) was found to be .82. The mean score of the students from the test was found to be 11.1. It was found that there are different applications in the related literature. For instance, in a study carried out by Somyürek and Yalın (2007) under the title of "The Effects of Pre-organizers used in Computer-assisted Educational Software Programs on the Academic Achievement Levels of the Field Dependent and Field Independent Students", the mean score for the students' scores was calculated and those with a score below the mean were classified as dependent and those with a score above the mean were classified as field-independent. In a study by Çakan (2005) under the title of "The Relationship between the Cognitive Styles and Foreign Language Achievement: Case of French Language Teaching" and in a study by Altun (2003) under the title of "Investigation of the Relationship between the Cognitive Styles of the Pre-service Teachers and Their Attitudes Towards the Computer", the top 27% of the group were classified as field-independent and bottom 27% were classified as field-dependent students. In the present study, in line with the national norm, the students with a score between 0 and 6 were

considered to be field-dependent, those with a score between 7 and 10 were considered to be semi-field-dependent and those with a score between 11 and 18 were considered to be field-independent. The other data collection tool used in the present study is the cognitive scenario texts generated by the students. In the analysis of these texts, principles of cognitive scenario generation were used as criteria. For each scenario, it was investigated which criteria it fits. Among the texts written as pre-scenarios, the ones fitting to at least one scenario principle were considered to be cognitive scenario, they were assigned a point for each scenario criterion they comply with (for one criterion, one point; for two criteria, two points). The data were entered into a computer through SPSS program package. %, f, Kruskal Wallis, Mann Whitney U-test analyses were conducted on the data.

### 3.3. Application Procedure

At the beginning of the study, The Group Embedded Figures Test was administered to determine the cognitive styles of the pre-service teachers. The first section of the test consists of 7 figures. This section is designed to make the participant accustomed to the test and hence excluded from the scoring. Second and third sections consist of 9 complicated figures where simple figures are embedded. The participants are expected to find the simple figures within the complicated figures within a given time period (2 minutes is given for the first section and five minutes for each of the second and third sections are given). The number of the correctly detected figures is calculated and the participant is assigned a score ranging from 0 to 18 and according to his/her score, and then he/she is classified as field-dependent or field-independent.

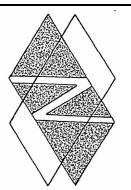
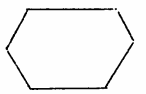
| Complex Figure | Simple Figure | Correct Answers |
|---|---|---|
|  |  |  |

**Figure 2.** A sample for the group embedded figures test

Before the lesson, in order to determine the state of the students' scenario generation skills and concept usage, they were asked this question "how would you make use of distance education in solving the problems of education?" The texts written as responses to this question were used to constitute the pre-test data of the study.

In the experimental process, sample scenarios generated by the researchers by using the principles of scenario-based teaching were studied in the lessons. In this respect, the basic criteria that should be included in a scenario were discussed with the students. After that, the unit of "Distance Education" was studied in the course of Educational Technologies and Material Design by using principles of scenario-based teaching and sample scenarios.

While teaching the lessons, by putting emphasis on the problem situation, the students were asked "What would you do if you were?" and they were asked to answer this question through writing. Discussions were held about each written response and in this way brain-storming sessions were carried out. For example, scenarios depicting the case of a teacher introducing internet technologies to his/her students and the experiences of a student having distance education were studied in the lessons as sample scenarios. Scenario-based learning activities about the unit lasted for 8 hours. At the end of the process, the students were asked this question "If you were a teacher having distance education, what kind of route would you follow to make use of distance education for contributing to the cognitive processes of the students and improving their academic achievement?" The students were asked to write cognitive scenarios about this question. The scenarios generated by the students were examined in terms of their compliance with scenario writing criteria and use of concepts. The data obtained from the texts written by the students for the solution of the problem were evaluated as post-test.

## 4. FINDINGS

**Table 1. Kruskal Wallis Analysis Results Concerning the Prior Scenario Generation Skills of the Pre-service Teachers in relation to Their Cognitive Styles**

| Cognitive Style | N | Mean Rank | Chi-Square | df | p |
|---|---|---|---|---|---|
| **Field Independent** | 34 | 29,74 | 4,737 | 2 | ,094 |
| **Half Field Dependent** | 8 | 21,75 | | | |
| **Field Dependent** | 10 | 19,30 | | | |
| **Total** | 52 | | | | |

When the Kruskal Wallis analysis results concerning the prior scenario generation skills of the pre-service teachers having different cognitive styles are examined, it is seen that p>.05. In this respect, it can be argued that there is no significant difference between the groups hence the groups are equal to each other.

