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An Investigation of Teachers' Beliefs about Learning

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Abstract

The aim of this study was to investigate teachers' beliefs about learning. So, we investigated the level of teachers' beliefs about the traditional and constructivist approach (cognitive, social and radical). Further, it was questioned how teachers developed qualifications needed for the constructivist approach. The study was conducted on 233 teachers working in the city centre of Gaziantep in Turkey during 2011-2012 school year. "Beliefs about Learning Scale", developed by the researchers, was used for data collection. The results revealed that the teachers adopted the constructivist approach at a higher level than the traditional approach. Speaking about the constructivist approach dimensions, the teachers adopted the social constructivist approach at a higher level than cognitive and radical constructivist approaches. According to the gender variable, the extent to which the female teachers adopted the constructivist approach was higher in comparison with the male teachers. Moreover, it was found that the level of classroom teachers' beliefs about the traditional approach was higher than that of subject teachers' beliefs according to seniority. Another finding was that the increase in seniority increased the teachers' beliefs about the traditional approach. The findings indicated that the teachers adopted qualifications for the constructivist approach mostly during their undergraduate and post-graduate education.

Key words: *beliefs about learning; constructivist learning; cognitive, social and radical constructivism; teachers' educational beliefs; traditional learning.*

Introduction

Beliefs are defined as internal acceptance or assumptions (Oliver & Koballa, 1992; Deryakulu, 2004) which affect attitudes and behaviours of individuals (Mansour, 2009;

Oztuna Kaplan & Macaroglu Akgul, 2009), and their mental processes (Schommer, 1998) which determine how individuals perceive, understand and react to each event, phenomenon, person or object they are faced with in their lives (Pajares, 1992; Deryakulu, 2006) and which are considered to be certainly right by individuals (Deryakulu, 2006). This strong and distinctive effect on individuals' thoughts and behaviours leads to much attention being paid by educators to various beliefs, such as self-efficacy beliefs, epistemological beliefs, beliefs regarding values in terms of learning and teaching processes (Chan, 2004; Deryakulu, 2006). Other beliefs which must be taken into account are teachers' beliefs about learning (Tillema, 1994; Holt-Reynolds, 2000).

Beliefs about learning play a significant role in behaviours in the learning process so that they affect teachers' thoughts about how learning happens (Clark & Peterson, 1986; Nespor, 1987; Kagan, 1992; Pajares, 1992; Fang, 1996; Marland, 1998; Woolley, Benjamin & Woolley, 2004; Jones & Carter, 2007; Shin & Koh, 2007). Determining teachers' beliefs about learning can shed some light on their applications in the classroom (Luft & Roehrig, 2007; Mansour, 2009), effectiveness of curriculum in practice (Van Dariel, Bulte & Verloop, 2007), and the extent to which educational reforms become successful (Duffee & Aikenhead, 1992; Tobin & McRobbie, 1996; Higgins & Moseley, 2001).

Literature review yields few studies on teachers' beliefs about learning (Chan, 2001; Tsai, 2002; Woolley, Benjamin & Woolley, 2004; Van Dariel, Bulte & Verloop, 2007; Meral & Colak, 2009; Sang, Valcke, Braak & Tondeur, 2009; Eren, 2010). They question whether teachers have a traditional or a constructivist learning approach. However, research on how teachers' beliefs about the constructivist approach differ in its three dimensions - cognitive, social and radical - is not seen in the literature. It is, therefore, important to explore teachers' beliefs about traditional and constructivist approaches, including cognitive, social and radical dimensions of the constructivist approach. We conducted the study with this aim.

Theoretical Background

Beliefs about learning affect the level at which teachers keep up with changes (Duffee & Aikenhead, 1992; Tobin & McRobbie, 1996; Ertmer, Addison, Lane, Ross, & Woods, 1999; Becker, 2001) and their classroom applications (Pajares, 1992; Hazer, Cazerniak & Lumpe, 1996; An, 2000; Beswick, 2005). In the research conducted on beliefs about learning, these were generally examined as traditional and constructivist (Woolley, Benjamin & Woolley, 2004; Van Dariel, Bulte & Verloop, 2007; Chan, Tan & Khoo, 2007; Eren, 2009; Mansour, 2009).

According to the traditional approach, learning takes place through reinforcing the relationship between the stimulus and the response (Senemoglu, 2005; Bacanlı, 2010). In this understanding, students are passive and receive information, while the teacher is active and gives information (Samuelowicz & Bain, 1992; Bramald, Hardman, & Leat, 1995; Chan & Elliott, 2004), and is also a decision-maker (Gunes & Coknaz, 2010).

The second heading which appears as a result of the categorization of beliefs about learning is the constructivist learning belief, which is also called the "progressivist

belief" (Kerlinger & Kaya, 1959). Constructivism is a student-centered approach based on learners' understanding of new information they are faced with and their prior experiences, establishing relationships between the two (Henson, 2003; Sherman & Kurshan, 2005). This approach rejects the consideration that knowledge exists independently and impersonally (David, 2004), and that knowledge is received by learners passively (Hendry, Frommer, & Walker, 1999; Hay & Barab, 2001); rather it suggests that the learner plays an active role in knowledge structuring (Glaserfeld, 1989). The constructivist approach varies as cognitive, social and radical with regard to the operation of structuring process, producing knowledge, etc. (Larochelle, Bednarz, & Garrison, 1998; Kroll, 2004).

Cognitive constructivism was generated from Piaget's cognitive development (Yasar, 1998; Powell & Kalina, 2009) and learning theory (Delil & Gules, 2006). Its starting point lies in the experiences the individual has had until that time and in a cognitive structure created by the experiences. This cognitive structure is balanced (Arslan, 2007; Ozden, 2010). The individual tries to identify with the new situation s/he is faced with, placing it into the cognitive structure (Bodner, 1986). However, the prior knowledge the individual has may not sometimes be sufficient in the interpretation of new information (Arı, 2009). In this case, the individual's cognitive balance is disturbed since s/he is not capable of placing new information into the prior mental (cognitive) structure (Powell & Kalina, 2009; Erden & Akman, 2011). Realizing that the prior knowledge is not sufficient, the individual restores the balance of his/her mind via new concepts s/he develops in his/her mind (Bee & Boyd, 2009).

The social constructivist approach resulted from Vygotsky, who stressed that culture and language have important effects on learning (McMahon, 1997; Derry, 1999; Schunk, 2000; Hashim & Awang, 2005; Palmer, 2005). According to the social constructivist approach, knowledge is socially built (Billet, 2002) due to the effects of cultural and historical factors (Sivan, 1986; Prawat & Floden, 1994; Terwel, 1999; Tsoukas, 2000). The best learning happens in a social atmosphere in which reciprocal interactions exist (Lauzon, 1999; Kim, 2001). The individual's capacity for learning emerges when s/he is with more knowledgeable people (Ozden, 2010). In other words, when students work together in groups, group members help each other and discuss solutions to the problems arising in the learning atmosphere, they learn more than they do when they are alone (Palincsar, 1998; Henson, 2003).

Radical constructivism was proposed by Von Glasersfeld (Taylor, 1997; Larochelle, Bednarz, Garrison, 1998; Staver, 1998; Raskin, 2002) as a response to what knowledge is and how we can gain it (Matthews, 1994; Yesildere & Turnuklu, 2004). According to this approach, each individual attends the learning-teaching process with different experiences (Altun, 2006). These result in differences in knowledge acquisition processes, as well (Turgut & Fer, 2006). This understanding postulates that everything, from daily information to scientific information, is a reflection of the truth. As knowledge is not a copy of the truth, there is nothing like absolute information. Concisely, every individual creates his/her own truth by his/her personal skills and endeavours (Bodner, 1986). In

this respect, although it is suggested that knowledge is structured by the individual in both cognitive and social dimensions of constructivism, it seems that this understanding is the strongest in radical constructivism (Glasersfeld, 1995).

Given that the constructivist approach varies as cognitive, social and radical constructivism, it is required to deal with beliefs regarding constructivist learning under three categories, such as cognitive constructivist learning approach, social constructivist learning approach and radical constructivist learning approach, in addition to traditional and constructivist learning beliefs. For this reason, in this study, beliefs about learning were examined under two headings; e.g. traditional and constructivist beliefs, and constructivist beliefs were examined under three headings, such as cognitive constructivist beliefs, social constructivist beliefs and radical constructivist beliefs.

Aim of the Study

The current study, aimed to investigate teachers' beliefs about learning, was thus focused on answering the following questions:

What is the level of teachers' beliefs about traditional and constructivist learning (cognitive, social and radical)?

Is there a significant difference between teachers' beliefs about traditional and constructivist approaches according to their gender, branch and seniority?

What do teachers think about how they have gained the qualifications regarding the constructivist approach?

Method

Descriptive method was used in the study. The study was conducted on classroom teachers working at the first level of primary schools and subject teachers working at the second level of primary schools in the autumn semester of 2011/2012 school year in the centre of Gaziantep, Turkey. The sample consisted of 233 teachers working at 5 primary schools, one of which is a private school chosen at random. The distribution of teachers who participated in the study according to gender, branch and seniority is provided in Table 1.

Table 1.

Values Regarding the Participants

		f	%
Gender	Female	130	55.8
	Male	103	44.2
Branch	Classroom teacher	107	45.9
	Subject teacher	126	54.1
Seniority	1-5 years	115	49.4
	6-10 years	64	27.5
	11 years and above	54	23.2
	Total	**233**	**100.0**

Data Collection Tool

"Beliefs about Learning Scale", developed in several phases by the researchers themselves, was used in the study as a data collection tool. Literature was firstly reviewed with regard to the types of constructivist and traditional learning approaches. As a result of the above-mentioned analysis, a pool of items was composed through exploratory assumptions from the traditional approach and the types of constructivist approach. The scale was then examined by ten field specialists, one from the field of measurement and evaluation and nine from the field of curriculum and instruction. At the same time, lecturers working in the Department of Turkish Language Teaching analysed the scale for its linguistic appropriateness. Finally, evaluations regarding linguistic adequacy and comprehensibility were ensured. It was decided to include 41 items in the draft scale. The draft scale was designed as a 5-point Likert type scale ranging from "*Strongly Agree (5)* to *"Strongly Disagree (1)"*. Then the scale was administered to the selected sample.

