



INVESTIGATION OF STUDENTS' EPISTEMOLOGICAL BELIEFS AND ATTITUDES TOWARDS STUDYING

ÖĞRENCİLERİN EPISTEMOLOJİK İNANÇLARI İLE DERS ÇALIŞMAYA YÖNELİK TUTUMLARININ İNCELENMESİ

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ABSTRACT: This study consists of the analysis on the relationship between the epistemological beliefs of secondary level students and their attitudes towards studying. The sampling of the study was formed by 440 students studying at Grade 10, 11 and 12 in secondary schools. The Epistemological Belief Questionnaire and the Attitudes towards Studying Scale, which were developed in Likert-type in order to assess students' epistemological beliefs and attitudes toward studying, were used as data collection tools. The data obtained from the scales were evaluated according to some variables and significant positive relations were determined. The analysis concluded that there were significant relationship between students' genders and grade levels in terms of their epistemological beliefs and attitudes towards studying. It was found that as the level of students' epistemological beliefs increased, their attitudes towards studying also improved.

Keywords: epistemological belief, attitudes towards studying, secondary level students.

ÖZET: Araştırmada, Ortaöğretim basamağında öğrenim gören öğrencilerin sahip oldukları epistemolojik inançları ile ders çalışmaya yönelik tutumları incelenmiştir. Araştırmanın örneklem grubunu ortaöğretim kurumlarının 10. 11 ve 12. Sınıflarında öğrenim gören 440 öğrenci oluşturmaktadır. Veri toplama aracı olarak, öğrencilerin epistemolojik inançları ve ders çalışmaya yönelik tutumlarını belirleyebilmek için, likert tipinde hazırlanan Epistemolojik inanç ölçeği ve Ders çalışmaya yönelik tutum ölçeği kullanılmıştır. Söz konusu ölçeklerden elde edilen veriler bazı değişkenler açısından değerlendirilmiş ve aralarında pozitif yönlü anlamlı bir ilişkinin olduğu saptanmıştır. Yapılan analizler sonucunda, ortaöğretim öğrencilerinin cinsiyetleri ve buldukları sınıf düzeyleri açısından hem epistemolojik inançlar hem de ders çalışmaya yönelik tutumlar arasında anlamlı ilişkiler olduğu belirlenmiş ve öğrencilerin epistemolojik inançları arttıkça, ders çalışmaya yönelik tutumlarının da arttığı saptanmıştır.

Anahtar sözcükler: epistemolojik inanç, ders çalışmaya yönelik tutum, ortaöğretim öğrenciler.

1. INTRODUCTION

Modern individuals have scientific thinking, researching and entrepreneurial skills. "Thinking" is the intellectual capital for individuals. All students could improve their thinking abilities and the quality of their thinking with the guidance of their teachers. The first step to take towards this stage is to learn the knowledge as well as how to learn the knowledge. Knowledge has always had a leading role in human life at all times. Today, what is important in terms of knowledge is the increase in its importance. Knowledge is continuously increasing today, so that individuals feed their minds and structure themselves with the knowledge they attain. Therefore, for the first time in human history, learning has gained this much importance. The philosophical field that focuses on the structure, roots, criteria, limits and scope of knowledge is called epistemology. Epistemology is a phenomenon questioning how knowledge is obtained, how much it could be known, what its theories are and how it could be constructed. In this respect, it is a philosophical trend related to the nature and reasons of the knowledge, also known as the theory of knowledge (Moser, et.al., 1998; Honer, et.al., 2003; Frolov, 1991; Ajdukiewicz, 1994; Cucen, 2001; Bolay, 2004; Sonmez, 1998; Hofer & Pintrich, 1997; Pears, 2004). Epistemology seeks for knowledge. An individual's comments on how s/he learns or teaches depends on his/her epistemological beliefs. The beliefs of individuals on knowledge and knowing have been named as epistemological beliefs (Schommer, 1994) and have set the focus point of a series of research programs. Epistemological beliefs were first developed by Perry (1981). Perry (1981) defined four basic developmental levels involving nine developmental stages. The first level consists of dualist individuals, who believe that only experts could decide whether the knowledge is correct or incorrect