The post-test results obtained in the study in relation to the cognitive scenario generation skills of the students are presented in Table 2 as a response to the first research question of the study.

**Table 2. Kruskal Wallis Analysis Results Concerning the Post Scenario Generation Skills of the Pre-service Teachers in relation to Their Cognitive Styles**

| Cognitive Style | N | Mean Rank | Chi-Square | df | p |
|---|---|---|---|---|---|
| **Field Independent** | 34 | 30,71 | 7,960 | 2 | **,019** |
| **Half Field Dependent** | 8 | 19,94 | | | |
| **Field Dependent** | 10 | 17,45 | | | |
| **Total** | 52 | | | | |

When the Kruskal Wallis analysis results concerning the post-scenario generation skills of the pre-service teachers having different cognitive styles, it is seen that p<.05, hence, there is a significant difference favoring the pre-service teachers having field-independent cognitive style. In light of these findings, it was concluded that the there is a significant difference among the cognitive scenario generation skills of the pre-service teachers having different cognitive styles. This difference favors the students with field-independent cognitive style.

**Table 3. Kuskal Wallis Analysis Results Concerning the Prior Concept Usage Level of the Pre-service Teachers in relation to Their Cognitive Styles**

| Cognitive Style | N | Mean Rank | Chi-Square | df | p |
|---|---|---|---|---|---|
| **Field Independent** | 34 | 29,91 | 5.370 | 2 | ,068 |
| **Half Field Dependent** | 8 | 22,44 | | | |
| **Field Dependent** | 10 | 18,15 | | | |
| **Total** | 52 | | | | |

When the pre-test Kruskal Wallis analysis results concerning the concept usage level of the pre-service teachers are examined, it is seen that p>.05. Hence, we can claim that there is no significant difference among the concept usage levels of the pre-service teachers having different cognitive styles and the groups are equal to each other before the study.

The post-test results obtained in the study in relation to the concept usage levels of the students are presented in Table 4 as a response to the second research question of the study.

**Table 4. Kruskal Wallis Analysis Results Concerning the Post Concept Usage Levels of the Pre-service Teachers in relation to Their Cognitive Styles**

| Cognitive Style | N | Mean Rank | Chi-Square | df | p |
|---|---|---|---|---|---|
| **Field Independent** | 34 | 30,63 | 7,564 | 2 | **,023** |
| **Half Field Dependent** | 8 | 20,63 | | | |
| **Field Dependent** | 10 | 17,15 | | | |
| **Total** | 52 | | | | |

As can be seen in Table 4, the post-test Kruskal Wallis analysis results concerning the concept usage levels of the students show that $p<.05$. It is seen that according to post-analysis results there is a significant difference among the students' concept usage levels in the cognitive scenarios they generated and this difference favors field-independent students.

**Table 5. Mann Whitney U-test Results Concerning the Prior Scenario Generation Skills of the Pre-service Teachers with Different Cognitive Styles in relation to Their Genders**

| Cognitive Style | Gender | N | Mean Rank | Sum of Ranks | U | p |
|---|---|---|---|---|---|---|
| **Field Independent** | **Female** | 21 | 18,31 | 384,50 | 119,500 | ,539 |
| | **Male** | 13 | 16,19 | 210,50 | | |
| **Half Field Dependent** | **Female** | 6 | 4,50 | 27,00 | 6,000 | 1,000 |
| | **Male** | 2 | 4,50 | 9,00 | | |
| **Field Dependent** | **Female** | 9 | 5,28 | 47,50 | 2,500 | ,472 |
| | **Male** | 1 | 7,50 | 7,50 | | |

As can be seen in Table 5, according to the results of Mann Whitney U-test analysis, there is no significant gender-based difference among the prior cognitive scenario generation skills of the pre-service teachers with different cognitive styles. Hence, we can argue that the male and female pre-service teachers are equal in terms of their cognitive scenario generation skills prior to the study.