Construct validity of the scale was examined in the validity study of "Beliefs about Learning Scale". In this respect, Exploratory Factor Analysis (EFA) was firstly conducted. Naturally, prior to EFA, it is required to determine whether data are suitable for factor analysis. To this end, Kaiser-Meyer-Olkin (KMO) test and Bartlett's Test of Sphericity were used. In order for the sample size to be adequate for factor analysis, KMO values must be higher than 0.60 and the results of Bartlett's Test of Sphericity must be significant (Buyukozturk, 2010). In this study, KMO sampling adequacy coefficient was 0.811, while the result of Bartlett's Test of Sphericity was 4062.791 ($p<0.001$, $df=820$). These results demonstrate that the data are appropriate for factor analysis. Having determined that the data were appropriate for factor analysis, we examined the number of factors of 41 items, utilizing the direct oblimin rotation technique. We preferred this rotation technique since there was a correlation among 4 factors. And then it was found that the items loaded on 4 factors, which accounted for 42.79% of the total variance, were generated after all these phases.

As Buyukozturk (2010) maintains, factor loadings of the scale items are supposed to be high. Factor loadings equalling 0.45 or having a higher value are considered to be appropriate to be used in the research. Furthermore, items must have high loading values in one single factor. Difference between the highest loading value of an item and another item with the second highest loading value must be as high as possible. It is noted that the difference between factor loadings must be at least 0.10. Examining EFA results in the light of the criteria above, two items with low factor loadings (lower than 0.40) were removed from the scale. Factor loadings of the rest of the items ranged from 0.41 to 0.79. In addition, 5 items were also excluded from the scale as 3 of them had close factor loadings and 2 of them were not supported by factors theoretically. Finally, a scale made up of 34 items and 4 factors was developed. Factor loadings of the items ranged from 0.79 to 0.41. Given the contents of the items and their theoretical structures, the first factor was termed "social constructivist", the

second one "traditional", the third one "cognitive constructivist", and the fourth one "radical constructivist".

Table 2.

Number of Factors' Items, Factor Loadings, and Sample Items

Approach	Number of Item	Factor Loading	Sample Item
Social constructivist	11	0.51-0.67	Individuals adopt new information they acquire by sharing with others (teachers, friends).
Cognitive constructivist	6	0.52-0.67	The individual achieves learning not in a way presented to him/her, rather in a way s/he structures it in his/her mind.
Radical constructivist	8	0.41-0.73	Knowledge reflects a world which is created, arranged and organized by the individual's own experiences.
Traditional	9	0.55-0.79	Learning is a result generated by the external effects (reinforcement and repetition).

As a part of the study with "Beliefs about Learning Scale", reliability coefficients were obtained from Cronbach's Alpha internal consistency. As a result of the reliability analysis, the internal coefficient was determined as .85 for "Social Constructivist" sub-scale, .74 for "Cognitive Constructivist" sub-scale, .73 for "Radical Constructivist" sub-scale, and .86 for "Traditional" sub-scale. The internal consistency calculated for the constructivism scale consisting of social, cognitive and radical constructivism sub-scales was .86. The scale reliability coefficients above 0.70 are regarded as reliable (Tezbasaran, 1997; Pallant, 2005; Buyukozturk, 2010). Thus, the findings of the reliability analysis demonstrated that the "Beliefs about Learning Scale" was reliable.

In order to determine the discrimination of the items in the scale and to explore to what extent they predict total scores, item total correlation and comparisons of 27% bottom-top groups were examined. In the calculation of item total correlation, Pearson product-moment correlation coefficients were used, and Independent sample t-test was utilized in the comparison of item scores of 27% bottom-top groups determined according to the total scores. T-values regarding differences among the item scores of 27% bottom-top groups ranged between 9.37 and 10.97 ($df=110$, $p<0.05$) for "Social Constructivism" sub-scale; 8.86 and 16.34 ($df=113$, $p<0.05$) for "Traditional" sub-scale, 9.73 and 15.44 ($df=136$, $p<0.05$) for "Cognitive Constructivism" sub-scale, and finally 7.77 and 18.14 ($df=107$, $p<0.05$) for "Radical Constructivism" sub-scale respectively. Results regarding the item total correlations were between 0.43 and 0.60 for "Social Constructivism" sub-scale; 0.48 and 0.68 for "Traditional" sub-scale; 0.39 and 0.56 for "Cognitive" sub-scale; and 0.27 and 0.59 for "Radical" sub-scale respectively. In the interpretation of item total correlation, the items which have values equalling 0.30 and above are accepted as adequate for discriminating the features to be measured (Buyukozturk, 2010). All of the items placed in "Radical Constructivism" sub-scale, except for one item with an item total correlation of 0.27, met this criterion. Moreover,

t- values obtained as a result of the comparisons of 27% bottom-top groups were found to be significant for the item with corrected item total correlation of 0.27. According to these results, all items in the scale can be said to be discriminant. Findings obtained in the validity, reliability and item analysis studies demonstrated that the scale had adequate psychometric properties to measure teachers' beliefs about learning.

Data Analysis

The data were analysed by using SPSS 17.0 packet programme. Arithmetic means and standard deviations were calculated to explore the level of teachers' beliefs about traditional and constructivist learning, as well as their beliefs about cognitive, social and radical dimensions of constructivism. In the means interpretation, score intervals provided in Table 3 were taken into account.

Table 3.
Values Used in the Interpretation of Arithmetic Means

Score intervals	Rate	Interpretation
1.00 – 1.80	Strongly Disagree	Very low
1.81 – 2.60	Disagree	Low
2.61 – 3.40	Undecided	Moderate
3.41 – 4.20	Agree	High
4.21 – 5.00	Strongly Agree	Very high

One-way ANOVA test for related samples was used to find out whether there was a significant difference between the teachers' level of adopting traditional and constructivist approaches, and social, cognitive and radical dimensions. The independent samples t-test was conducted to figure out whether the teachers' beliefs about traditional and constructivist learning as well as their beliefs about cognitive, social and radical dimensions of constructivism differed according to gender and branch variables. In addition to this, one-way analysis of variance was used to explore if their beliefs varied according to seniority. In the comparisons, the significance level was chosen to be 0.05. When a difference was found, effect sizes were calculated. Effect sizes demonstrate the size of significant difference among the comparisons (Pallant, 2005). As Cohen maintained, if the calculated effect size ranges from 0.01 to 0.06, significant difference among the means is accepted small; if it is between 0.06 and 0.14, significant difference among the means is accepted moderate, and lastly if it is 0.14 and above, significant difference among the means is accepted very high (Akbulut, 2010; Pallant, 2005). Additionally, for the purpose of determining the source of teachers' qualifications regarding the constructivist approach, frequencies and percentages were evaluated.

Findings

Findings are presented below in accordance with the study sub-problems.

Findings Regarding the First Sub-problem

Arithmetic means and standard deviations of the teachers' beliefs about traditional and constructivist learning, along with their beliefs about cognitive, social and radical dimensions of constructivism, were initially calculated. Table 4 provides the findings obtained from this analysis.

Table 4.

Arithmetic Means and Standard Deviations of Teachers' Beliefs about Learning

	n	$\overline{X}$	SD	Interpretation
Traditional	233	3.19	0.88	Moderate
Constructivist	233	3.90	0.48	High
Radical Constructivist	233	3.30	0.70	Moderate
Cognitive Constructivist	233	4.08	0.60	High
Social Constructivist	233	4.24	0.58	Very High

Taking the findings in Table 4, it is revealed that the teachers adopt the constructivist approach at a *high level*, while they adopt the traditional approach at a *moderate level*. According to this finding, the teachers can be said to adopt the constructivist approach more than they do the other one. Furthermore, which constructivist approach is adopted by them is demonstrated in the same table indicating that the teachers adopt the social constructivist approach at a very high level, and the cognitive constructivist approach at a high level, whereas the radical constructivist approach is adopted by them at a moderate level. These findings may suggest that the social constructivist approach is adopted more than cognitive and radical constructivist approaches. One-way ANOVA test for related samples was used to see whether the means regarding the teachers' level of adopting traditional and constructivist approaches and social, cognitive and radical dimensions, were significantly different or not. The findings are shown in Table 5.

Table 5.

Repeated Measures ANOVA Results for Teachers' Beliefs about Learning

Source of Variance	Sum of Squares	df	Mean of Squares	F	p	Eta Square	Significant Difference
Within Subject Effects	236.224	232	1.02				Between all related comparisons other than 1-3.
Measure	207.94	4	51.99	176.56	0.00	0.43	
Error	273.24	928	0.29				
Total	717.404	1164					

1=Traditional, 2=Constructivist, 3=Radical Constructivist, 4=Cognitive Constructivist and 5=Social Constructivist

According to the findings given in Table 5, there is a statistically significant difference between the teachers' level of adopting traditional and constructivist approaches, and social, cognitive and radical dimensions. According to Eta squared value, the difference could be considered significant. The comparisons made to find out the source of the difference show that there is a significant difference with regard to all related comparisons other than the one between traditional and radical constructivism.

Findings Regarding the Second Sub-problem

This sub-problem examined whether the teachers' beliefs about learning differed significantly in terms of gender, seniority and branch. Whether or not their beliefs about learning differ significantly according to gender was first analysed. The results are demonstrated in Table 6.

Table 6.

Independent Samples T-Test Results Regarding Teachers' Beliefs about Learning According to Gender Variable

	Gender	$\bar{X}$	SD	df	t	p	Eta Square
Traditional	$Female_1$	3.18	0.95	231	0.11	0.91	–
	$Male_2$	3.19	0.78				
Constructivist	Female	4.01	0.42	231	-3.69	0.00	0.06
	Male	3.77	0.51				
Cognitive Constructivist	Female	4.22	0.53	231	-4.04	0.00	0.07
	Male	3.90	0.64				
Social Constructivist	Female	4.31	0.51	231	-1.99	0.04	0.02
	Male	4.16	0.64				
Radical Constructivist	Female	3.43	0.69	231	-3.13	0.00	0.04
	Male	3.14	0.69				

n_1= 103 and n_2=130

Findings given in Table 6 indicate that the difference among the teachers' beliefs about traditional learning according to gender is not statistically significant. However, there is a statistically significant difference in favour of female teachers with regard to the teachers' beliefs in terms of constructivist learning, as well as cognitive, social, and radical constructivist dimensions. The effect sizes were calculated to determine the significant difference size. Drawing on the calculated effect size, it can be said that the significant difference between female and male teachers' thoughts of constructivist learning and the cognitive constructivist approach is at a moderate level, while the significant difference between their thoughts of the social constructivist and the radical constructivist approach is at a low level. In addition, gender variable has an effect size ranging between 2% and 7% in terms of the teachers' beliefs about constructivist learning and the dimensions of constructivism. Consequently, female teachers can be said to adopt the constructivist approach more than male teachers according to gender variable.