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as only the experts possess the correct knowledge. Students embracing the dualist approach comprehend the knowledge that experts possess. The beliefs of these students gather around phenomena and reality. Multiplist level is a developmental level where different perspectives are appreciated and knowledge of experts is questioned. Students embracing the multiplist approach try to establish their own opinions. Individuals embracing the relativist level believe that knowledge is active and is constructed individually. The fourth level, where individuals are “committed” continue to think relatively, while believing flexibly but strongly to a certain approach or belief (Hofer, 2001; Buehl, 2003; Tsai, 2000; Schommer & Aikins, 2005; Boden, 2005; Brownlee et.al., 2002; Berthelsen et.al., 2002; Marrs, 2005). The studies on the varying epistemological developments of individuals, in other words, beliefs of individuals on what is knowledge and how it is attained have mainly been conducted with adolescents or adults. The reason for this is the nature of epistemological beliefs that develops rather late and is closely related to mental development. It is possible to list the factors affecting the construction and development of epistemological beliefs as mental development, age, family structure, education level and cultural background. Although there is not enough evidence yet, gender and field of study are also believed to be effective on the structuring of the epistemological beliefs (Deryakulu, 2004). Moreover, epistemological beliefs are considered to be in relation with studying skills and higher cognition level (where problem solving occurs) as it affects the decisions on finding the correct strategies in order to cope with the challenging nature of the mental functions (Öngen, 2003). The analysis on the relationship between the epistemological beliefs and studying skills of secondary level students has set the basis of this study. Students’ failures at the end of the education period result in the wasting of investments in education while creating the anxiety that the expected manpower cannot be provided for the community. Today, one of the main reasons for the failures of students at school is the inadequacy of their studying skills as well as their attitudes towards studying. The attainment of the most useful and permanent knowledge at the shortest period has become a requirement of our age. Considering that achievement is obtained through effective studying instead of studying more, it is important for students to develop productive studying skills (Erdamar, 2010). Learning is a difficult performance requiring planning, motivation, regular studying and material analysis skills. In other words, attaining knowledge, relating it to the existing knowledge and facilitating its recalling are thoughts and behaviors that students are expected to have (Özbey, 2007). Reaching these thinking and behavioral levels could be actualized through gaining the habit of effective studying. Students, who fail to organize their timing for studying and leisure and lack the knowledge of some recalling techniques tend to lose their interest or get bored (Özcan, 2006). The productivity and usefulness of students’ studying habits are closely related to their attitudes towards studying. Moreover, their studying performance depends on how they attain and use the knowledge. As students manage to relate their daily lives during the process of attaining knowledge and learning, they would be able to manage their studying processes. Some students are observed to fail although they try hard. The main reason for that is their lacking the skills to use effective studying methods, which leads to failing to study regularly and systematically as they fail to know how to acquire the targeted knowledge and comprehend it in their minds. These result in academic failure in students. Students’ developing positive attitudes towards studying indicates that they have improved studying skills. Students with improved studying skills know what to know, how to learn and how to use strategies to unite these with effective studying skills. Schommer and colleagues (1997), in their study where the epistemological developments of high school students were analyzed, students were found to believe that learning improved in time as they proceeded from first grade to higher grades as they achieved higher academic averages as well as more improved epistemological beliefs. Qian and Alvermann (2000) researched on the relationship between middle school students’ the epistemological beliefs and learning performances that require conceptual changes and concluded that students with improved epistemological beliefs performed better than students with underdeveloped epistemological beliefs performed worse. Schreiber and Shinn (2003), in their study on 115 students being 43 male and 73 female, analyzed the relationship between epistemological beliefs and learning processes. They concluded that students’ epistemological beliefs affected their performances, academic success and learning processes. The most important feature of the relationship between epistemological beliefs and learning processes is that students’ attitudes towards studying affected their performances and

epistemological beliefs have empowering affects in the knowledge processing skills. Educational psychologists of today emphasize that in increasing academic achievement levels of students, epistemological beliefs and cognitive behaviors need to be highlighted, as these two structures are rather effective in students' achievement. This makes it more important to research on the relationship between students' attitudes towards studying and their epistemological beliefs. Epistemological beliefs are highly affected from the education and teaching activities of teachers in the classroom (the methods and techniques to be used, classroom management, the learning focus etc.). The basis of the factors hindering educational reforms is affected by failure of the system to attain students studying skills at the expected level. Therefore, in organizing and applying secondary level programs, it is important to analyze the variables that could have relations with students' epistemological beliefs. Knowing students' attitudes towards studying and epistemological beliefs as well as their relations is of utmost importance in determining teaching methods, assessment and evaluation activities, and guidance and counseling services.