**Table 6. Mann Whitney U-test Results Concerning the Post Scenario Generation Skills of the Pre-service Teachers with Different Cognitive Styles in relation to Their Genders**

| Cognitive Style | Gender | N | Mean Rank | Sum of Ranks | U | p |
|---|---|---|---|---|---|---|
| **Field Independent** | **Female** | 21 | 18,95 | 398,00 | 106,000 | ,273 |
| | **Male** | 13 | 15,15 | 197,00 | | |
| **Half Field Dependent** | **Female** | 6 | 4,58 | 27,50 | 5,500 | ,864 |
| | **Male** | 2 | 4,25 | 8,50 | | |
| **Field Dependent** | **Female** | 9 | 5,61 | 50,50 | 3,500 | ,694 |
| | **Male** | 1 | 4,50 | 4,50 | | |

As can be seen in Table 6, according to the results of Mann Whitney U-test analysis used as a post test, there is no significant gender-based difference among the cognitive scenario generation skills of the pre-service teachers with different cognitive styles. So differentiation did not occur in cognitive scenario generation skills of the students in relation to their gender.

**Table 7. Mann Whitney U-test Results Concerning the Prior Concept Usage of the Pre-service Teachers with Different Cognitive Styles in relation to Their Genders**

| Cognitive Style | Gender | N | Mean Rank | Sum of Ranks | U | p |
|---|---|---|---|---|---|---|
| Field Independent | Female | 21 | 17,31 | 363,50 | 132,500 | ,887 |
| | Male | 13 | 17,81 | 231,50 | | |
| Half Field Dependent | Female | 6 | 4,83 | 29,00 | 4,000 | ,505 |
| | Male | 2 | 3,50 | 7,00 | | |
| Field Dependent | Female | 9 | 5,56 | 50,00 | 4,000 | ,861 |
| | Male | 1 | 5,00 | 5,00 | | |

As can be seen in Table 7, according to results of Mann Whitney U-test used as a pre-test, the male and female pre-service teachers having the same cognitive style are equal to each other in terms of their prior concept usage levels. There is no significant difference among the groups.

The results of Mann Whitney U-test carried out as a post-test to determine the concept usage levels of the students after the application are presented in Table 8.

**Table 8. Mann Whitney U-test Results Concerning the Post Concept Usage of the Pre-service Teachers with Different Cognitive Styles in relation to Their Genders**

| Cognitive Style | Gender | N | Mean Rank | Sum of Ranks | U | p |
|---|---|---|---|---|---|---|
| Field Independent | Female | 21 | 17,71 | 372,00 | 132,000 | ,873 |
| | Male | 13 | 17,15 | 223,00 | | |
| Half Field Dependent | Female | 6 | 4,17 | 25,00 | 4,000 | ,505 |
| | Male | 2 | 5,50 | 11,00 | | |
| Field Dependent | Female | 9 | 5,39 | 48,50 | 3,500 | ,727 |
| | Male | 1 | 6,50 | 6,50 | | |

The table 8 presents the Mann Whitney U-test analysis results concerning the post concept usage levels of the students with different cognitive styles in relation to their gender. According to the table, there is no significant difference among the concept usage levels of the students depending on their gender.

## 5. DISCUSSION AND RESULTS

In the present study, the effects of scenario-based teaching on the cognitive scenario generation skills and concept usage levels of the students having different cognitive styles were investigated.

No cognitive style-based significant difference was found among the prior scenario generation skills and concept usage levels of the students. However, a significant difference favoring the field-independent students was found in post cognitive scenario generation skills and concept usage levels of the students.

When the related literature is reviewed, it is seen that there are some studies (Veznedaroğlu, 2005; Yaman, 2005; Chu & Leung, 2000) carried out to determine the effects of scenario-based teaching on students' academic achievement, attitudes and self-efficacy and these studies revealed positive effects. The results of these studies concur with the findings of our study. But, there is no study detected in Turkey about cognitive scenario generation and concept usage.

Davis (1967) carried out a study with 323 students, in this study, he used the group embedded figures test and determined the cognitive styles of the students. Then he plotted the distribution of the cognitive styles and then according to this distribution examined their concept recognition status. Davis found that the cognitive style differences among the students are influential on their concept recognition. The result of this study is parallel to the finding of the present study concerning the

differentiation between cognitive scenario generation skills and concept usage levels depending on their cognitive styles.

No significant difference was found among the students' prior scenario generation skills and concept usage levels in relation to their gender. Moreover, no significant gender-based difference was found among the post cognitive scenario generation skills and concept usage levels of the students.