It was also examined whether there was a significant difference between the classroom teachers and subject teachers' beliefs about traditional learning and dimensions of constructivism (social, cognitive and radical). Table 7 provides findings of this analysis.

Table 7.

Independent Samples T-Test Results Regarding Teachers' Beliefs about Learning According to Branch Variable

		$\overline{X}$	SD	df	t	p	Effect size
Traditional	Classroom$_1$ Subject$_2$	3.35 3.04	0.87 0.87	231	2.70	0.01	0.03
Constructivism	Classroom Subject	3.93 3.88	0.55 0.41	231	0.77	0.44	-
Cognitive Constructivist	Classroom Subject	4.04 4.11	0.65 0.55	231	-0.91	0.36	-
Social Constructivist	Classroom Subject	4.28 4.21	0.65 0.50	231	0.88	0.38	-
Radical Constructivist	Classroom Subject	3.37 3.25	0.70 0.70	231	1.24	0.22	-

n_1= 107 and n_2=126

Findings provided in Table 7 demonstrate that a statistically significant difference was found between the teachers' beliefs about traditional learning in favour of classroom teachers. Given the effect size regarding this significant difference, it is seen that the difference is small and subject variable has an impact on the teachers' beliefs about traditional learning at 3%. Moreover, a statistically significant difference was not found between the teachers' beliefs about constructivist learning, and cognitive, social and radical constructivist dimensions. The findings may suggest that classroom teachers and subject teachers have similar beliefs about the constructivist approach and its dimensions.

Whether the teachers' beliefs about constructivist learning and its cognitive, social, and radical dimensions differ significantly was examined according to seniority by utilizing ANOVA. Table 8 provides findings resulted from this analysis.

Table 8.

ANOVA Results Regarding Teachers' Beliefs about Learning According to Seniority Variable

	Seniority	$\overline{X}$	SD	F	p	Effect Size	Scheffe's Test
Traditional	1-5 years$_1$ 6-10 years$_2$ 11 years and above$_3$	2.86 3.43 3.58	0.79 0.83 0.89	17.75	0.00	0.13	1-5 years and 6-10 years, 1-5 years and 11 years- above
Constructivism	1-5 years 6-10 years 11 years and above	3.94 3.84 3.90	0.42 0.44 0.62	0.83	0.44	–	–
Cognitive Constructivism	1-5 years 6-10 years 11 years and above	4.18 3.96 3.99	0.52 0.58 0.75	3.45	0.03	0.03	1-5 years and 6-10 years
Social Constructivism	1-5 years 6-10 years 11 years and above	4.28 4.18 4.24	0.53 0.57 0.68	0.60	0.55	–	–
Radical Constructivism	1-5 years 6-10 years 11 years and above	3.28 3.28 3.38	0.64 0.73 0.80	0.41	0.67	–	–

n_1=115, n_2=64 and n_3=54

According to the findings given in Table 8, there is no statistically significant difference between the teachers' beliefs about constructivist learning, as well as the social and radical dimensions of constructivism in terms of seniority. However, a significant difference appears between their beliefs about traditional learning and cognitive constructivism. Given arithmetic means regarding the teachers' beliefs about traditional learning, it is observed that as the teachers' seniority increases, the level of their beliefs about traditional learning also increases. Arithmetic means of cognitive constructivism reveal that the level of beliefs of teachers whose seniority ranges between 1-5 years is higher than those whose seniority ranges between 6-10 years and 11 years and above.

Scheffe's test, one of Post Hoc tests, was conducted to figure out whose beliefs about cognitive constructivism were significantly different in terms of seniority. As a result of the analysis, it was found that there was a significant difference between beliefs of teachers whose seniority ranged between 1-5 years and 6-10 years, and those whose seniority ranged between 1-5 years and 11 years and above. A significant difference was detected between the teachers' beliefs about cognitive constructivism. These teachers recorded 1-5 years and 6-10 years of seniority in teaching. Additionally, according to values in the table, the significant difference found in the teachers' beliefs about traditional learning was at a moderate level in terms of seniority, while the difference in the teachers' beliefs about cognitive constructivism was small. Based on the effect sizes given in the same table, it can be said that seniority has an effect on the teachers' beliefs about learning at 13% and on their beliefs about cognitive constructivism at 3%.

According to the results of the analysis carried out to investigate whether the teachers' beliefs about traditional and constructivist learning, along with cognitive, social, and radical dimensions of constructivism vary, seniority can be said to be the most effective variable.

Findings Regarding the Third Sub-problem

How teachers acquired their qualifications to use the constructivist approach was also examined in this study. Table 9 provides findings of this analysis.

Table 9.
Source of Teachers' Knowledge about the Constructivist Approach

	Yes		No	
	n	%	n	%
Undergraduate and Post-graduate Education	156	67	77	33
In-service training	35	15	198	85
Individual efforts	56	24	177	76
Other	7	3	226	97

As can be seen in Table 8, 33% of the teachers do not regard undergraduate and post-graduate education as the source of their qualifications for the constructivist

approach, while 67% of the teachers believe that the source of their qualifications regarding the constructivist approach is undergraduate and postgraduate education. Similarly, 85% of the teachers think that the source of their knowledge about the constructivist approach is not in-service training; 15% of the teachers regard in-service training as the source of their knowledge about the constructivist approach. 76% of the teachers believe that individual efforts are not the source of their knowledge about the constructivist approach. On the other hand, 24% of the teachers think that the source of their knowledge about the constructivist approach is their individual efforts. Lastly, Table 11 demonstrates that 97% of the teachers do not believe factors are the source of their knowledge about the constructivist approach except for undergraduate and postgraduate education, in-service training and individual efforts. Only 3% of the teachers accept other factors as the source of their knowledge about the constructivist approach. Based on these findings, it may be suggested that the most important source of the teachers' knowledge about the constructivist approach is undergraduate and postgraduate education, which is followed by in-service training, individual efforts and other factors respectively.

Discussion

In this study, there were investigated: *1)* the level of teachers' beliefs about traditional and constructivist learning and cognitive, social and radical dimensions of constructivism, and *2)* possible differences in their beliefs about learning according to gender, branch and seniority variables. The study further examined the teachers' thoughts about the mostly implemented approach at schools, the level of their use of constructivist learning, and how they gained the qualifications needed to implement the constructivist approach. Findings regarding the study sub-problems are as follows:

It was found that there were significant differences between the teachers' level of adopting traditional and constructivist approaches and social, cognitive and radical dimensions. When the means for the teachers' adoption of traditional and constructivist approaches were analysed, it was seen that their beliefs about the constructivist approach were higher than those for the traditional approach. In parallel with this finding, in the studies conducted on prospective teachers by Chan, Tan and Khoo (2007) and on teachers by Sang et al. (2009), it was revealed that the level of prospective teachers' and teachers' beliefs about the constructivist learning were higher than those about the traditional approach. Thus, it can be suggested that teachers think learning occurs when the individual makes sense of new information, relating it to prior experiences, that the learner must be at the heart of learning-teaching process (Henson, 2003; Sherman & Kurshan, 2005) and that the learner plays an active role in the knowledge structuring (Glaserfeld, 1989). On the other hand, Tsai (2002), in his study on teachers, and Chan and Elliott (2004) and Meral and Colak (2009), in their studies on prospective teachers, found out that the level of teachers' and prospective teachers' beliefs about traditional learning was higher than that

regarding constructivist learning. With regard to these studies, it can be suggested that the findings obtained in the current study regarding teachers' beliefs about traditional and constructivist learning are consistent with some previous research; they, however, differ from some other research results. Hence, it is recommended to conduct further research on teachers' beliefs about traditional and constructivist learning to make a broader evaluation.

Given the teachers' beliefs about cognitive, social and radical dimensions of the constructivist approach, it was found out that the level of their beliefs about the radical constructivist approach was lower than that considering cognitive and social constructivism. In radical constructivism, individual differences and personal experiences are known to be more important (Kelly, 1996; Demirci, 2003; Kanlı, 2009). This may cause teachers to think that applying the radical constructivist approach in the classroom is harder than social and cognitive constructivism, and this, in turn, may result in a decrease in the level of their beliefs about the radical constructivist approach when compared with the other dimensions. Another outstanding finding regarding teachers' beliefs about cognitive, social and radical dimensions of the constructivist approach is that the level of teachers' beliefs about the social constructivist approach was higher than that of the cognitive constructivist approach. Based on this finding, it can be suggested that teachers believe that knowledge is structured via the effects of social and cultural factors, and they pay much attention to students' entering into interaction with other students and their teachers in the learning-teaching process and support collaborative work. In social constructivism, the teacher is not the sole source of knowledge; helping each other and discussing the issues coming up in the learning atmosphere enable students to learn more than they could do alone. Hence, in the learning atmosphere in which the social constructivist approach is implemented, teachers are able to share the roles expected from them, namely offering help and guidance to students in the classroom. The characteristics of social constructivist learning atmosphere may explain the reason why the level of teachers' beliefs about the social constructivist approach is higher than cognitive and radical constructivist approaches.

In the study, it was found that there was no statistically significant difference between teachers' beliefs about traditional learning according to gender. This may suggest that female and male teachers hold similar beliefs about traditional learning. This result is consistent with Eren's (2009, 2010) studies which reveal that prospective teachers' beliefs about traditional learning do not differ in terms of this variable. On the other hand, our study differs from another study conducted by Sang et al. (2009), which concludes that teachers' beliefs about traditional learning differ significantly in favour of male teachers. In brief, the results of this study are in parallel with some studies, not with all of them ,when gender is discussed. With regard to the teachers' beliefs about constructivist learning and dimensions of constructivism, e.g. cognitive, social and radical constructivist approaches, a significant difference was detected in favour of

female teachers. This finding indicates that students make sense of new information associating it with prior experiences, they are active and in the heart of learning-teaching process, and female teachers give more importance to constructive learning than male teachers. This result is confirmed by the results of Eren's (2009) study which demonstrates a statistically significant difference in prospective teachers' beliefs about constructivist learning in favour of female teachers. Similarly, Cınar, Teyfur and Teyfur (2006) carried out a study on the constructivist approach and the curricula designed in the light of this approach. It also reveals a significant difference in teachers' beliefs about the constructivist approach according to gender, which is consistent with the results of this study. However, another study conducted by Eren (2010) concludes that gender is not a variable having significant effects on prospective teachers' beliefs about constructivist learning. Given the studies into beliefs about traditional learning, the same situation can be seen with regard to the finding showing the effects of gender on teachers' beliefs about constructivist learning. It is recommended that future meta-analytic research subsuming the results of studies focused on similar issues should consider beliefs about learning according to gender as a variable and present an overall evaluation about its effects on both traditional and constructivist views of learning.

