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The Prediction of Physical Education Teacher Candidates' Achievement Goals Regarding Their Learning and Studying Approaches and Epistemological Beliefs

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ABSTRACT

The study aim is to define the relationships between the learning and study approaches, achievement goal orientations, and epistemological beliefs of physical education teacher candidates studying at physical education and sports schools. A total of 502 students (233 females and 269 males) from five different universities volunteered to participate. Multiple regression analysis using the stepwise method shows that the highest proportion of the variance of the Learning-Approach Goal Orientation subscale score was explained by the Belief of Learning Depends on Effort subscale. Meanwhile, the Belief of There is Only One True Truth subscale explained a significant portion of the variance for the Learning-Avoidance Goal Orientation subscale score. The Belief of Learning Depends on Ability subscale explained a significant portion of the variance for the Performance-Approach Goal Orientation and Performance-Avoidance Goal Orientation subscale scores. Teacher candidates should be allowed to undertake learning and study approaches that adhere to their own beliefs, while education planning for the future must be performed taking into consideration students' individual features.

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Keywords:
achievement goal, epistemological beliefs, learning approach

Introduction

Many educational studies focus on "goals" which is a profound component of success in the literature (Akın & Arslan, 2014; Puente-Diaz, 2012); investigators place great importance on this topic as the crucial point of achievement. However, besides "goals," other components of success exist. A student who masters the factors related to achievement goals could then proceed through his/her self-designated path of success more confidently. The effects of the learning and study approach concepts, which explain students' learning approaches, on achievement goals are well known. Particularly in the modern education system, the aim is to assess the most effective and convenient approach for each student individually in order to improve overall academic achievement goals and competence. The relationships between structures facilitate the arrangements related to the improvement of academic performance. The epistemological belief concept, which outlines the beliefs of students regarding information and learning, affects areas such as reading comprehension and active research. Therefore, investigating the relationship between epistemological beliefs and learning and studying approaches will contribute greatly to the field of achievement goals research for both students and educators.

Achievement goals are an important parameter in defining success in an academic environment and these focus on success behaviors. Learning and performance are defined as two achievement goal orientations

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(Dweck, 1986; Dweck & Leggett, 1988) and, for each goal orientation, both approach and avoidance values are outlined. Thus, achievement goals comprise four subscales. *Learning-Approach Goal Orientation* focuses on improving proficiency via the gaining of skills and becoming skilled in tasks. *Learning-Avoidance Goal Orientation* is defined as the individual's effort to avoid losing the skills and abilities, forgetting the learned information, not understanding the topics, or interrupting a task (Eliot, 1999). *Performance Approach Goal Orientation* is related to compatible behaviors of success, such as task stability and use of strategy (Wolters, 2004) as well as high self-sufficiency levels (Elliot & Harackiewicz, 1996), which involve the desire to reach high-level performance. Here, an individual who has a Performance-Approach Goal Orientation searches for positive consolidation and feedback (Payne, Youngcort, & Beaubien, 2007). In *Performance-Avoidance Goal Orientation,* there is a high fear of failure and low proficiency expectations; the individual focuses on the possibility of failure, thus exhibiting inadaptable behaviors and weak performance (Elliot & Church, 1997).

Many structures regarding achievement goal structure have been discussed in the literature; for example, epistemological beliefs and approaches to learning and studying. Epistemological beliefs reportedly have significant effects on learning, and students with improved epistemological beliefs are more successful in learning (Deryakulu & Büyüköztürk, 2005; Öngen, 2003). Most beliefs regarding the nature of knowledge are called epistemological beliefs (Hofer & Pitnrich, 1997), and these reflect the beliefs in relation to "what the knowledge is," "what the individual is," and "how knowing and learning become a fact."

William Perry (as cited in Yılmaz, 2007) conducted the first study on epistemological beliefs in 1968. Perry created a model explaining the progress of individuals' epistemological beliefs and this model comprised nine initial levels based on his study results; in his later studies, he modified this model to four levels (Hofer & Pitnrich, 1997). The pedagogues who examined Perry's studies outlined many perspectives in light of his research (Baxter Magolda, 1992). Schommer (1990), who used the concept "how individuals perceive knowledge and learning," modified the Epistemological Belief scales (as cited in Yılmaz, 2007). In the literature, epistemological beliefs may relate to the achievement goals of students (Braten & Strømsø, 2004). Schutz, Pintrich, and Young (1993) stated that it is more likely for students with improved epistemological beliefs to adopt proficiency goals. Meanwhile, Neber, and Schommer-Aikins (2002) reported that epistemological beliefs have a negative relationship with proficiency goal approaches.