In a study, Horzum and Alper (2006) tried to determine the effects of cognitive style and gender in the science course. As a result of the achievement test, it was found that cognitive style has a significant effect but the effect of gender is not statistically significant. Edwards and Lee (2002) determined that the transfer skills of the field-independent students are stronger. Witkin et al., (1977) reported that in applications requiring independency, field-independent students got higher grades. Çakan (2005) found a significant difference between the listening and reading achievements of the field-dependent and field-independent students. Arbak, Özmen and Saatçıoğlu (2004) carried out a study in order to investigate the effects of cognitive style, learning strategies, and skills on learning performance in different settings, and they found that different cognitive styles can affect student's achievement at different levels. As a consequence, both the literature and our study indicate that there is a significant difference favoring the field-independent learners.

It can be argued that scenario-based learning is influential on students' academic achievement and attitudes yet this effect does not vary according to gender. As can be seen in the related literature, both traditional (lecturing, question-answer) and more modern (sample event, role play, what would you do if you were?) teaching methods seem to favor the field-independent learners.

Given that field-independent learners prefer reading science-fiction which is not imaginary, like improving their individual approaches, do not much affected from the external factors, like doing their own plans, but field-dependent learners prefer reading fiction, easily adapt externally imposed goals, prefer being passive (Witkin & Goodenough, 1986; Saracho, 1988; Miller, 1997; Oh & Lim, 2005), it can be told that cognitive scenarios aiming to propose realistic, concrete, original, and democratic solutions to problems are more created by the students with field-independent cognitive style.

### 5.1. Suggestions

For field-dependent students to be as much effective as field-independent students, teacher-made scenarios paying attention to the characteristics of field-dependent students can be created and the effects of these scenarios on field-dependent students can be investigated.

Cognitive scenario generation activities can be employed to enhance the concept usage levels of students in learning processes. For students to cope with problems, teachers who are teaching designers should be able to help them in recognizing the problems. As prospective teachers, the students of an education faculties should be trained in such a way as to be able to this during their teaching career. In this respect, the pre-service teachers should be educated about how to give scenario training.

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## Genişletilmiş Özet

Öğrenilen bilgilerin bütünleştirilmesine yönelik çıkarımda bulunmak bilişsel süreç becerilerini gerektirir. Bilişsel süreç becerilerindeki bilişsel stil kavramı bireyin problemlere yaklaşım biçimini ortaya koyar. Witkin ve arkadaşları bilişsel stil kuramlarında alan bağımlı ve alan bağımsız olmak üzere iki stil belirlenmişlerdir. Alan bağımsızlar; Öğrenmede kendi planlarını yaparlar. Rekabeti tercih ederler, toplumdan bağımsızdırlar, gerçekçi mizah ve bilimkurgu okurlar. Alan bağımlılar ise; dıştan belirtilen hedefleri, grupla öğrenmeyi ve kurgu okumayı tercih ederler.

Öğrencilerin bir problem üzerinde düşünebilmesi, bilgilerini gerçeğe benzer durumlarda kullanabilmesi, problemlere alternatif çözüm önerileri getirebilmesi gibi becerileri kazandırmaya yönelik yapılan bilişsel düzeydeki öğretim yöntemlerinden biride senaryo temeli öğrenme yöntemidir. Senaryo temelli öğrenmede konular ilgi çekici olarak senaryolaştırılıp gerçek yaşamla birleştirilir. Bir olayın nasıl gerçekleştiğine dair zihinde oluşan senaryoya bilişsel senaryo denir. Bilişsel senaryoların senaryo niteliği taşıması için gerçek yaşamla uyumlu olması, sorunun çözümüne yönelik öneriler içermesi, örneklendirmeler yapılması, karşılaştırmalara yer verilmesi gibi özellikler gerekir. Öğrencinin, sorumluluk duygusunu üstlenebilmesi, problemlere yaratıcı ve alternatif çözümler getirebilmesi, öğrenme sürece etkin katılabilmesi için bilişsel becerilerini kullanmayı gerektiren

senaryo temelli öğrenme yaklaşımlarına göre düzenlenen bilişsel senaryo oluşturma etkinliklerine gereksinim duyulduğu düşünülmektedir. Seneryolar, öğrencinin geçmiş yaşantılarını ve beklentilerini yapılandırmada etkili bir araçtır. O halde, senaryo temelli öğretim, öğrencilerin bilşşsel senaryo oluşturma ve kavram kullanama düzeylerini etkilemekte midir? Bu genel amacın doğrultusunda şu soruların cevapları aranmıştır.