Corresponding with classroom and subject teachers' beliefs about traditional learning, a significant difference was found in favour of classroom teachers. This finding is not only supported by theoretical information according to which whether teachers are class or subject teachers has effects on their beliefs about learning (Lin & Gorrel, 2001) but also by research results indicating that subject is an effective variable on prospective teachers' beliefs about a traditional view of learning. In our study, however, a statistically significant difference was not found among teachers' beliefs about constructivist learning and cognitive, social and radical dimensions of constructivism according to subject variable. Unlike this finding, Rawitz and Snow (1998), in their study, found out that class teachers hold a more constructivist view of learning than subject teachers (cf. Isıkoglu & Basturk, 2007). Additionally, in two studies, Eren (2009, 2010) concluded that subject is an effective variable on prospective teachers' beliefs about constructivist learning, which is not consistent with the findings of this study. The research finding that classroom teachers and subject teachers have similar beliefs regarding constructivist learning contradicts with theoretical information asserting that department has important effects on beliefs about learning (Lin & Gorrel, 2001). As a result, it can be said that the research finding suggesting that branch variable has significant effects on traditional view of learning is both supported by theoretical information and consistent with previous research. On the other hand, the research finding which concluded that subject is not an effective variable on beliefs about learning not only contradicts with theoretical information but also differs from previous research results.

A statistically significant difference was revealed among the teachers' beliefs about traditional learning in terms of the seniority variable. As a result of two-fold

comparisons made to determine the source of the difference, it was found out that the teachers with a 1-5 years and 6-10 years of seniority, and those who had worked for 1-5 years and 11 years and over hold different beliefs regarding traditional learning, and as the seniority increases, the level of their beliefs about traditional learning also increases. It is known that the implementation of the curricula developed on the basis of the constructivist approach started in 2005. As a part of this change, the need to organise education given at the faculties of education according to the constructivist approach emerged. Given that teachers with 1-5 years of seniority graduated from the faculties of education in 2005 or later, it can be assumed that these teachers attended in-service training in accordance with the constructivist approach. In other words, this may suggest that in-service training provided for teachers with different seniority levels was based on a different view of learning. Hence, the difference explored among the teachers' beliefs about traditional learning may be explained with the difference in in-service training provided for teachers with different seniority levels. The finding indicating that the most important source of teachers' knowledge about the constructivist approach is in-service training supports this view.

In the study, a statistically significant difference was not found among the teachers' beliefs about the constructivist approach in terms of seniority. A significant difference was revealed only in the cognitive dimension of the constructivist approach, and the effect size regarding the difference indicated that the significant difference was small. The fact that as the level of teachers' seniority increased, the level of their beliefs about traditional learning also increased creates an expectation that the level of less experienced teachers' beliefs about constructivist learning will be higher than that of the more experienced teachers. However, there was not a statistically significant difference in the teachers' beliefs about constructivist learning according to seniority variable, which demonstrates that seniority is not an effective variable in terms of teachers' beliefs about the constructivist approach. This indicates that the education which teachers get in their undergraduate programmes/departments raises the level of their beliefs about the constructivist approach. Although the constructivist approach may seem easy to be implemented theoretically, in real learning-teaching atmosphere teachers come up with the idea that it is hard to be implemented (Eren, 2009). Different from the study which found out that seniority affects teachers' beliefs about learning; Lu's (2004) study concluded that teachers with less than 6 years of experience had higher level beliefs about the constructivist approach. The findings obtained from Sang et al.'s (2009) study demonstrated that seniority was not an effective variable in terms of teachers' beliefs about traditional learning. This study is thus different, but it is consistent with the finding that seniority is not an effective variable in terms of beliefs about constructivist learning.

In this study, it was revealed that the most important source of teachers' knowledge about the constructivist approach is undergraduate and postgraduate education, and this is followed by in-service training, individual efforts and other factors respectively.

More than half of the teachers who participated in the study state that undergraduate and postgraduate education are the most important source of their knowledge about the constructivist approach. This result demonstrates that both undergraduate and postgraduate education undertake some functional roles in terms of teachers' gaining the qualifications with regard to the constructivist approach. As Arslan and Ozpınar (2008) posited in their study, the constructivist approach is taught both in theory and practice at universities. For teachers who feel lack of the required knowledge and qualifications needed to implement the constructivist approach, post-graduate education may be recommended. Given the research result which indicated that undergraduate education is an important process in receiving information about the constructivist approach, undergraduate education should be assessed well to help prospective teachers be well-equipped to apply the constructivist approach. Majority of the teachers who participated in the study stated that in-service training was another source of their knowledge about the constructivist approach. However, this finding is not consistent with another study which concluded that the level of teachers' knowledge about the constructivist approach increased notably after attending in-service training courses (Hand & Treagust, 1994; Onen, Mertoglu, Saka, & Gurdal, 2009). Future research should be directed to the effects of in-service training courses in the development of teachers' qualifications needed for the constructivist approach to be implemented. Besides, a new arrangement should be made to improve the effectiveness of in-service training courses. In the study, almost all of the teachers stated that other factors except for undergraduate and postgraduate education, in-service training and individual efforts were not the source of their knowledge about the constructivist approach. The finding demonstrating the source of teachers' knowledge about the constructivist approach is of great importance as it suggests that postgraduate education undertakes the most significant role to enhance teachers' knowledge about the constructivist approach.

Limitations

This study is a quantitative study based on the data gathered through using a self-report scale. Thus, it is important to carry out qualitative studies to determine teachers' beliefs about traditional and constructivist learning, along with their beliefs about cognitive, social and radical dimensions of constructivism. In particular, further research is needed to collect more detailed data about the level at which teachers apply the constructivist approach via observation and interview techniques.

Another limitation of this study is that the study group consisted of Turkish teachers. However, it is known that cultural factors play a central role in the formation of beliefs about learning (Hofer, 2008; Sang et al., 2009). To overcome this limitation, similar studies should be conducted with participants from different cultures.

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Istraživanje o uvjerenjima što ih učitelji imaju o učenju

Sažetak

Cilj je ovog istraživanja odrediti uvjerenja koja učitelji imaju o učenju. Istražili smo stoga razinu njihovih uvjerenja o tradicionalnim i konstruktivističkim pristupima (kognitivni, društveni i radikalni). Štoviše, tražili smo odgovor na pitanje kako učitelji razvijaju kompetencije potrebne za konstruktivistički pristup. Istraživanje je provedeno na uzorku od 233 učitelja koji poučavaju u središtu turskog grada Gaziantepa tijekom šk. godine 2011./2012. Ljestvica za utvrđivanje uvjerenja o učenju, koju su izradili sami autori, korištena je za prikupljanje podataka. Rezultati su otkrili da učitelji usvajaju konstruktivistički pristup na višoj razini u odnosu na tradicionalni pristup. Kada je riječ o dimenzijama konstruktivističkog pristup, učitelji usvajaju društveni konstruktivizam na višoj razini nego kognitivni ili radikalni konstruktivizam. S obzirom na rod kao varijablu, učiteljice usvajaju konstruktivistički pristup na višoj razini od učitelja. Pokazalo se, štoviše, da je razina uvjerenja što ih razredni učitelji imaju o tradicionalnom pristupu viša nego u slučaju predmetnih učitelja kada se promatraju godine staža. S porastom godina staža rastu i uvjerenja učitelja o tradicionalnom pristupu. Rezultati istraživanja ukazuju na to da učitelji usvajaju kompetencije potrebne za konstruktivistički pristup uglavnom tijekom dodiplomskog i poslijediplomskog obrazovanja.

Ključne riječi: *kognitivni, društveni i radikalni konstruktivizam; konstruktivističko učenje; uvjerenja o učenju; uvjerenja učitelja o učenju; tradicionalno učenje.*

Uvod

Uvjerenja se definiraju kao interna prihvaćanja ili pretpostavke (Oliver i Koballa, 1992; Deryakulu, 2004) koji utječu na stavove i ponašanja pojedinaca (Mansour, 2009; Oztuna Kaplan i Macaroglu Akgul, 2009), kao i na njihove mentalne procese (Schommer, 1998) koji određuju kako oni vide, shvaćaju i reagiraju na svaki događaj, pojavu, osobu ili predmet s kojim se suočavaju u životu (Pajares, 1992; Deryakulu, 2006), a koje svakako smatraju ispravnima (Deryakulu, 2006). Tako snažan utjecaj na misli i ponašanja pojedinaca vodi k tome da učitelji pridaju veliku pozornost raznim uvjerenjima kao što su uvjerenja o vlastitoj učinkovitosti, epistemološka uvjerenja, uvjerenja u vezi s vrijednostima nastavnog procesa (Chan, 2004; Deryakulu, 2006).

Treba također uzeti u obzir uvjerenja što ih učitelj ima o učenju (Tillema, 1994; Holt-Reynolds, 2000).

Uvjerenja o učenju imaju važnu ulogu u ponašanju tijekom procesa učenja jer utječu na ono što učitelj misli o tome kako se učenje ostvaruje (Clark i Peterson, 1986; Nespor, 1987; Kagan, 1992; Pajares, 1992; Fang, 1996; Marland, 1998; Woolley, Benjamin i Woolley, 2004; Jones i Carter, 2007; Shin i Koh, 2007). Određivanje uvjerenja što ih učitelj ima o učenju može rasvijetliti rad u učionici (Luft i Roehrig, 2007; Mansour, 2009), učinkovitost kurikula u praksi (Van Dariel, Bulte i Verloop, 2007) i razinu na kojoj obrazovne reforme postaju uspješne (Duffee i Aikenhead, 1992; Tobin i McRobbie, 1996; Higgins i Moseley, 2001).

