ISSN: 2392-5442
ESSN : 2602-540X
V/13 N/02 Year/2026
P 371 - 380

Sport system journal
International scientific journal published by: Ziane Achour –Djelfa- Algeria
Received: 2026-07-11 A ccepted: 2026-08-14

Students' Epistemological Beliefs towards Science and Technique of Physical and Sports Activities

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Abstract:

This study aims to examine the general epistemological beliefs of students who are enrolled in science and technique of physical and sports activities field, Bouira University. through investigating the effects of these independent variables: gender, major, and academic level on students' epistemological beliefs. The Schommer Epistemological Beliefs Questionnaire (SEQ) was used to measure general epistemological beliefs. The sample of this study includes ISTAPS students of Bouira University. Data reliability was assessed using internal consistency, and data analysis was conducted through the *t*-test of independent samples to determine the statistical significance of differences. The results showed epistemological development among STAPS students may be more deeply linked to individual and experiential factors than to curricular structure (academic major) or academic progression(academic level).

Keywords: Epistemological beliefs; STAPS field; gender; academic major; academic level

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1. INTRODUCTION

Higher education, is the main source of knowledge within society, and it holds a remarkable responsibility to convey instruction that look upon the diverse personalities and learning needs of students (Lozano, 2012). In today's academic environment, this responsibility is progressively shaped by technological development and the wide availability of information (Darwesh et al., 2011). Managing individual differences can increase student commitment and motivation, encouraging them to be more active in mental processes (Tóth, 2014; Hatami, 2013). Therefore, it is required that educators have to be aware of their students' characteristics throughout the educational process. By adopting different learning styles, educators can rely on the individual differences as a critical guide for restructuring and enhancing the process of teaching (Kim, 2012; Alecu, 2011; ChanLin, 2009; Magoulas et al., 2003).

Epistemology, a philosophy branch, that focuses on knowledge and the interaction between subject and object and studies the sources, limitations, communication, and acquisition of knowledge. Epistemological beliefs refer to the perspectives that the students may have about the nature of knowledge (Schommer, 1994). (Deryakulu, 2006) defines epistemological beliefs as private beliefs that outline knowledge and explain how it is gained and learned. Theories on epistemological beliefs often shed light on the certainty or flexibility of knowledge and identify its sources, structure, conditions, and depth (Karhan, 2007).

This has given rise to a key debate in the literature: are learners' epistemological beliefs domain-specific or domain-general? (Alexander, 2006; Hofer, 2006; Muis et al., 2006). Specifically, do individuals preserve consonant beliefs about knowledge and knowing throughout all fields of study, or do these beliefs vary depending on the specific domain? Some studies have shown that domain-specific epistemological beliefs significantly affect learners' behavior (Qian & Alvermann,1995; Hofer, 2000). However, other research reveals that domain-general beliefs are the main determinant of learners' epistemological structure, indicating consistency across domains (Schommer & Walker, 1995). The connection between academic achievement and epistemological beliefs becomes especially clear when students combine new knowledge with prior learning, explain it subjectively, and apply it to complex new tasks (Deryakulu, 2006).Over all, ongoing discussion and emerging research continue to shed light on the complicated nature of human thought and belief systems, giving the educational field valuable opportunities for growth and innovation.

The aim of this research :a) Identifying the differences between male and female in terms of their general epistemological beliefs. b) Identifying the differences between education and motor skills students and sport training students in terms of their general epistemological beliefs. c) Identifying the differences between third-year license and master 2 students in terms of their general epistemological beliefs. Therefore, we assumed: a) Male and female students may have differences in their general epistemological beliefs. b) Education and motor skills and Sport training students may differ in their general epistemological beliefs. c) Third-year license and Master 2 students may have differences in their general epistemological beliefs.

2. Methods

2.1 Research approach

The study used the descriptive approach. The focusing only on students at STAPS Bouira University, using a quantitative research method for both data collection and analysis.

2.2 Population and Sample

The target population for this study consisted of students of Institute STAPS Institute at Bouira University. Due to the practical limitations associated with accessing the entire population, a convenience sample was selected. The sample comprised a total of 81 students pursuing either a License Degree or a Master's Degree within ISTAPS. Specifically, participants were drawn from two academic levels: third-year undergraduate (License) students and Master 2 students.

2.3 Research Instruments

A questionnaire was used to measure epistemological beliefs, as supported by previous research. Participants completed the instrument simultaneously. It included tow sections: demographic information, the Arabic version of the SEQ. (Buehl and Alexander, 2001).

The demographic part of the tool collected information on participants' gender (male / female), major (Sport Training /Education and Motor Skills) and academic level (third-year license / Master 2). The SEQ employed a five-point Likert-type scale to measure participants' responses: 5 = Absolutely Agree, 4 = Agree, 3 = Don't Know, 2 = Disagree, and 1 = Absolutely Disagree. Cronbach's Alpha is used to assess internal consistency, with value 0.884 (N = 30, N of Items = 61) indicating a good reliability which confirm that the scale is a reliable tool for assessing STAPS student's epistemological beliefs.