Öğretmen adaylarının bilişsel stillerine gore;

**1.** Bilişsel senaryo oluşturma becerileri arasında anlamlı bir fark var mıdır?

**2.** Kavram kullanma durumları arasında anlamlı bir fark var mıdır?

**3.** Cinsiyetleri açısından bilişsel senaryo oluşturma becerileri arasında anlamlı bir fark var mıdır?

**4.** Cinsiyetleri açısından kavram kullanma durumları arasında anlamlı bir fark var mıdır?

Araştırma tek gurup öntest-sontest deneysel modele göre tasarlanmıştır. Çalışma 2008-2009 eğitim-öğretim yılında Muğla Üniversitesi Eğitim Fakültesi Okul Öncesi Eğitimi ve Resim-iş Eğitimi Anabilim Dallarında yürütülmüştür. Okul öncesinden 36 Resim iş bölümünden de 16 öğrenci çalışma grubunu oluşturmuştur. Örneklem grubunun 34 (%65,4)'ü alan bağımsız, 8 (%15,4)'ü yarı alan bağımlı, 10 (%19,2)'si de alan bağımlı bilişsel stile sahiptir. Bunların 36 (%69,2)'sını kadınlar, 16 (%30,8)'sını ise erkekler oluşturmaktadır.

Bu çalışmada iki tür veri toplama aracı kullanılmıştır. 1- Öğrencilerin bilişsel stillerini belirlemek amacıyla Witkin ve arkadaşları (1971) tarafından geliştirilen Türkçe'ye Fişek Okman (1979) tarafından geçerlik ve güvenirlik çalışması yapılarak uyarlanan Saklı Şekiller Grup Testi uygulanmıştır. 2- Uzaktan eğitim konusu ile öğrencilerin yazdığı bilişsel senaryo metinleridir.

Verilerin çözümlenmesinde, bilişsel stillerinin belirlenmek için, öğrencilerin Saklı Şekiller Grup testinden aldıkları puanlar değerlendirlmiştir. 0-6 puan alanlar alan bağımlı, 7-10 puan alanlar yarı alan bağımlı, 11-18 puan alanlar ise alan bağımsız olarak kabul edilmiştir. Öğrencilerin senaryo yazma becerilerini değerlendirmek için çalışmada bahsedilen kriterlere uyulmuştur. Öğrencilerin yazdığı metinlerin senaryo kriterlerine uygunluğuna bakılmıştır. Uygun kriterlerin her biri için birer puan verilmiştir. Verilerle ilgili yüzde-frekans, Kruskal Wallis, Mann Whitney U-testi, analizleri yapılmıştır.

Araştırmanın bulgularına göre; farklı bilişsel stillere sahip öğretmen adaylarının ön bilişsel senaryo oluşturma becerilerine ilişkin Kruskal Wallis analiz sonuçlarına göre aralarında anlamlı bir farklılaşma bulunamamıştır (p=.094). Farklı bilişsel stillere sahip öğretmen adaylarının son bilişsel senaryo oluşturma becerilerine ilişkin Kruskal Wallis analiz sonuçlarına göre alan bağımsızlar lehine anlamlı bir farklılaşma bulunmuştur (p=.019). Öğretmen adaylarının kavram kullanma durumlarına ilişkin olarak uygulanan ön test Kruskal Wallis analiz sonuçlarına göre anlamlı farklılaşma olmadığı, grupların denk olduğu saptanmıştır (p=.068). Öğretmen adaylarının kavram kullanma durumlarına ilişkin olarak uygulanan son test Kruskal Wallis analiz sonuçlarına göre alan bağımsızlar lehine anlamlı farklılaşma olduğu saptanmıştır (p=.023).

Bilişsel stillere göre ön bilişsel senaryo oluşturma durumlarının Mann Whitney U-testi analiz sonuçları açısından öğretmen adaylarının cinsiyetlerine göre anlamlı bir fark bulunmamaktadır. Bu açıdan aynı bilişsel stile sahip olan kadın ve erkek öğretmen adaylarının (alan bağımsız p=.539; yarı alan bağımlı p=1.000; alan bağımlı p=.472) ön bilişsel senaryo oluşturma durumlarının denk olduğu görülmektedir. Bilişsel stillere göre son bilişsel senaryo oluşturma durumlarının Mann Whitney U-testi analiz sonuçları açısından öğretmen adaylarının cinsiyetlerine göre anlamlı bir fark bulunmamaktadır (alan bağımsız p=.273; yarı alan bağımlı p=.864; alan bağımlı p=.694).