Pregled literature pokazuje da postoji malen broj istraživanja o uvjerenjima što ih učitelji imaju o učenju (Chan, 2001; Tsai, 2002; Woolley, Benjamin i Woolley, 2004; Van Dariel, Bulte i Verloop, 2007; Meral i Colak, 2009; Sang, Valcke, Braak i Tondeur, 2009; Eren, 2010). U njima se postavlja pitanje zastupaju li učitelji tradicionalni ili konstruktivistički pristup učenju. No, u literaturi se ne navode istraživanja o tome kako se razlikuju njihova uvjerenja o konstruktivističkom pristupu prema trima dimenzijama – kognitivnoj, društvenoj i radikalnoj. Važno je, stoga, utvrditi kakva su uvjerenja učitelja o tradicionalnim i konstruktivističkim pristupima, odnosno svim trima dimenzijama konstruktivističkog pristupa. Proveli smo istraživanje upravo s tim ciljem.

Teorijska podloga

Uvjerenja o učenju određuju koliko učitelj prati promjene (Duffee i Aikenhead, 1992; Tobin i McRobbie, 1996; Ertmer, Addison, Lane, Ross i Woods, 1999; Becker, 2001) i primjenjuje ih u učionici (Pajares, 1992; Hazer, Cazerniak i Lumpe, 1996; An, 2000; Beswick, 2005). U relevantnim istraživanjima uglavnom su se određivala tradicionalna i konstruktivistička uvjerenja o učenju (Woolley, Benjamin i Woolley, 2004; Van Dariel, Bulte i Verloop, 2007; Chan, Tan i Khoo, 2007; Eren, 2009; Mansour, 2009).

Prema tradicionalnom pristupu, učenje se ostvaruje tako što se potkrepljuje odnos između poticaja i reakcije (Senemoglu, 2005; Bacanlı, 2010). Učenici su, prema tome, pasivni i primaju informacije, a učitelj je aktivan, daje informacije (Samuelowicz i Bain, 1992; Bramald, Hardman i Leat, 1995; Chan i Elliott, 2004) i donosi odluke (Gunes i Coknaz, 2010).

Drugi pristup koji proizlazi iz kategorizacije uvjerenja o učenju konstruktivističke je prirode i također se naziva „progresivnim uvjerenjem" (Kerlinger i Kaya, 1959). Konstruktivizam podrazumijeva pristup usmjeren učeniku, a temelji se na učenikovu razumijevanju novih informacija i njegovim prethodnim iskustvima, što ih povezuje jedno s drugim (Henson, 2003; Sherman i Kurshan, 2005). Taj pristup odbacuje zamisao o neovisnom i bezličnom postojanju znanja (David, 2004) koje se pasivno usvaja (Hendry, Frommer i Walker, 1999; Hay i Barab, 2001). Naprotiv, podrazumijeva

aktivnu ulogu učenika u strukturiranju znanja (Glaserfeld, 1989), a funkcionira kao kognitivni, društveni i radikalni konstruktivistički pristup jer se odnosi na strukturiranje i proizvodnju znanja, kao i na ostale procese (Larochelle, Bednarz i Garrison, 1998; Kroll, 2004).

Kognitivni je konstruktivizam proizašao iz Piagetove teorije kognitivnog razvoja (Yasar, 1998; Powell i Kalina, 2009) i učenja (Delil i Gules, 2006). Njegovo se polazište nalazi u prethodnim iskustvima pojedinaca, a ta iskustva čine kognitivnu strukturu, koja je uravnotežena (Arslan, 2007; Ozden, 2010). Pojedinac se nastoji poistovjetiti s novom situacijom u kojoj se nalazi, postavljajući je u određenu kognitivnu strukturu (Bodner, 1986). No, prethodno znanje kojim raspolaže ne može uvijek biti dostatno da bi tumačio nove podatke (Arı, 2009). U tom je slučaju kognitivna ravnoteža pojedinca uzdrmana jer on nije sposoban uklopiti novu informaciju u prethodnu mentalnu (kognitivnu) strukturu (Powell i Kalina, 2009; Erden i Akman, 2011). Shvaćajući da znanje kojim raspolaže nije dostatno, ponovno uspostavlja ravnotežu uz pomoć novih koncepata koje razvija u svom umu (Bee i Boyd, 2009).

Društveni se konstruktivizam razvio iz ideja Vygotskog, koji je isticao važnost kulture i jezika za učenje (McMahon, 1997; Derry, 1999; Schunk, 2000; Hashim i Awang, 2005; Palmer, 2005). Prema takvom pristupu, znanje se društveno izgrađuje na temelju učinaka što ih imaju kulturne i povijesne činjenice (Sivan, 1986; Prawat i Floden, 1994; Terwel, 1999; Tsoukas, 2000). Najbolje se uči u društvenom ozračju kada dolazi do recipročnih interakcija (Lauzon, 1999; Kim, 2001). Pojedinac stječe sposobnost učenja kada je u društvu onih koji znaju više od njega (Ozden, 2010). Drugim riječima, kada učenici zajedno rade u skupinama, pomažu jedni drugima i raspravljaju o rješenju problema koje nastaju u takvom ozračju, uče više nego kada su sami (Palincsar, 1998; Henson, 2003).

Radikalni je konstruktivizam predložio Von Glasersfeld (Taylor, 1997; Larochelle, Bednarz i Garrison, 1998; Staver, 1998; Raskin, 2002) kao odgovor na to što znanje predstavlja i kako ga usvajamo (Matthews, 1994; Yesildere i Turnuklu, 2004). Prema takvom tumačenju, svaki pojedinac pristupa nastavi s različitim iskustvima (Altun, 2006), a ona posljedično dovode do različitih procesa usvajanja znanja (Turgut i Fer, 2006). Spomenuto shvaćanje podrazumijeva da sve, od svakodnevne do znanstvene informacije, odražava istinu. Budući da znanje nije preslika istine, ne postoji nešto kao što je apsolutna informacija. Sažetije rečeno, svaki pojedinac kreira vlastitu istinu, koristeći se pritom osobnim vještinama i nastojanjima (Bodner, 1986). U tom smislu, iako i kognitivna i društvena dimenzija podrazumijevaju da pojedinac organizira znanje, čini se da je opisano shvaćanje najsnažnije vidljivo upravo u radikalnom konstruktivizmu (Glasersfeld, 1995).

S obzirom na to da konstruktivistički pristup postoji kao kognitivni, društveni i radikalni, osim tradicionalnih i konstruktivističkih uvjerenja o učenju, potrebno je razmotriti uvjerenja u vezi s konstruktivističkim učenjem u sklopu triju kategorija kao što su kognitivno-konstruktivistički, društveno-konstruktivistički i radikalno-

konstruktivistički pristup. Stoga su u ovom istraživanju razmatrana uvjerenja o učenju kao tradicionalna i konstruktivistička, a zatim su konstruktivistička uvjerenja istraživana kao kognitivna, društvena i radikalna.

Cilj istraživanja

Cilj istraživanja bio je utvrditi uvjerenja što ih učitelji imaju o učenju. Istraživanje se, prema tome, ponajprije bavi sljedećim pitanjima:

1 Na kojoj su razini njihova uvjerenja o tradicionalnom i konstruktivističkom učenju (kognitivno, društveno i radikalno)?
2 Postoji li značajna razlika u njihovim uvjerenjima o tradicionalnim i konstruktivističkim pristupima s obzirom na rod, razinu poučavanja i godine staža?
3 Što misle o tome kako su stekli kvalifikacije za konstruktivistički pristup?

Metoda

U istraživanju je korištena deskriptivna metoda, a provedeno je u jesenskom semestru 2011./2012. školske godine na uzorku razrednih i predmetnih učitelja u osnovnim školama u centru grada Gaziantepa. Uzorak se sastojao od 233 učitelja zaposlena u 5 osnovnih škola, od kojih je jedna slučajno odabrana privatna škola. Distribucija učitelja koji su sudjelovali u istraživanju s obzirom na rod, razinu poučavanja i godine staža prikazana je u Tablici 1.

Tablica 1.

Alati za prikupljanje podataka

U istraživanju je, kao alat za prikupljanje podataka, upotrijebljena Ljestvica za utvrđivanje uvjerenja o učenju, koju su izradili autori. Proces njezine izrade odvijao se u nekoliko etapa. Najprije se pristupilo uvidu u literaturu o vrstama konstruktivističkih i tradicionalnih pristupa učenju, a iz te su analize proizašla pitanja za potrebe njihovog istraživanja. Ljestvicu je zatim pregledalo deset relevantnih stručnjaka, jedan za područje mjerenja i vrednovanja i devet za područje kurikula i nastave. Istodobno su je analizirali predavači na Odsjeku za nastavu turskog jezika da bi utvrdili odgovara li jezičnim standardima, te je na kraju bilo sigurno da je razumljiva. Odlučeno je da će prva inačica sadržavati 41 tvrdnju. Bila je u obliku Likertove ljestvice sa stupnjevima u rasponu od *Veoma se slažem (5) do Uopće se ne slažem (1),* a primijenjena je na odabranom uzorku ispitanika.

Valjanost konstrukta utvrđena je uz pomoć valjanosti Ljestvice za utvrđivanje uvjerenja o učenju. U tom je smislu prvo provedena eksploratorna faktorska analiza (EFA), ali je svakako bilo potrebno prethodno utvrditi jesu li podaci uopće prikladni za faktorsku analizu. Na kraju su upotrijebljeni Kaiser-Meyer-Olkinov (KMO) test i Bartlettov test sferičnosti. Da bi se osigurao uzorak koji će po veličini odgovarati faktorskoj analizi, KMO vrijednosti moraju biti veće od 0,60, a rezultati Bartlettova

testa sferičnosti moraju biti značajni (Buyukozturk, 2010). U ovom je istraživanju koeficijent adekvatnosti uzorka iznosio 0,811, a rezultat Bartlettova testa 4062.791 ($p<0,001$, $df=820$). Navedeni rezultati pokazuju da podaci odgovaraju faktorskoj analizi. Nakon toga, utvrdili smo broj faktora za 41 tvrdnju koristeći se tehnikom izravne oblimin rotacije, za koju smo se rado odlučili zbog korelacije između 4 faktora. Na kraju se pokazalo da su tvrdnje opterećene na 4 faktora koji su činili 42,79% ukupne varijance.