The conclusions of this study and the suggestions that could come up are expected to bridge the above-mentioned gap and lead to important findings. Additionally, this study could help researchers find new research problems, set theorems for new research studies and add onto their existing knowledge in the field.

Therefore the findings of the study are targeted to contribute to field-related institutions and individuals.

2. METHOD

2.1. Research Model

This study, which aims to determine the epistemological beliefs of secondary level students, their attitudes towards studying and the relations of some variables with these, is a descriptive research within the research scanning model. Within the study, it was tested whether there was a relationship between epistemological beliefs of secondary level students and their attitudes towards studying according to some variables. Additionally, the relationship between students' epistemological beliefs and attitudes towards studying was described.

2.2. Limitations

This research has been conducted with a total of 440 students studying at Grades 10, 11 and 12 within the 2009 – 2010 and 2010 – 2011 academic year.

2.3. Assessment Tools

2.3.1. Epistemological Belief Questionnaire

The "Epistemological Belief Questionnaire", which was developed by Schommer (1990) was translated into Turkish by Deryakulu and Buyukozturk (2002). The reliability and validity studies were completed. It has a three-factor structure. The first factor of the scale called "Belief that learning depends on effort" consists of 18 items. The second factor of the scale called "Belief that learning depends on skills" consists of 9 items. "Belief that there is only one correct knowledge", the third factor, consists of 8 items. The dual correlations between the factor scores of the scale show that factors are independent from each other, which means that the scale assesses different dimensions related to epistemological beliefs. Additionally, the Cronbach Alpha inner consistency coefficient calculated according to the item analysis of the scale is found to be .83 for the first factor, .62 for the second factor, .59 for the third factor and .71 for the whole scale. It is a 5-point Likert-type scale as "Strongly disagree (1), Disagree (2), Neither Agree nor Disagree (3), Agree (4) and Strongly Agree (5)". The low average scores of the factors were evaluated as developed/improved epistemological belief and the high average scores were evaluated as underdeveloped/unimproved epistemological beliefs (Deryakulu, 2004; Schommer-Aikins et.al., 2005). The reliability and validity of the

Epistemological Belief Questionnaire was accepted to be completed as 37% of the sampling of the study by Deryakulu and Buyukozturk (2005) consisted of pre-service homeroom teachers, the study of Vural and Gömleksiz (2007) had a sampling composed of pre-service homeroom teachers and the scale had a three-factor structure in both studies. In order to reassure its reliability, a study was done and the Cronbach Alpha inner consistency coefficient for the whole scale was found to be .80. The calculation was found to be .79 for the first factor, .76 for the second factor and .72 for the third factor.

2.3.2. The Scale of Attitudes Towards Studying

The Likert-type scale administered in order to determine the attitudes of students towards studying was developed by Ozturk, Koc and Cetin (2002). Factor analysis was applied in determining the validity of the scale with 40 items, which was constructed in the light of expert views and pre application. The data for this application was obtained from 812 students. The items with factor loading values lower than .40 were not included in the scale. In the end, 13 items were removed from the scale and 27 items remained. The analysis made according to Varimax Vertical Rotation Technique, 3 factors were found to have self values higher than 1. These factors were named as “willingness to study” (sample item: I feel happy when I learn something through studying), “valuing studying” (sample item: I prefer having fun to studying), and “studying as a habit” (sample item: I can study for hours if I am not disturbed) according to the behaviors in their scopes. There were 8 items in the “willingness to study” dimension, 12 in the “valuing studying” and 7 items in the “studying as a habit” dimension. These three factors explained the 50.9% of the total variance. The factor loadings of the items are .65 in average. The inner consistency of the sub scales was determined according to Cronbach Alpha. It was calculated for the first factor as .87, for the second factor as .85, for the third factor as .82, and for the whole scale as .72. The degrees indicating students’ attitudes towards each behavior are “I don’t agree at all (1), I sometimes agree (2), I rarely agree (3), I usually agree (4) and I strongly agree (5). The items listed under the title “willingness to learn” are positive and the items listed under “valuing learning” are negative. Negative items were scored in reverse order. According to the data analysis results, the scale is valid, and reliable.

3. FINDINGS

3.1. Findings Regarding Epistemological Beliefs Of Students

In order to determine whether students’ epistemological beliefs differed according to their genders, the average scores of female and male students were compared through the Independent Samples t-test and the result is displayed on Table 1.