2.4 Data analysis

Basic descriptive statistics, including mean values and standard deviations, were calculated. Additionally, independent samples *t*-test was performed to determine whether there were statistically significant differences between groups based on the examined factors. All data analyses were performed using IBM SPSS Statistics version 27.0.

3. Results

3.1 Results of the first hypothesis

This section identify whether male and female STAPS students at Bouira University differ in their epistemological beliefs. *t*-test was conducted to identify any significant gender-based differences.

Table 1
Gender-Based Differences in General Epistemological Beliefs.

Group	N	Mean	Standard Deviation	df	T-Value	P	Effect Size Cohen's d
Male	63	217.10	16.15	79	4.58	<0.001	1.22
Female	18	237.33	17.87				

Source: the researchers, based on the research results

A *t*-test of independent samples was conducted to compare male and female scores on the studied variable. The finding revealed a statistically significant differences between the two genders, $t(79)=4.58$, $p < 0.001$., female participants, in particular, (M =237.33 , SD = 17.87) scored significantly higher than male participants (M =217.10 , SD = 16.15). Additionally the effect size, (1.22), indicates a considerable practical differences between the tow groups, which means that gender had a strong effect on the studied variable. These results showed that females outperformed males in General Epistemological Beliefs, and the size of this difference reflects statistical significance and meaningful practical impact.

3.2 Results of the second hypothesis

This section examines whether students' majors influence their general epistemological beliefs. *t*-test was conducted to compare Education and Motor Skills students with Sport Training students, identifying any significant differences in belief dimensions.

Table 2
Major-Based Differences in General Epistemological Belief.

Group	N	Mean	Standard Deviation	df	T-Value	P
Education and Motor Skills	39	219.54	12.63	65.23	0.98	0.329
Sports Training	42	223.50	22.61			

Source: the researchers, based on the research results

An independent samples *t*-test was conducted to compare the scores of education and motor skills students and sports training students. $t(65.23) = 0.98$, $p = 0.329$, sports training participants($M = 223.50$, $SD = 22.61$) had slightly higher mean scores than education and motor skills participants ($M = 219.54$, $SD = 12.63$). Nevertheless the differences between the two groups were not large enough to be considered statistically significant. Therefore, the results indicate that major have no significant effect on the studied variable.

3.3 Results of the third hypothesis:

This section examines whether academic level influences students' epistemological beliefs. *t*-test was used to compare Third-year license and Master 2 students, identifying any statistically significant differences in epistemological beliefs based on academic level.

Table 3
Academic levels-Based Differences in General Epistemological Beliefs.

Group	N	Mean	Standard Deviation	df	T-Value	P
Third-year license	39	222.85	18.57	79	0.59	0.560
Master 2	42	220.43	18.55			

Source: the researchers, based on the research results

A *t*-test of independent samples was conducted to compare the scores of Third-year license students and Master 2 students. The finding showed, $t(79) = 0.59$, $p = 0.560$, Third-year license participants ($M = 222.85$, $SD = 18.57$) had slightly higher mean scores than Master 2 participants ($M = 220.43$, $SD = 18.55$). Yet these differences were not large enough to be considered statistically significant. Therefore, the findings indicate that academic level have no significant impact on the studied variable.

4. Discussion

The results of this study highlighted the important and valuable understanding of the relationship between three variables: gender, academic major and academic level in shaping the general epistemological beliefs of STAPS students. The findings revealed a remarkable gender influence, where female students showed higher levels of epistemological beliefs compared to male students. Similar findings have been revealed in several previous studies (Schommer, 1990; Hofer & Pintrich, 1997; Jehng, Johnson & Anderson, 1993). The findings of these studies revealed that female students are more likely to show a more advanced and adaptable perspectives on knowledge and learning. These differences are likely affected by variations in cognitive processes, communication styles, and educational tendencies.

On the other hand, the results revealed that major and academic level did not have a significant influence on students' epistemological beliefs. This

indicates that the nature of students' specific study field (academic major) or their progression through higher education (academic level) may not necessarily lead to significant differences in epistemological beliefs. This results support findings from previous studies by (Hofer, 2001) and (Baxter Magolda , 1993), which indicate that epistemological beliefs tend to change and grow slowly and are often shaped by personal experiences, educational practices, and learning context than by major affiliation or academic level progression.

5. CONCLUSION

In conclusion, this study highlights gender as a significant factor of STAPS students' general epistemological beliefs, while academic major and academic level showed no considerable influence. These findings indicate that epistemological development among STAPS students may be more deeply linked to individual and experiential factors than to curricular structure (academic major) or academic progression(academic level). Thus, educators should be encouraged to integrate pedagogical approaches that promote and improve epistemological reflection and critical thinking across all levels of study. Future research should further examine the contextual and cultural factors that shape students' beliefs and conceptions of knowledge.

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