Kao što Buyukozturk (2010) tvrdi, pretpostavlja se da su visoka opterećenja na faktore. Opterećenja od najmanje 0,45 smatraju se odgovarajućim za istraživanje. Štoviše, tvrdnje moraju imati visoke vrijednosti opterećenja na jedan jedini faktor. Razlika između dvaju najvećih vrijednosti mora biti što je moguće veća. Primijećeno je da razlika između opterećenja na faktore mora iznositi najmanje 0,10. S obzirom na EFA rezultate u svjetlu navedenih kriterija, iz ljestvice su uklonjene dvije tvrdnje s niskim opterećenjima na faktor (ispod 0,40). Opterećenja za ostale tvrdnje kretala su se između 0,41 i 0,79. Osim toga, još je 5 tvrdnji isključeno iz ljestvice jer su 3 imale slična opterećenja, dok se 2 ne mogu teorijski podržati faktorima. Ljestvica je tako sadržavala 34 tvrdnje i 4 faktora. Opterećenja na faktore za konačne tvrdnje bila su u rasponu od 0,79 do 0,41. S obzirom na sadržaj tvrdnji i njihovu teorijsku strukturu, prvi je faktor bio označen kao „društveno-konstruktivistički", drugi je bio „tradicionalni", treći je imao oznaku „kognitivno-konstruktivistički", a četvrti prepoznat pod nazivom „radikalno-konstruktivistički".

Tablica 2.

Radi utvrđivanja pouzdanosti Ljestvice o uvjerenjima o učenju, izračunati su Cronbachovi koeficijenti pouzdanosti na temelju interne konzistencije. Analiza pouzdanosti utvrdila je interni koeficijent .85 za „društveno-konstruktivistički dio", .74 za „kognitivno-konstruktivistički dio" i .73 za „radikalno-konstruktivistički dio" te .86 za „tradicionalni dio" ljestvice. Interna konzistencija izračunata za konstruktivističku ljestvicu (društveno, kognitivno i radikalno-konstruktivistička sub-ljestvica) iznosi ,86. Koeficijenti pouzdanosti ljestvica su iznad 0,70; to jest smatraju se pouzdanima (Tezbasaran, 1997; Pallant, 2005; Buyukozturk, 2010). Rezultati analize pouzdanosti, dakle, pokazuju da je Ljestvica uvjerenja o učenju pouzdana.

Da bi se pokazala diskriminacija tvrdnji na ljestvici i utvrdilo u kojoj mjeri one ukazuju na ukupne rezultate, izračunate su ukupna korelacija i usporedne vrijednosti za 27% dolje-gore skupina. Pri izračunu ukupne korelacije korišteni su koeficijenti Pearsonove produkt-moment korelacije, dok je t-test za nezavisni uzorak korišten za usporedbu rezultata 27% dolje-gore skupine određene prema ukupnim rezultatima. T vrijednosti s obzirom na razlike u rezultatima 27% dolje-gore skupina kretale su se u rasponu od 9,37 do 10,97 ($df=110$, $p<0,05$) za „društveno-konstruktivistički dio"; od 8,86 do 16,34 ($df=113$, $p<0,05$) za „tradicionalni dio", od 9,73 do 15,44 ($df=136$,

p<0,05) za „kognitivno-konstruktivistički dio", i od 7,77 do 18,14 (df=107, p<0,05) za „radikalno-konstruktivistički dio". Rezultati ukupnih korelacija kreću se između 0,43 i 0,60 za „društveno-konstruktivistički dio"; 0,48 i 0,68 za „tradicionalni dio"; 0,39 i 0,56 za „kognitivno-konstruktivistički dio"; 0,27 i 0,59 za „radikalno-konstruktivistički dio". Pri tumačenju ukupne korelacije, tvrdnje koje su imale vrijednost 0,30 i više od toga prihvaćene su kao odgovarajuće za diskriminaciju mjernih karakteristika (Buyukozturk, 2010).

Sve su tvrdnje u „radikalno-konstruktivističkom dijelu", osim jedne čija ukupna korelacija iznosi 0,27, zadovoljile taj kriterij. Štoviše, t-vrijednosti dobivene kao rezultat usporedbe 27% dolje-gore skupina pokazale su se značajnim za tvrdnje s ispravljenom ukupnom korelacijom od 0,27. Uzimajući rezultate u obzir, za sve se tvrdnje na ljestvici može reći da su diskriminantne. Rezultati dobiveni u istraživanjima valjanosti, pouzdanosti i analize tvrdnji pokazali su da ljestvica ima prihvatljive psihometrijske karakteristike za mjerenje uvjerenja što ih učitelji imaju o učenju.

Analiza podataka

Podaci u istraživanju analizirani su uz pomoću programskog paketa SPSS 17.0. Izračunate su aritmetičke srednje vrijednosti i standardne devijacije da bi se odredila razina uvjerenja o tradicionalnom i konstruktivističkom učenju te kognitivnim, društvenim i radikalnim dimenzijama konstruktivizma. Pri tumačenju srednjih vrijednosti korišteni su rezultati s pripadajućim intervalima prikazani u Tablici 3.

Tablica 3.

Korišten je jednosmjerni ANOVA test za srodne uzorke da bi se vidjelo postoji li značajna razlika između razine prihvaćanja tradicionalnog i konstruktivističkog pristupa, društvene, kognitivne i radikalne dimenzije. T-test za nezavisni uzorak proveden je da bi se utvrdilo razlikuju li se uvjerenja učitelja o tradicionalnom i konstruktivističkom učenju, kao i njihova uvjerenja o kognitivnim, društvenim i radikalnim dimenzijama konstruktivizma prema varijablama rod i razina poučavanja. Također, primijenjena je jednosmjerna analiza varijance da bi se utvrdilo razlikuju li se njihova uvjerenja prema godinama staža. Kao značajna razina za usporedbu odabrana je 0.05. Kada je pronađena razlika, izračunate su veličine učinka. One pokazuju veličinu značajne razlike pri uspoređivanju (Pallant, 2005). Kao što Cohen tvrdi, ako se izračunata veličina učinka kreće od 0,01 do 0,06, mala je značajna razlika u srednjim vrijednostima; umjerena je ako iznosi između 0,06 i 0,14, a ako iznosi 0,14 i više smatra se vrlo velikom (Akbulut, 2010; Pallant, 2005). Osim toga, izračunate su frekvencije i postotci da bi se odredilo odakle potječu kompetencije za konstruktivistički pristup.

Rezultati

U nastavku rada predstavljeni su rezultati s obzirom na pitanja razmatrana u istraživanju.

Rezultati s obzirom na prvi problem

Prvo su izračunate aritmetičke srednje vrijednosti i standardne devijacije za uvjerenja učitelja o tradicionalnom i konstruktivističkom učenju, kao i za njihova uvjerenja o kognitivnim, društvenim i radikalnim dimenzijama konstruktivizma. Tablica 4 prikazuje rezultate te analize.

Tablica 4.

Rezultati navedeni u Tablici 4 pokazuju da učitelji prihvaćaju konstruktivistički pristup na *visokoj razini,* a tradicionalni pristup na *srednjoj razini.* Može se, stoga, reći da učitelji više prihvaćaju konstruktivistički od tradicionalnog pristupa. Ista tablica dodatno pokazuje da učitelji prihvaćaju društveni konstruktivizam na vrlo visokoj, kognitivni konstruktivizam na visokoj, a radikalni konstruktivizam na srednjoj razini. Navedeni rezultati mogu ukazivati na to da se društveni konstruktivizam prihvaća više od kognitivnog i radikalnog konstruktivizma. Korišten je jednosmjerni ANOVA test za srodne uzorke kako bi se vidjelo jesu li statistički značajno različite srednje vrijednosti razine na kojoj su prihvaćeni tradicionalni i konstruktivistički pristup u odnosu na srednje vrijednosti društvenih, kognitivnih i radikalnih dimenzija. Rezultati su prikazani u Tablici 5.

Tablica 5.

Polazeći od rezultata prikazanih u Tablici 5, postoji statistički značajna razlika između razine prihvaćanja tradicionalnog i konstruktivističkog pristupa i društvenih, kognitivnih i radikalnih dimenzija. S obzirom na vrijednost Eta kvadrata, moglo bi se reći da je uočena značajna razlika. Usporedba provedena da bi se utvrdio njezin izvor ukazuje na značajnu razliku u svakoj usporedbi, osim one između tradicionalnog pristupa i radikalnog konstruktivizma.

Rezultati s obzirom na drugi problem

Misli se na to postoje li statistički značajne razlike u uvjerenjima učitelja kada se analiziraju rod, godine staža i razina poučavanja. Prvo je analizirana varijabla rod, a rezultati su prikazani u Tablici 6.

Tablica 6.

Navedeni rezultati ne ukazuju na statistički značajnu razliku u uvjerenjima o tradicionalnom učenju s obzirom na rod kao varijablu. No, ukazuju na statistički značajnu razliku u korist učiteljica, kada se analiziraju uvjerenja o konstruktivističkom učenju i kognitivnoj, društvenoj i radikalnoj konstruktivističkoj dimenziji. Da bi se utvrdila veličina spomenute razlike, izračunate su veličine učinka. Polazeći od izračuna, može se reći da postoji umjereno značajna razlika između ideja što ih učiteljice i učitelji imaju o konstruktivističkom učenju i kognitivnom konstruktivističkom pristupu, a ona je između ideja što ih imaju o društvenom i radikalnom konstruktivističkom pristupu slaba. Osim toga, veličina učinka spomenute varijable kreće se od 2% do 7% kada je

riječ o uvjerenjima o konstruktivističkom učenju i dimenzijama konstruktivizma. Može se, stoga, reći da učiteljice prihvaćaju konstruktivistički pristup više od učitelja kada se analizira rod kao varijabla.

U sklopu istraživanja analizirano je također postoji li značajna razlika između razrednih i predmetnih učitelja u pogledu njihovih uvjerenja o tradicionalnom učenju i konstruktivističkim dimenzijama (društvena, kognitivna i radikalna). Tablica 7 sadrži dobivene rezultate.

Tablica 7.