Table 1: The Test Results Of Students’ Epistemological Belief Questionnaire Scores According To Their Genders

	Gender	N	\bar{X}	S	sd	t	p
Epistemological Belief	Female	256	3.44	.38	438	3.95	0.01
	Male	184	3.27	.48			

As Table 1 displays, there are significant differences in the epistemological beliefs of the participating male and female students [$t(438) = 3.95, p < .05$]. This finding leads to the determination of a significant relationship between students’ epistemological beliefs and their genders.

The study continued with the analysis on whether the epistemological beliefs of students differed according to their grade levels. Single-direction ANOVA (the Analysis of Variance) was applied at the 0.5 significance level. The conclusions are displayed on table 2.

Table 2: The Analysis Of Students' Epistemological Belief Levels According To Their Grade Levels

Grade	N	\bar{X}	ss
10	180	3.26	.40
11	122	3.33	.40
12	138	3.50	.47
Total	440	3.37	.43

As Table 2 displays, the epistemological score average of Grade 12 students are higher than the others whereas that of the Grade 10 students were found to be the lowest. In order to determine the statistical significance of this difference between the average scores of students at different grade levels, ANOVA analysis was made and the results are displayed on Table 3.

Table 3: The Single-Direction Variance Analysis Of Students' Epistemological Belief Scores According To Grade Level

The Source of the Variance	The sum of squares	Sd	Average of squares	F	P
Intergroup	4.05	2	2.02		
Intragroup	7ording to	437	.181	11.169	.001
Total	83.27	439			

As Table 3 displays, the single-directional analysis made concluded that the difference between the epistemological belief levels of students according to their grade levels is significant [$F(2-439) = 11.16$, $p < .05$]. In other words, the epistemological belief scores of students differ significantly according to their grade levels. The Sheffe test was administered in order to determine the grade levels where the difference is observed. According to the test results, the epistemological belief score averages of Grade 12 students were significantly different from that of the Grade 10 and 11 students.

3.2. Findings Regarding The Attitudes Of Students Towards Studying

The attitudes of male and female students towards studying according to their genders were compared using the Independent Samples t-test and the findings of the comparison are listed on Table 4.

Table 4: The T-Test Scores Of Students' Attitudes Towards Studying According To Their Genders

	Gender	N	\bar{X}	S	Sd	t	p
Studying	Female	256	2.92	.41	438	3.62	0.01
	Male	184	2.78	.37			

Table 4 displays that there is a significant difference between students' attitudes towards studying according to their genders [$t(438) = 3.62$, $p < .05$]. Additionally, female students were found to have more positive attitudes towards studying than male students, which lead to statistically significant differences.

In order to determine whether attitudes of students towards studying differed according to their grade levels, single-dimensional variance analysis (ANOVA) was administered. The findings are displayed on Table 5.

Table 5: Grade Level Analysis Of Scores Obtained From Data Regarding Students' Attitudes Towards Studying

Grade	N	\bar{X}	ss
10	180	2.79	.36
11	122	2.81	.39
12	138	2.98	.43
Total	440	2.86	.40

Table 5 displays that the average attitude scores of students at Grade 12 regarding their attitudes towards studying (2.98) ranked the first since it was the highest amongst the sampling. The same average for Grade 10 students was 2.79, which ranked them the third and that of the Grade 11 students ranked them the second with the average score of 2.81. ANOVA analysis was applied in order to determine whether the difference was statistically significant or not, and the results are displayed on Table 6.

Table 6: The Single-Dimensional Variance Analysis Results of Students' Scores For Their Attitudes Towards Studying According to Their Grade Levels

The Source of the Variance	Sum of Squares	Sd	Average of Squares	F	p
Intergroup	3.209	2	1.60		
Intragroup	68.055	437	.156	10.30	.001
Total	71.264	439			

Table 6 displays that the variance analysis results indicated a statistically significant difference between the attitude scores of students at different grade levels [$F(2-439) = 10.30$, $p < .05$]. The Sheffe test was administered in order to determine the grade levels, where the difference is statistically significant. The test scores indicated that there was a significant difference between the attitude scores of Grade 12 students and that of the Grade 11 and 10 students.