Farklı bilişsel stillere sahip öğretmen adaylarının cinsiyetleri açısından kavram kullanma durumlarına ilişkin ön testlerinin Mann Whitney U-testi analiz sonuçları açısından aynı bilişsel stile sahip kadın ve erkek öğretmen adaylarının (alan bağımsız p=.887; yarı alan bağımlı p=,505; alan bağımlı p=.861) ön kavram kullanma durumlarının denk olduğu görülmektedir. Gruplar arasında

kavram kullanma açısından bir farklılaşma saptanmamıştır. Farklı bilişsel stillere sahip öğretmen adaylarının cinsiyetleri açısından kavram kullanma durumlarına ilişkin son testlerinin Mann Whitney U-testi analiz sonuçları açısından aynı bilişsel stile sahip kadın ve erkek öğretmen adaylarının (alan bağımsız p=.873; yarı alan bağımlı p=,505; alan bağımlı p=.727) son kavram kullanma durumları arasında farklılaşma olmadığı saptanmıştır.

Bu çalışmada Senaryo temelli öğrenmenin farklı bilişsel stillere sahip öğrenenlerin bilişsel senaryo oluşturma becerilerine ve kavram kullanma durumlarına etkisini incelenmiştir. Öğretmen adaylarının bilişsel stillerine göre ön bilişsel senaryo oluşturma ve ön kavram kullanma durumları arasında hem cinsiyetleri açısından hem de farklı stiller açısından aralarında anlamlı bir fark saptanmamıştır. Ancak son bilişsel senaryo oluşturma ve son kavram kullanma durumları arasında alan bağımsızlar lehine anlamlı bir farklılaşma bulunmuştur.

Bu alanda literatür tarandığında Veznedaroğlu, 2005; Yaman, 2005; Chu & Leung, 2000 gibi araştırmacılar tarafından yapılan senaryo temelli öğrenmenin öğrencilerin akademik başarıları, tutumları ve özyeterlilik algıları gibi bazı faktörleri üzerinde etkili olduğunu gösteren çalışmalara rastlanmaktadır. İlgili çalışmalarınn sonuçları araştırmamızın bilişsel senaryo etkinliklerinin sonuçlarıyla tutarlılık göstermektedir. Ancak Türkçe literatürde bilişsel senaryo oluşturma ve kavram kullanma durumları üzerine yapılan çalışmalara pek rastlanamamıştır.

Bilişsel stiller üzerine yapılan çalışmalar incelendiğinde, Davis (1967) bilişsel stillerin dağılımlarını ve kavram tanıma durumlarını incelediği çalışmasında, öğrencilerin bilişsel stil farklılıklarının kavramları tanıma üzerinde etkili olduğunu bulmuştur. Edwards & Lee (2002) yaptıkları araştırmalarda transfer becerilerinin alan bağımsız öğrenciler lehine daha etkili olduğunu belirlemiştir. Witkin ve arkadaşlarının (1977), bağlamsızlaştırmayı gerektiren uygulamalarda alan bağımsız öğrencilerin daha yüksek puanlar elde ettiklerini bulmuşlardır. Bu çalışmaların sonuçları araştırmamızın bilişsel stilleriyle ilişkili sonuçlarına parelellik göstermektedir.

İlgili literatür incelendiğinde senaryo temelli öğrenme ve bilişsel stillerin birlikte çalışıldığı çalışmalara araştırmacılar tarafından rastlanamamıştır. Bu nedenle bu çalışmanın, farklı bilişsel stillere göre senaryo temeli öğrenme yöntemi ile bilişsel senaryo oluşturma ve kavram kullanma durumlarını incelemesi bakımından özgün bir araştırma niteliği taşıdığını söyleyebiliriz.

Sonuç olarak; ilgili literatürde alan bağımsızlar lehine çalışma sonuçlarının olduğu görülmektedir. Bununla birlikte alan bağımlı öğrencilerin en az alan bağımsızlar kadar etkili olabilmesi için alan bağımlıların özelliklerini dikkate alan öğretmen yapımı senaryo metinleri oluşturulup bu metinlerin alan bağımlılar üzerindeki etkilerine bakılabilir.