Rezultati prikazani u Tablici 7 pokazuju statistički značajnu razliku u uvjerenjima o tradicionalnom učenju u korist razrednih učitelja. S obzirom na veličinu učinka navedena je značajna razlika mala; razina poučavanja utječe na uvjerenja o tradicionalnom učenju na 3%. Štoviše, nije otkrivena statistički značajna razlika između uvjerenja o konstruktivističkom pristupu učenju i kognitivnim, društvenim i radikalnim dimenzijama konstruktivizma. Rezultati mogu ukazivati na to da razredni i predmetni učitelji imaju slična uvjerenja o konstruktivističkom pristupu i njegovim dimenzijama.

Da bi se utvrdilo razlikuju li se značajno uvjerenja učitelja o konstruktivističkom učenju i njegovoj kognitivnoj, društvenoj i radikalnoj dimenziji u odnosu na godine staža, korišten je ANOVA test. Tablica 8 prikazuje rezultate dobivene u toj analizi.

Tablica 8.

Prema rezultatima u Tablici 8 primjetna je statistički značajna razlika između uvjerenja učitelja o konstruktivističkom učenju i društvene i radikalne dimenzije konstruktivizma u smislu godina staža. Međutim, ona se pojavljuje u uvjerenjima o tradicionalnom učenju i kognitivnom konstruktivizmu. Polazeći od aritmetičkih srednjih vrijednosti koje se odnose na uvjerenja o tradicionalnom učenju, primjećuje se da s porastom godina staža raste i razina uvjerenja o tradicionalnom učenju. Aritmetičke srednje vrijednosti koje se odnose na kognitivni konstruktivizam otkrivaju višu razinu uvjerenja što ih imaju učitelji od 1 do 5 godina staža u odnosu na učitelje sa stažem od 6 do 10 godina te 11 i više godina.

Da bi se utvrdilo između kojih skupina postoji značajna razlika u uvjerenjima o kognitivnom konstruktivizmu kada su u pitanju godine staža, primijenjen je Scheffeov test, jedan od post hoc testova. Analiza je pokazala značajnu razliku između uvjerenja učitelja koji imaju do pet godina staža i između 6 i 10 godina staža, odnosno onih koji bilježe do pet godina staža i 11 i više godina. Utvrđena je statistički značajna razlika u uvjerenjima o kognitivnom konstruktivizmu. To su učitelji s 1-5 i 6-10 godina nastavnog staža. Osim toga, prema vrijednostima u Tablici 8, umjerena je statistički značajna razlika pronađena u uvjerenjima o tradicionalnom učenju kada su u pitanju godine staža, a mala je razlika u uvjerenjima o kognitivnom konstruktivizmu. Na temelju veličina učinka u istoj tablici može se reći da godine staža kao varijabla utječu na uvjerenja o učenju na 13%, a na uvjerenja o kognitivnom konstruktivizmu na 3%.

Prema rezultatima analize provedene da bi se utvrdilo variraju li uvjerenja učitelja o tradicionalnom i konstruktivističkom učenju, odnosno kognitivnim, društvenim i radikalnim dimenzijama konstruktivizma, može se reći kako su godine staža najučinkovitija varijabla.

Rezultati u vezi s trećim problemom

U ovom se istraživanju također utvrđivalo kako su učitelji stekli kompetencije da bi mogli primijeniti konstruktivistički pristup, a Tablica 9 prikazuje rezultate te analize.

Tablica 9.

Kao što se vidi u Tablici 9, 33% učitelja ne smatra dodiplomsko i poslijediplomsko obrazovanje izvorom stjecanja kompetencija za konstruktivistički pristup, a 67% učitelja uvjereno je upravo u to. Slično tome, 85% učitelja smatra da njihovo znanje o konstruktivističkom pristupu nema polazište u profesionalnom usavršavanju. 76% učitelja uvjerenja je da individualna nastojanja ne predstavljaju izvor njihova znanja o konstruktivističkom pristupu. S druge strane, 24% učitelja misli da je to znanje rezultat upravo njihovih individualnih nastojanja.

Na kraju, Tablica 11 pokazuje da 97% učitelja nije uvjereno u to da im znanje o konstruktivističkom pristupu potječe od nekih čimbenika, ako se izuzmu dodiplomsko i poslijediplomsko obrazovanje, profesionalno usavršavanje i individualna nastojanja. Samo 3% učitelja prihvaća druge čimbenike kao polazište za spomenuto znanje. Može se, prema tome, reći da su najvažniji izvor znanja učitelja o konstruktivističkom pristupu dodiplomsko i poslijediplomsko obrazovanje, nakon čega slijede profesionalno usavršavanje, individualna nastojanja i ostali čimbenici.

Rasprava

U ovom su istraživanju razmatrana sljedeća pitanja: *1)* razina učiteljskih uvjerenja o tradicionalnom i konstruktivističkom učenju i kognitivnim, društvenim i radikalnim dimenzijama konstruktivizma; i *2)* razlike u njihovim uvjerenjima o učenju prema rodu, razini poučavanja i godinama staža kao varijablama. Istraživanje se dalje bavilo onim što učitelji misle o najčešće primjenjivanom pristupu, razini na kojoj sami primjenjuju konstruktivističko učenje i načinima na koje su usvojili kompetencije potrebne za primjenu takvog pristupa. Rezultati u vezi s dodatno postavljenim pitanjima su sljedeći:

U ovom su se istraživanju pokazale značajne razlike između razine na kojoj su učitelji prihvatili tradicionalni i konstruktivistički pristup te društvenih, kognitivnih i radikalnih dimenzija. Kada su analizirane srednje vrijednosti prihvaćanja tradicionalnog i konstruktivističkog pristupa, uočeno je da su uvjerenja o konstruktivističkom pristupu na višoj razini u usporedbi s onima za tradicionalni pristup. Paralelno s tim rezultatom, u istraživanjima što su ih na uzorku budućih učitelja proveli Chan, Tan i Khoo (2007) te Sang i sur. (2009) na uzorku učitelja,

pokazala se viša razina uvjerenja budućih učitelja i učitelja o konstruktivističkom, u odnosu na tradicionalni pristup. Tako se može reći da učitelji smatraju da se učenje ostvaruje kada pojedinac daje smisao novoj informaciji povezujući je s prethodnim iskustvima, da učenik mora biti u srcu nastavnog procesa (Henson, 2003; Sherman i Kurshan, 2005) i aktivan u strukturiranju znanja (Glaserfeld, 1989). S druge strane,Tsai (2002) u svom istraživanju na uzorku učitelja te Chan i Elliott (2004), odnosno Meral i Colak (2009) u svojim istraživanjima na uzorku budućih učitelja, otkrivaju da je razina uvjerenja što ih učitelji i budući učitelji imaju o tradicionalnom učenju viša u odnosu na onu koja se tiče konstruktivističkog učenja. S obzirom na spomenuta istraživanja, može se reći da rezultati u ovom istraživanju o uvjerenjima učitelja o tradicionalnom i konstruktivističkom učenju odgovaraju nekim prijašnjim istraživanjima, ali se također razlikuju od nekih drugih rezultata. Preporuča se, stoga, nastavak istraživanja o uvjerenjima što ih učitelji imaju o tradicionalnom i konstruktivističkom učenju radi njihova potpunijeg vrednovanja.

Kada je riječ o uvjerenjima učitelja o kognitivnim, društvenim i radikalnim dimenzijama konstruktivističkog pristupa, utvrđeno je da su uvjerenja o radikalno-konstruktivističkom pristupu na nižoj razini u usporedbi s onima koja se odnose na kognitivni i društveni konstruktivizam. Poznato je da su u radikalnom konstruktivizmu individualne razlike važnije (Kelly, 1996; Demirci, 2003; Kanlı, 2009). Zbog toga učitelji mogu smatrati kako je teže primjenjivati radikalni konstruktivistički pristup u učionici nego društveni i kognitivni konstruktivizam, što samim time može dovesti do niže razine kada su u pitanju njihova uvjerenja o radikalnom konstruktivističkom pristupu u odnosu na ostale dimenzije. Drugo značajno otkriće povezano s uvjerenjima učitelja o kognitivnim, društvenim i radikalnim dimenzijama konstruktivističkog pristupa jest to da je razina njihovih uvjerenja o društveno-konstruktivističkom pristupu viša nego ona koja se odnosi na kognitivno-konstruktivistički pristup. Polazeći od navedenih rezultata, može se zaključiti kako su učitelji uvjerenja da se znanje organizira djelovanjem društvenih i kulturnih čimbenika, da naglasak stavljaju na ulazak učenika u interakciju s ostalim učenicima i učiteljima u nastavi, kao i to da podržavaju suradnički rad. U društvenom konstruktivizmu učitelj ne predstavlja jedini izvor znanja; međusobno pomaganje i raspravljanje o pitanjima koja se pojave u nastavi omogućuju učenicima da nauče više nego što bi to mogli da su sami. U ozračju karakterističnom za društveno-konstruktivistički pristup učenju učitelji, dakle, mogu dijeliti očekivane uloge, a to znači učenicima pružati pomoć i smjernice u učionici. Ono po čemu se prepoznaje upravo takvo ozračje možda objašnjava zašto su uvjerenja učitelja o društveno-konstruktivističkom pristupu na višoj razini kada se usporede s kognitivnim i radikalnim pristupima.