3.3. Findings Regarding The Relationship Between Students' Epistemological Beliefs And Their Attitudes Towards Studying

The study sought for an answer to the question whether the data obtained from the Epistemological Belief Questionnaire and the Scale of Attitudes towards Studying were related to each other. With this aim, the numerical values obtained from data collection tools were calculated according to Pearson Correlation Analysis and the findings are displayed on Table 7.

Table 7: The Pearson Correlation Coefficient Values of the Epistemological Belief Questionnaire and the Scale of Attitudes towards Studying

		Epistemological Belief Questionnaire	The Scale of Attitudes towards Studying
Epistemological Belief Questionnaire	Pearson Correlation	1	.152**
	Sig. (2-tailed)		.024
The Scale of Attitudes towards Studying	Pearson Correlation	.152**	1
	Sig. (2-tailed)	.024	

** at 0.05 significance level

Table 7 displays that the epistemological beliefs of students and their attitudes towards studying had a significant relationship on the positive direction ($r = .152$; $p < .05$). In other words, as students' attitudes towards studying improved their epistemological beliefs also progressed in the positive direction.

4. CONCLUSION AND DISCUSSION

Within the scope of the study, it was aimed to determine students' epistemological beliefs and attitudes towards studying and the potential relationship between the two factors as well as their evaluation according to some variables. The analysis concluded that the epistemological beliefs of secondary level students had significant differences according to their genders. The study by Neber, Schommer and Aikins (2002) on primary and secondary level students, Schommer's (1993) study on secondary level students, Enmer and Lupart's (2000) study on college students all concluded that female students had more advanced beliefs in knowledge and learning than male students. Similarly, the scale of attitudes towards studying concluded with scores favoring female students. This result, in line with the common conclusions, indicates that female students embrace attitudes implying they need to study more in order to achieve more, whereas male students prefer not to relate studying to achievement but to see the achievement as an outcome of their skills (Deryakulu, 2004).

The study showed that as the grade level increased, the epistemological beliefs improved. Schommer(1993) stated that the intelligence and grade level of secondary school students had significant effects on their epistemological beliefs by proving that Grade 12 students had more advanced epistemological beliefs than others. Schommer and Dunnell (1994) found that the epistemological beliefs of secondary level students with normal and gifted students did not significantly differ from each other during the first years of secondary school, however, during the last two years of the secondary school the epistemological beliefs of gifted students regarding "learning should occur promptly" or "knowledge is a simple, easy, comprehensible and independent group of phenomena" were observed to get weakened. The findings of this study are in line with the findings of the related studies in the literature. As the grade level increases, students construct a positive relationship between acquiring knowledge, learning, achieving and studying as well as developing positive attitudes towards studying with their advanced epistemological beliefs. Therefore, a positive correlation could be identified between the epistemological beliefs of secondary level students and their attitudes towards studying. As grade level increases, these belief and attitudes do not display a consistent structure or indicate a single true knowledge embraced by students; instead, they display a structure that could be reconstructed by the student from time to time. In the light of the fact that learning is structured and developed by the student, formal education emerges as an important figure. The educational activities should motivate students to attain studying habits, to display their studying skills through various performances as well as acknowledging them about what they should do to acquire knowledge or guiding them to construct conscious strategies on why and how they should

reach the better knowledge. Parents and teachers play important roles at this stage. While evaluating student performance, teachers should move away from testing their memorizing skills or assessing the results and get closer to evaluate their students on process-basis by observing them in their journey to acquire knowledge or guiding them in choosing their strategies. In evaluating students' performances, teachers should include students' studying processes and be careful. Parents should be respectful to their children's thoughts and decisions. They should create environments where children could display their skills and take the responsibility of their own learning for constructing their own future.