Epistemological beliefs, which are accepted as an area of individualistic differences, have been shown to have significant effects on teaching and learning approaches (Deryakulu, 2004). Studies related to learning approaches have been undertaken since 1976, when Marton and Saljö focused on the two-dimension learning approaches of students, which are defined as the deep and surface approaches (Prat-Sala & Redford, 2010). In subsequent studies, learning was treated in three subscales as surface, deep, and strategic learning approaches (Biggs, 1979; Newble & Entwistle, 1986). The surface learning approach states that knowledge is constant, certain, and stable, and the belief that "knowledge is presented to an individual by the authority" (Chan, 2003). The deep learning approach refers to learning as performed via effort and knowledge in a manner whereby the individuals comprehend and understand the situation (Chan, 2003). The strategic learning approach states that learning depends on knowledge of the result and that obtaining high marks is important (Biggs, 1987).

One study that evaluated the relationship between epistemological beliefs and studying approaches was performed by Chan (2003); it involved 292 students from an education faculty in Hong Kong. The study results showed a relationship between both structures; thus, it appears that epistemological beliefs are important for teaching and learning. As well as the beliefs of students, the beliefs of teachers about knowledge and learning are thought to be effective in education environments. In studies conducted regarding teachers' epistemological beliefs, Howard, McGee, Schwartz, and Purcell (2000) stated that beliefs are effective in teachers' choice of teaching strategies (Hashweh, 1996), adopting program changes (Prawat, 1992), and students' use of high-level thinking skills (Maor & Taylor, 1995).

This study aims to reveal the relationship between these three basic structures, which are reportedly correlated. Here, the criteria used by physical education teacher candidates in relation to how they use and understand learning approaches as well as their beliefs about success, learning, and studying approaches are evaluated. Additionally, different behavior patterns explaining how physical education teacher candidates interpret and respond to their own proficiency in achievement goals and teaching approaches are outlined.

Method

Participants

Participants comprised 269 males (M = 22.9, SD = 2.6) and 233 females (M = 21.9, SD = 2.8) physical education teacher candidates (N = 502; M = 22.5, SD = 2.8) from five schools of physical education and sports in Turkey (Ege University = 93, Mersin University = 106, Çukurova University = 97, Trakya University = 100, Selçuk University = 106). The universities were chosen through convenience sampling before the participants were chosen; the numbers of students attending the physical education and sports teaching department of each school were taken into consideration in the sampling process.

Measures

2 × 2 achievement goal orientations scale. Developed by Akın (2006), the 2 × 2 Achievement Goal Orientations Scale comprises four types of research goals with 26 items: Learning-Approach Goal Orientation (LPGO; eight items, e.g., "I like school work that I'll learn from"), Learning-Avoidance Goal Orientation (LVGO; five items, e.g., "I do my best to avoid making mistakes"), Performance-Approach Goal Orientation (PPGO; seven items, e.g., "It is important for me to perform better than others"), and Performance-Avoidance Goal Orientation (PVGO; six items, e.g., "I worry about the possibility of getting bad grades"). Physical education teacher candidates gave responses on a five-point Likert-type scale from 1 (strongly disagree) to 5 (strongly agree). Cronbach's alphas for internal consistency were .77, .82, .84, and .86 for LPGO, LVGO, PPGO, and PVGO, respectively.

Epistemological beliefs scale. Developed by Schommer (1990), this scale was adapted into Turkish by Deryakulu and Büyüköztürk (2005). It comprises three subscales with 34 items: The Belief of Learning Depends on Effort (BLDE; 17 items), The Belief of Learning Depends on Ability (BLDA; 8 items), and The Belief of There is Only One True Truth (BOTT; nine items). Students responded on a five-point Likert-type scale from 1 (strongly disagree) to 5 (strongly agree). Cronbach's alphas for the adapted version of the subscales were .84, .69 and .64, respectively, and .81 for the whole scale (Deryakulu & Büyüköztürk, 2005). In each subscale, high and low scores indicated that responding students possess immature and mature beliefs, respectively.