U istraživanju nije utvrđena statistički značajna razlika između uvjerenja o tradicionalnom učenju u odnosu na rod kao varijablu. To može upućivati na zaključak da učiteljice i učitelji imaju slična uvjerenja o tradicionalnom učenju, što odgovara Erenovim (2009, 2010) istraživanjima koja su pokazala da se uvjerenja budućih učitelja

o tradicionalnom učenju ne razlikuju prema rodu. S druge strane, naše se istraživanje razlikuje od jednog drugog istraživanja (Sang i sur., 2009), čiji je zaključak da se uvjerenja o tradicionalnom učenju značajno razlikuju u korist učitelja. Ukratko, rezultati ovog istraživanja odgovaraju rezultatima nekih, ali ne svih, istraživanja u pogledu roda kao varijable. Kada je riječ o uvjerenjima o konstruktivističkom učenju i dimenzijama konstruktivizma (kognitivna, društvena i radikalna), zabilježena je značajna razlika u korist učiteljica. Taj rezultat pokazuje da učenici daju smisao novoj informaciji tako što je povezuju sa stečenim iskustvima, aktivni su i nalaze se u srcu nastavnog procesa te da učiteljice pridaju veću važnost konstruktivističkom učenju u usporedbi s učiteljima. Navedeno potvrđuju rezultati Erenova (2009) istraživanja koji pokazuju statistički značajnu razliku u uvjerenjima budućih učitelja o konstruktivističkom učenju u korist učiteljica. Cınar, Teyfur i Teyfur (2006) na sličan su način proveli istraživanje o konstruktivističkom pristupu i kurikulima koji su proizašli iz njega. Spomenuto istraživanje također pokazuje značajnu razliku u uvjerenjima o konstruktivističkom pristupu u odnosu na rod, što odgovara rezultatima ovog istraživanja. No jedno drugo Erenovo (2010) istraživanje donosi zaključak o rodu kao varijabli koja nema značajan učinak na uvjerenja što ih budući učitelji imaju o konstruktivističkom učenju. Kada se pogledaju istraživanja uvjerenja o tradicionalnom učenju ista je situacija s rezultatima koji pokazuju učinke roda na uvjerenja o konstruktivističkom učenju. Smatra se da bi neko naknadno meta-analitičko istraživanje, koje bi obuhvaćalo rezultate istraživanja usmjerenih sličnim pitanjima, trebalo razmotriti uvjerenja o učenju prema rodu kao varijabli te predstaviti sveukupnu evaluaciju njegovih učinaka i na tradicionalni i na konstruktivistički pristup učenju.

U odnosu na uvjerenja razrednih i predmetnih učitelja o tradicionalnom učenju, utvrđena je značajna razlika u korist prve skupine. Ne samo da nas teorija informira kako struka učitelja ima utjecaja na njihova uvjerenja o učenju (Lin i Gorrel, 2001) nego i rezultati koji ukazuju na struku kao učinkovitu varijablu kada se razmatraju uvjerenja budućih učitelja o tradicionalnom učenju daju potporu takvom rezultatu. U našem istraživanju, međutim, nije otkrivena statistički značajna razlika u uvjerenjima što ih učitelji imaju o konstruktivističkom učenju i kognitivnoj, društvenoj i radikalnoj dimenziji konstruktivizma kada je riječ o usmjerenju. Za razliku od spomenutog rezultata Rawitz i Snow (1998) su u svom istraživanju utvrdili da su razredni učitelji više skloni konstruktivističkom pristupu nego predmetni učitelji (cf. Isıkoglu i Basturk, 2007). Osim toga, Eren (2009, 2010) je u dva istraživanja zaključio da razina poučavanja predstavlja učinkovitu varijablu u slučaju uvjerenja budućih učitelja o konstruktivističkom učenju, što ne odgovara nalazima u ovom istraživanju. Rezultat istraživanja prema kojem razredni i predmetni učitelji imaju slična uvjerenja o konstruktivističkom učenju u suprotnosti je s podacima iz teorije prema kojima razina poučavanja ima važne učinke na uvjerenja o učenju (Lin i Gorrel, 2001). Stoga se može reći da rezultati istraživanja koji pokazuju da upravo ta varijabla ima značajne učinke na uvjerenja o tradicionalnom učenju imaju uporište kako u teoriji tako i u prethodnim istraživanjima. S druge strane, rezultati istraživanja prema kojima razina poučavanja

ne predstavlja učinkovitu varijablu u odnosu na uvjerenja o učenju ne samo da je u suprotnosti s teorijom nego se također razlikuju od rezultata prethodnih istraživanja.

Zabilježena je statistički značajna razlika u uvjerenjima učitelja o tradicionalnom učenju s obzirom na njihove godine staža. Dvostruke su usporedbe, provedene da bi se utvrdilo odakle potječe spomenuta razlika, pokazale kako učitelji do pet godina, odnosno 6-10 godina, učitelji do pet godina, odnosno 11 i više godina imaju različita uvjerenja o tradicionalnom učenju. Osim toga, kako se povećava broj godina staža tako se povećavaju i njihova uvjerenja o tradicionalnom učenju. Kao što je poznato, kurikuli utemeljeni na konstruktivističkom pristupu, počeli su se primjenjivati 2005. godine. Ta je promjena uvjetovala potrebu za organizacijom nastave na učiteljskim fakultetima u skladu s konstruktivističkim pristupom. S obzirom na učitelje s najmanje 5 godina staža koji su diplomirali na učiteljskim fakultetima 2005. godine ili poslije, može se pretpostaviti da su oni bili uključeni u profesionalno usavršavanje prilagođeno konstruktivističkom pristupu. Drugim riječima, može se zaključiti da se profesionalno usavršavanje za učitelje koji pripadaju različitim skupinama s obzirom na godine staža temeljilo na drugačijem pristupu učenju. Dakle, razlika u uvjerenjima učitelja o tradicionalnom učenju može se objasniti različitim programima profesionalnog usavršavanja za učitelje koji se razlikuju prema godinama staža. Rezultati koji ukazuju na profesionalno usavršavanje kao najvažniji izvor znanja učitelja o konstruktivističkom pristupu idu u prilog tom stajalištu.

U istraživanju nije zabilježena statistički značajna razlika kada je riječ o uvjerenjima učitelja o konstruktivističkom pristupu u odnosu na godine staža. Statistički se značajna razlika pokazala samo u kognitivnoj dimenziji konstruktivističkog pristupa, a veličina učinka pokazala je kako je ta razlika mala. Činjenica da se s povećanjem godina staža povećava i razina uvjerenja o tradicionalnom učenju, dovodi do očekivanja prema kojem će razina uvjerenja što ih manje iskusni učitelji imaju o konstruktivističkom učenju biti viša nego kada govorimo o iskusnijim učiteljima. Ipak, nije zabilježena statistički značajna razlika u uvjerenjima učitelja o konstruktivističkom pristupu s obzirom na godine staža, što pokazuje da to nije učinkovita varijabla u kontekstu uvjerenja o konstruktivističkom pristupu. To ujedno upućuje na to da obrazovanje što ga učitelji dobivaju na dodiplomskoj razini dovodi do povećanja razine njihovih uvjerenja o konstruktivističkom pristupu. Premda je riječ o pristupu čija se primjena možda čini jednostavnom u teoriji, u stvarnom nastavnom okruženju učitelji dolaze do zaključka da ga je teško primijeniti u praksi (Eren, 2009). Za razliku od istraživanja o utjecaju godina staža na uvjerenja što ih učitelji imaju o učenju, Lu (2004) je u svom istraživanju zaključio da su učitelji sa stažem kraćim od 6 godina uvjereniji u konstruktivistički pristup. Rezultati dobiveni od Sang i sur. (2009) pokazuju da godine staža ne predstavljaju učinkovitu varijablu kada je riječ o uvjerenjima učitelja o tradicionalnom učenju. U tom se smislu to istraživanje razlikuje od našeg istraživanja, ali odgovara istraživanjima u kojima se zaključuje da godine staža ne predstavljaju učinkovitu varijablu kada je riječ o uvjerenjima učitelja o konstruktivističkom učenju.

U ovom su istraživanju kao najvažniji izvor znanja kojim učitelji raspolažu o konstruktivističkom učenju prepoznati dodiplomsko i poslijediplomsko obrazovanje, a zatim profesionalno usavršavanje, individualna nastojanja i ostali čimbenici. Više od polovine učitelja koji su sudjelovali u istraživanju smatra da njihovo znanje o konstruktivističkom pristupu najviše potječe od dodiplomskog i poslijediplomskog obrazovanja, što pokazuje da obje razine obrazovanja imaju funkcionalnu ulogu u stjecanju kompetencija potrebnih učiteljima za konstruktivistički pristup. Kao što Arslan i Ozpınar (2008) navode u svom istraživanju, konstruktivistički je pristup zastupljen i u teoriji i u praksi na sveučilištima. Poslijediplomsko se obrazovanje može preporučiti učiteljima koji imaju osjećaj kako im nedostaje potrebno znanje da bi primijenili konstruktivistički pristup. Polazeći od rezultata prema kojima je dodiplomsko obrazovanje važno u informiranju o konstruktivističkom pristupu, trebalo bi ga dobro vrednovati kako bi se budući učitelji lakše pripremili za primjenu konstruktivističkog obrazovanja. Većina sudionika ovog istraživanja navodi profesionalno usavršavanje kao drugi izvor znanja o navedenom pristupu. No, to ne odgovara jednom drugom istraživanju u kojemu se zaključuje da se znanje o konstruktivističkom pristupu znatno povećava nakon što učitelji odslušaju programe profesionalnog usavršavanja (Hand i Treagust, 1994; Onen, Mertoglu, Saka i Gurdal, 2009). Buduće bi istraživanje trebalo usmjeriti utvrđivanju učinaka sličnih programa na profesionalni razvoj učitelja s ciljem osposobljavanja za konstruktivistički pristup. Osim toga, trebalo bi pripremiti nešto novo kako bi se povećala učinkovitost programa profesionalnog usavršavanja. U istraživanju su gotovo svi učitelji tvrdili da ostali čimbenici, osim dodiplomskog i poslijediplomskog obrazovanja, profesionalnog usavršavanja i individualnih nastojanja, ne predstavljaju izvor njihova znanja o konstruktivističkom pristupu. Rezultat prema kojem izvor znanja o spomenutom pristupu ima veliku važnost ukazuje na to da poslijediplomsko obrazovanje preuzima najznačajniju ulogu u poboljšanju znanja učitelja o konstruktivističkom pristupu.

Ograničenja

Ovo je kvantitativno istraživanje koje se temelji na podacima prikupljenim uz pomoć ljestvice o samostalnom izvještavanju. Važno je, stoga, provesti kvalitativna istraživanja da bi se odredilo kakva su uvjerenja učitelja o tradicionalnom i konstruktivističkom učenju i uvjerenja o kognitivnim, društvenim i radikalnim dimenzijama konstruktivizma. Osobito je potrebno daljnje istraživanje da bi se prikupilo više pojedinosti o razini primjene konstruktivističkog pristupa uz pomoć tehnika promatranja i intervjua.

Istraživanje ima također ograničavajući karakter jer se skupina ispitanika sastojala od turskih učitelja. Poznato je, međutim, da kulturni čimbenik ima središnju ulogu u formiranju uvjerenja o učenju (Hofer, 2008; Sang i sur., 2009). Da bi se prevladalo spomenuto ograničenje, trebalo bi provesti slična istraživanja s ispitanicima iz različitih kultura.