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Genişletilmiş Özet

Ortaöğretim basamağında öğrenim gören öğrencilerin epistemolojik inançları ile ders çalışma alışkanlıkları arasındaki ilişkinin araştırılması, bu çalışmanın hareket noktasını oluşturmuştur. Epistemoloji, bilginin nasıl elde edildiğini, hangi ölçütlerle bilinebileceğini, bilgi savlarının nasıl temellendirileceğini sorgulayan bir olgudur. Bu yönüyle, insan bilgisinin doğası ve gerekçeleriyle ilgilenen, bilgi kuramı olarak da bilinen felsefi akımdır (Moser, et.al, 1998; Honer, et.al, 2003; Frolov, 1991; Ajdukiewicz, 1994; Çuçen, 2001; Bolay, 2004; Sönmez, 1998; Hofer & Pintrich, 1997; Pears, 2004). Eğitim öğretim sürecinin sonunda, öğrencilerin başarısız olması, eğitime yapılan harcamaların önemli bir bölümünün boşa gitmesine neden olurken, öte yandan da toplumun istediği insan gücünün yetişemeyeceği endişesini de kuvvetlendirmektedir. Günümüzde, öğrencilerin okul başarısızlıklarının altında yatan en büyük nedenlerden birinin, ders çalışma beceri ve tutumlarının yetersizliği olduğu belirtilmektedir. Günümüzde en kısa sürede, en kalıcı ve kullanışlı bilginin kazanılması, çağın bir gereği olarak karşımıza çıkmaktadır. Başarının çok çalışmayla değil, etkili çalışmayla elde edilebileceği göz önüne alındığında öğrencilerin verimli çalışma alışkanlıklarına sahip olmaları zorunluluğu ortaya çıkmaktadır (Erdamar, 2010). Öğrenme zor bir görevdir. Planlama, motivasyon, düzenli ve verimli ders çalışma ve öğrenme materyallerini analiz etme becerilerini gerektirir. Diğer bir anlatımla herhangi bir bilginin kazanılması, bunun var olan bilgilerle ilişkilerinin kurulması ve gereğinde hatırlanmasını kolaylaştıracak düşünce ve davranışlara öğrencilerin sahip olması gerekir (Özbey, 2007). Bu sıralanan düşünce ve davranışlara ulaşma ancak öğrencinin etkili ders çalışma alışkanlıklarına sahip olmasıyla gerçekleşir. Öğrencilerin ders çalışma alışkanlıklarının etkili ve kullanışlı olabilmesi, ders çalışmaya yönelik tutumları ile yakından ilişkilidir. Ayrıca, ders çalışma performanslarının yüksek olması, ders çalışma süreçlerinde bilgi'yi nasıl, ne şekilde elde ettikleri ve kullandıklarıyla da yakından ilişkilidir. Bilgi'ye ulaşırken, günlük yaşamlarını da etkili bir biçimde bilgi kazanma ve öğrenme süreçlerine katabilmeleri onların ders çalışma süreçlerini de etkili bir biçimde yönettiklerini gösterecektir. Eğitim konusunda gerçekleştirilecek reformlara engel oluşturan etmenlerin temelinde, ders çalışma alışkanlıklarının gerektiği biçimde öğrenciye kazandırılmamasının etkisi vardır. Bazı öğrencilerin, gösterdikleri gayrete rağmen, yeterince başarılı olamamaktan yakındıkları görülmektedir. Bunun en önemli nedeni, öğrencilerin ders çalışma sürecinde etkili çalışma yöntemlerini kullanamamaları, düzenli ve sistemli çalışamamaları ve öğrenecekleri bilgi- ya da-bilgilere nasıl ulaşacaklarını bilememeleri ve bilgiyi gerekli şekilde zihinlerine işleyememeleridir. Öğrenciler, bu nedenle de akademik başarısızlık yaşamaktadırlar. Öğrencilerin ders çalışma'ya yönelik olumlu tutum göstermeleri, onların ders çalışma becerilerinin de gelişmiş olduğunu gösterir. Ders çalışma becerisi gelişmiş öğrenciler, neyi bilmeleri gerektiğini, nasıl öğrenmeleri gerektiğini, bilgiye nasıl ve nereden ulaşacaklarını bilen, etkili çalışma alışkanlıklarıyla bunları bütünleştiren stratejileri başarıyla kullanan bireylerdir. Bu nedenle, ortaöğretim düzeyindeki ders programlarının düzenlenmesinde ve uygulanmasında öğrencilerin epistemolojik inançları ile ilişkisi olabilecek değişkenlerin incelenmesi gereklidir. Ortaöğretim öğrencilerinin, epistemolojik inançları ve ders çalışmaya yönelik tutumları hakkında bilgi sahibi olunması ve aralarındaki ilişkinin belirlenmesi, öğrencilere uygulanacak öğretim yöntemi, ölçme değerlendirme etkinlikleri ve psikolojik danışma -