Learning and studying approaches inventory (LSAI—Short form). Developed by Hounselli, Entwistle, and Anderson et al. (2002), this evaluates learning and studying approaches (as cited in Topkaya, Yaka, Öğretmen, 2010). Topkaya, Yaka, and Öğretmen (2010) adapted it into Turkish. It comprises three subscales (total 18 items): surface approach (SA, 4 items), deep approach (DA, 10 items), and strategic approach (StA, 4 items). The inventory is designed in five evaluation steps from 1 (*not convenient at all*) to 5 (*totally convenient*). In each subscale, a high score indicates that the student prefers the learning approach the most and a low score indicates that he/she prefers the learning approach the least. Cronbach's alphas ranged from 0.45–0.85 for the subscales. The physical education teacher candidates were asked to answer the questions concerning themselves. Each administration took approximately 15 minutes.

Data Analyses

In this study, the statistical analyses were conducted using SPSS 15.0 for Windows (SPSS Inc., Chicago, IL, USA). Descriptive statistics for all measures were presented as mean ± standard deviation. Cronbach's alphas were used to assess the internal reliability of the subscales. Independent samples t-test assessed the possible differences in the subscale scores between genders; effect sizes (Cohen's d) were calculated using the Effect Size Determination Program (2001, Wilson, D.B., University of Maryland, College Park). Bivariate correlation analysis was performed to identify the relationships between subscales. Multiple regression analysis with the stepwise method was used to control for whether the Learning and Studying Approaches and Epistemological Beliefs subscales are determinants of Achievement Goal Orientation. Statistical significance was $p < .05$ for all analyses.

Results

Means, standards deviations, Cronbach's alphas, and independent sample t-test results of all subscale variables by gender are presented in Table 1. Consistent with previous research that used these scales on physical education teacher candidates, the data for all subscales were calculated and used in subsequent

analyses of the mean scores. For all subscales, these mean scores were equal to or above the midpoint (2.5) of the five-point scale, except for the BLDE and SA mean scores. Table 1 also shows the internal reliability for each subscale; these are acceptable for all subscales (Kalaycı, 2005).

There was a statistically significant difference in the mean scores for LVGO (t = 3.02, p < .01), SA (t = −2.30, p < .05), and StA (t = 2.40 p < .05) between male and female teacher candidates. The mean scores of the female physical education teacher candidates for the LVGO and StA were significantly greater than those of the male candidates. Meanwhile, the mean scores of the male physical education teacher candidates in the SA were significantly greater than that of the female candidates (t = −2.30, p < .01).

Table 1. Descriptive statistics for the latent variables

Scale	Subscale	Female		Male		α	*t*	*d*
		M	*SD*	*M*	*SD*			
Epistemological Beliefs	BLDE	1.91	.64	1.95	.65	88	−.69	0.06
	BLDA	2.63	1.00	2.72	.93	83	−1.06	0.09
	BOTT	3.26	.72	3.18	.71	68	1.24	0.11
2 × 2 Achievement Goal Orientation	LPGO	4.01	.83	3.98	.73	.86	.43	0.04
	LVGO	3.61	.71	3.41	.79	61	3.02**	0.27
	PPGO	3.12	.91	3.12	.89	78	.03	0.002
	PVGO	2.98	.93	3.00	.86	73	−.32	0.03
Approaches to Learning and Studying	SA	2.22	.81	2.39	.83	.57	−2.30*	0.21
	DA	4.13	.65	4.07	.59	82	1.01	0.09
	StA	3.60	.88	3.42	.80	61	2.40*	0.21

*p < .05, **p < .01, d = Cohen's d (Effect Size), M = Mean, SD = Standard Deviation

Note. BLDE = The Belief of Learning Depends on Effort, BLDA = The Belief of Learning Depends on Ability, BOTT = The Belief of There is Only One True Truth, LPGO = Learning-Approach Goal Orientation, LVGO = Learning-Avoidance Goal Orientation, PPGO = Performance-Approach Goal Orientation, PVGO = Performance-Avoidance Goal Orientation, SA = surface approach, DA = deep approach, StA = strategic approach

Pearson's product moment correlation coefficients between the Epistemological Beliefs, Achievement Goal Orientation, and Approaches to Learning and Studying subscales are presented in Table 2. The BLDE subscale (Epistemological Beliefs), has a moderate-level negative relationship with the LPGO (r = −.54, p < .01) and LVGO subscales (r = −.33, p < .01) (Achievement Goal Orientation). In contrast, the BLDE subscale (Epistemological Beliefs) is not related to the PPGO or PVGO subscales (Achievement Goal Orientation). Regarding the other Epistemological Beliefs subscales, each has a moderate-level positive relationship with all Achievement Goal Orientation subscales, except for LPGO. There is a moderate-level negative relationship between BLDA and LPGO (r = −.20, p < .01).

The BLDE subscale (Epistemological Beliefs) has a moderate-level negative relationship with all Approaches to Learning and Studying subscales. Regarding the BLDA subscale (Epistemological Beliefs), while Approaches to Learning and Studying has a significant low-level relationship with the SA (r = .39, p < .01) and DA subscales (r = −.18, p < .01), it had no significant relationship with the StA subscale (r = −.03, p > .05). While the BOTT subscale (Epistemological Beliefs) has a significant low-level positive relationship with the SA subscale (r = .22, p < .01) (Approaches to Learning and Studying), it had no significant relationship with the other subscales.

Regarding the possible relationships between the Achievement Goal Orientation and Approaches to Learning and Studying subscales, the LPGO and LVGO subscales (Achievement Goal Orientation) had a low-level positive relationship with all Approaches to Learning and Studying subscales. When we consider the PPGO subscale (Achievement Goal Orientation), while the Approaches to Learning and Studying had a significant low-level positive relationship with its subscale, SA (r = .25, p < .01), it had no significant relationship with any other subscales. However, regarding the last Achievement Goal Orientation subscale, PVGO, while a low-level positive relationship exists with the SA (r = .34, p < .01) and DA subscales (r = −.11, p

< .05) (Approaches to Learning and Studying), no significant relationship exists with the StA subscale ($r = -.01$, $p > .05$).

Table 2. Correlations between epistemological beliefs, achievement goal orientation, and approaches to learning and studying subscales

Subscales	BLDE	BLDA	BOTT	LPGO	LVGO	PPGO	PVGO	SA	DA
BLDE	-								
BLDA	.16**	-							
BOTT	−.12**	.51**	-						
LPGO	−.54**	−.20**	.12**	-					
LVGO	−.33**	.18**	.37**	.41**	-				
PPGO	−.04	.47**	.43**	.03	.41**	-			
PVGO	.03	.51**	.46**	−.10*	.51**	.68**	-		
SA	.11*	.39**	.22**	−.14**	.13**	.25**	.34**	-	
DA	−.55**	−.18**	.07	.44**	.22**	−.03	−.11*	−.31**	-
StA	−.31**	.03	.03	.34**	.20**	.08	−.01	.03	.45**

*p < .05, **p < .01

BLDE = The Belief of Learning Depends on Effort, BLDA = The Belief of Learning Depends on Ability, BOTT = The Belief of There is Only One True Truth, LPGO = Learning-Approach Goal Orientation, LVGO = Learning-Avoidance Goal Orientation, PPGO = Performance-Approach Goal Orientation, PVGO = Performance-Avoidance Goal Orientation, SA = surface approach, DA = deep approach, StA = strategic approach

Stepwise multiple regression analysis was used to control for whether the Learning and Studying Approaches and Epistemological Beliefs subscales are determinants of Achievement Goal Orientation (Table 3). The classification of Achievement Goal Orientation was hierarchically regressed for Epistemological Beliefs and Approaches to Learning and Studying.

Regarding Learning Approach Goal Orientation, the first subscale of Achievement Goal Orientation, all Epistemological Belief subscales, StA, and DA scores appeared as significant predictors; the highest proportion, approximately 37%, of the total variance of Learning Approach Goal Orientation is explained by the DA subscale. When the subscales were entered into the equation as variables, the BLDE ($\beta = -.38$, $t = -8.62$, $p < .001$) and BLDA subscales ($\beta = -.21$, $t = -4.80$, $p < .001$) provided statistically negative predictors of Learning Approach Goal Orientation. In contrast, the StA ($\beta = .18$, $t = 4.36$, $p < .001$), BOTT ($\beta = .17$, $t = 3.97$, $p < .001$), and DA subscales ($\beta = .11$, $t = 2.29$, $p < .01$) provided statistically positive predictors. The highest proportion of variance for the LPGO score was explained by the BLDE subscale [$R^2 = .30$, $F(1, 500) = 209.3$, $p < .01$].

Regarding the second subscale of Achievement Goal Orientation, while the BOTT ($\beta = .32$, $t = 7.84$, $p < .001$), StA ($\beta = .10$, $t = 2.45$, $p < .05$), and SA ($\beta = .08$, $t = 2.01$, $p < .05$) subscales provided statistically positive predictors for LVGO, the BLDE subscale ($\beta = -.27$, $t = -6.29$, $p < .001$) provided a negative predictor. The BOTT subscale [$R^2 = .14$, $F(1, 500) = 80.2$, $p < .01$] explained a significant part of the variance of the LVGO subscale score.