rehberlik hizmetlerinde nelere dikkat edilmesi gerektiği açısından da son derece önemlidir. Epistemolojik inançları belirlemek amacıyla Schommer (1990) tarafından geliştirilen ve Deryakulu ve Büyüköztürk (2002) tarafından geçerlik ve güvenilirliği saptanan Epistemolojik İnanç Ölçeği (EİÖ) kullanılmıştır. Ölçeğin her bir faktöründen alınan yüksek puan, bireyin o faktöre ilişkin olgunlaşmış / gelişmiş (sophisticated) inançlara sahip olduğunu göstermektedir. Özgün ölçeğin test tekrar test güvenilirliği 0,74'tür, faktörlerin güvenilirlik katsayıları ise .85 ile .63 arasında değişmektedir. Uyarlanan 35 maddelik ölçeğin Cronbach Alpha iç tutarlık katsayıları birinci faktör için 0.83, ikinci faktör için .62, üçüncü faktör için .59 ve ölçeğin bütünü için ise 0.71 olarak hesaplanmıştır. Öğrencilerin ders çalışmaya yönelik tutumlarını belirlemek için kullanılan likert tipi ölçek Öztürk, Koç ve Çetin (2002) tarafından geliştirilmiştir. Ölçek üç faktörlüdür. Alt ölçeklerin iç tutarlılık katsayısı Cronbach Alpha ile belirlenmiş; birinci faktör .87, ikinci faktör .85, üçüncü faktör .82 ve ölçeğin tümü için .72 bulunmuştur. Yapılan analizler sonucunda, lise öğrencilerinin epistemolojik inançlarında cinsiyete göre anlamlı bir farklılık olduğu ortaya çıkmıştır. Aynı şekilde, ders çalışmaya yönelik Tutum Ölçeği sonuçlarında da kız öğrencilerin tutum puanları, erkek öğrencilerden daha yüksek çıkmaktadır. Bu sonuç da, kız öğrencilerin; bilgi, öğrenme ve başarı için daha çok çalışmaları gerektiğine yönelik tutumlar içinde olduklarına; erkek öğrencilerin ise başarıyı, ders çalışma ve bilgiye ulaşma ile ilişkilendirmek yerine yeteneklerinin bir sonucu olarak gördükleri yönündeki görüşleri ile uyum içindedir (Deryakulu, 2004). Çalışmada, sınıf düzeyi arttıkça, epistemolojik inançlarında arttığı görülmüştür. Schommer (1993), lise öğrencilerinin zeka ve sınıf düzeylerinin epistemolojik inançları üzerine belirleyici etkileri olduğunu saptamış, lise son sınıf öğrencilerinin, yeni başlamış öğrencilere göre daha gelişmiş epistemolojik inançlara sahip olduklarını ortaya çıkarmıştır. Araştırma, bu saptama ile uyumluluk göstermiştir. Sınıf büyüdükçe, öğrenciler, bilgiye ulaşma, öğrenme ve başarı ile ders çalışma arasında olumlu bir ilişki kurmakta; sınıf düzeyine bağlı olarak gelişmiş epistemolojik inançlarıyla, ders çalışma'ya yönelik tutumlarındaki pozitif ilişkinin yönü artmaktadır. Dolayısıyla ortaöğretim öğrencilerinin epistemolojik inançları ile ders çalışmaya yönelik tutumları arasında pozitif bir korelasyon olduğu ortaya çıkmıştır. Sınıf ilerledikçe, inanç ve tutumların değişmesi, bu inanç ve tutumların değişmez bir yapı olmadığını, özellikle öğrenciyi etkin kılan, tek bir doğrunun olmadığını, tersine öğrenci tarafından zaman içerisinde yeniden yapılandırılabilceğini ortaya koymaktadır. Öğrenmenin, öğrenci tarafından yapılandırıldığı ve geliştirildiği gerçeğinden yola çıkarak; formal eğitim-öğretim uygulamalarının oldukça önemli bir yeri olduğu ortaya çıkmaktadır. Yapılacak eğitim-öğretim etkinliklerinde öğrencilerin ders çalışma alışkanlıkları kazanmaları, bu kazanımlarını farklı ortamlarda, gerektiği şekilde iyi bir performansla sergilemeleri, onların bilgiye ve öğrenmeye ulaşmak için neler yapmaları gerektiğini bilmeleriyle; niçin?, neden?, nasıl? daha iyi bilgiye ulaşacakları ile ilgili bilinçli stratejilere sahip olmalarıyla yakından ilişkilidir. Burada, öğretmenlere ve velilere de önemli görevler düşmektedir.