The third Achievement Goal Orientation subscale showed that the BLDA ($\beta = .34$, $t = 7.52$, $p < .001$) and BOTT subscales ($\beta = .25$, $t = 5.70$, $p < .001$) were statistically positive predictors for the PPGO subscale and explained the highest proportion of the variance of the BLDA subscale score [$R^2 = .22$, $F(1, 500) = 139.0$, $p < .01$].

Regarding the last subscale of Achievement Goal Orientation, BLDA ($\beta = .32$, $t = 7.01$, $p < .001$), BOTT ($\beta = .26$, $t = 6.21$, $p < .001$), and SA subscales ($\beta = .16$, $t = 4.10$, $p < .001$) were positive predictors for the PVGO. The BLDA subscale explained a significant variance of the PVGO subscale score [$R^2 = .30$, $F(1, 500) = 178.0$, $p < .01$].

Table 3. Results of the multiple regression analysis related to the relationship between epistemological beliefs, achievement goal orientation, and approaches to learning and studying

MODEL	B	β	t	Δ R^2	R^2
Learning-Approach Goal Orientation					
BLDE	−.45	−.38	−8.62***	.30	.30
StA	.16	.18	4.36***	.03	.33
BLDA	−.17	−.21	−4.80***	.01	34
BOTT	.19	.17	3.97***	.02	.36
DA	.13	.11	2.29**	.01	.37
Learning-Avoidance Goal Orientation					
BOTT	.34	.32	7.84***	.14	.14
BLDE	−.31	−.27	−6.29***	.08	.22
StA	.09	.10	2.45*	.01	.23
SA	.08	.08	2.01*	.01	.24
Performance-Approach Goal Orientation					
BLDA	.31	.34	7.52***	.22	.22
BOTT	.32	.25	5.70***	05	.27
Performance-Avoidance Goal Orientation					
BLDA	.29	.32	7.01***	.26	.26
BOTT	.33	.26	6.21***	.05	.31
SA	.18	.16	4.10***	.02	.33

*p < .05, **p < .01,***p < .001, **Δ** = Change

BLDE = The Belief of Learning Depends on Effort, BLDA = The Belief of Learning Depends on Ability, BOTT = The Belief of There is Only One True Truth, LPGO = Learning-Approach Goal Orientation, LVGO = Learning-Avoidance Goal Orientation, PPGO = Performance-Approach Goal Orientation, PVGO = Performance-Avoidance Goal Orientation, SA = surface approach, DA = deep approach, StA = strategic approach

Discussion and Conclusion

In recent years, being informed about students' learning motivations and achievement goals has been important for effective teaching in the education system, as well as knowing how students learn and what their learning approach in terms of their own beliefs. The study aim was to define the relationship between learning and studying approaches, achievement goals, and epistemological beliefs of physical education teacher candidates studying at schools of physical education and sports.

The SA and DA (Approaches to Learning and Studying subscales), and LVGO (Achievement Goal Orientation subscale), are statistically different in terms of gender. The mean scores of the female physical education teacher candidates in the LVGO and StA subscales are significantly greater than that of males. In terms of the SA subscale, male students perceive themselves better compared with female students. When the literature is examined, in parallel with our findings, Howell and Buro (2009) and Kazak Çetinkalp (2010) outlined in their studies that female university students were more adapted to LVGO than male university students. Additionally, the studies stating that LVGO subscale levels do not differ for gender have drawn attention (Puente-Diaz, 2012; Splan, Brooks, Porr, and Broyles, 2011). When the studies concerning StA are examined, Senemoğlu (2011) outlined that both American and Turkish female university students adopted StA better than their male counterparts. Paver and Gammie (2005) also obtained the same result in their studies on business administration and finance students. However, in Andreou, Vlachoc, and Andreou's (2006) study on university students, female students had lower scores than male students in terms of StA. Additionally, there was no gender difference in terms of preferring StA (Chamorro-Premuzic, Furnham, 2009; Duff, 2002). When the studies involving SA are concerned, Duff (2002) noted that female university students had greater scores than their male counterparts in terms of using SA. Again, Foold and Wilson (2008) found that female

students' mean score for SA was higher compared to the male students. Moreover, studies stating that SA does not differ in terms of gender are also of interest (Roziana et al., 2011; Taher & Jin, 2011).

Additionally, regarding the results of the regression analysis performed for the relationships between Approaches to Learning and Studying, Epistemological Beliefs, and Achievement Goal Orientation, the Approaches to Learning and Studying subscales provided meaningful connections with the Epistemological Beliefs subscales. All Epistemological Beliefs subscales and StA and DA subscales provided meaningful connections with the LPGO subscale. The highest proportion of variance for the Learning–Approach Goal Orientation subscale score was explained by the BLDE subscale. This was an anticipated result. This study revealed consistent results in line with previous study results. In this context, while the BLDE leads the students to the learning goal, the BLDA leads them to the performance goal (Hau & Salili, 1990). Meanwhile, Kadıoğlu and Uzuntiryaki ve Aydın (2011) reported a significant relationship between the LPGO and BLDE subscales.

Regarding the second subscale of Achievement Goal Orientation, while the BOTT, StA, and SA subscales provided statistically positive predictors for the LVGO subscale, the BLDE subscale provided a negative predictor. The BOTT subscale explained a significant part of the variance of the LVGO subscale score. When the related literature is investigated, different results were obtained in studies related to the LVGO. For example, Muis and Franco (2009) studied 167 female students and found no relationship between the LVGO and BOTT subscales.

Regarding the PPGO subscale, the BLDA and BOTT subscales provided statistically positive predictors for the PPGO subscale and explained the highest proportion of the variance of the BLDA subscale score. Numerous studies have had different results regarding this subscale. Rastergar, Jahromi, Haghighi, and Akbari (2010) investigated epistemological beliefs and mathematical success; here, a negative significant relationship between the PPGO and BLDA subscales was found. Paulsen and Feldman (2005) reported that the Learning Goal had effects on the BLDA and there was a negative significant relationship between these subscales. A positive relationship between the BLDA and PPGO subscales was also found. It is suggested that environmental conditions, individual characteristics, and the nature of learning effects all affect Performance Goal Orientation. This suggestion supports the results of Midgley, Kaplan, and Middleton (2001).

In the evaluation of the last subscale of Achievement Goal Orientation, PVGO, BLDA, BOTT, and SA were positive predictors. Of these subscales, the BLDA subscale explained a significant of variance for the PVGO score. Other studies showed the existence of a relationship between BLDA and Performance Goal Orientation (Dweck & Leggett, 1988; Robins & Pals, 2002). The BLDA can also be associated with the maintenance of the Learning Goal due to its malleable characteristic. However, some studies revealed no relationship or a very poor relationship between the aforementioned subscale and Performance Goal Orientation (Dupeyrat & Marine, 2005).

Regarding the relationship between Approaches to Learning and Studying and Epistemological Beliefs, many other study findings support the present study results (Chan, 2003; Cano, 2005). In his study of the thoughts concerning the learning environments of 234 nursing students, Cantwell (1997) outlined personal differences as having significant effects on learning experiences, such as epistemological beliefs; here, knowing and learning approaches were preferred by nursing students. Therefore, he emphasized the importance of these issues in educational activities. From all of the aforementioned studies, students' learning and epistemological beliefs appear to be important matters to manage, and students' learning processes, learning motivations, and ways of defining and using learning approaches affect their epistemological beliefs.

The current study results have highlighted that physical education teacher candidates who have adopted a deep learning approach must have an understanding of the process and effort regarding epistemological beliefs. This was an anticipated outcome. Gordon and Debus (2002) claim that the candidates who have a preferred DA can achieve more qualified learning compared to the SA and StA. Students who learn deeply can add new information to their knowledge via research and can relate this new information with the information learned before. This would both save them from parroting information and provide them with the ability to relate the acquired information to their daily life in an easier way.

These results indicate that being motivated to learn in the light of individual beliefs, comprehending the learning processes, and knowing which learning approach they are using are important issues for teacher candidates; indeed, these issues will probably affect their teaching activities to a large extent when they become teachers. Teacher candidates should also be allowed to undertake learning and study approaches in line with their own beliefs, and education planning must take into consideration students' individual features.

Mastering the study approaches is a valuable tool for teacher candidates and instructors to facilitate the process of student success and to diverge them from factors leading to mental confusion. In this way, students' learning could be more effective and efficient. As this subject needs extensive research, conducting similar studies with different age groups and in different regions could provide this research field with substantial contributions.

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