EXAMINATION OF INTERNET-SPECIFIC EPISTEMOLOGICAL BELIEFS OF STUDENTS IN GEOGRAPHY DEPARTMENT

Şevki Babacan [a] *

[a] Tokat Gaziosmanpaşa University, Faculty of Science and Letters, Tokat, Turkey

Abstract

This study investigated the Internet-specific epistemological beliefs of students from a geography department and the effect of personal, academic, and Internet-related variables on those beliefs. The study was conducted in the geography department of a public university in the 2021-2022 academic year. The study sample consisted of 221 students. The data were collected using "Information Form" and ''Internet-Specific Epistemological Belief Scale (ISEBS)'' after the approval of the ethics committee. The Statistical Package for Social Sciences (SPSS, v. 22.0) was used to analyze the data. Participants had a mean total ISEBS score of 96.13 ± 17.96. They had mean ISEBS "certainty and source of knowledge," "justification of knowing," and "structure of knowledge" subscale scores of 53.26 ± 15.39, 14.51 ± 8.34, and 28.36 ± 8.56, respectively. The participants' epistemological beliefs about the Internet differed significantly by age, grade level, access to information, and use of the Internet for academic learning. However, their epistemological beliefs about the Internet did not significantly differ by gender, choosing the department willingly, being satisfied with studying in the department and also daily internet usage time for accessing information, and academic learning. Geography students have moderate/unclear epistemological beliefs about the Internet.

Keywords: Geography, Student, Epistemological belief, Internet

*Corresponding author Şevki Babacan. ORCID ID https://orcid.org/0000-0003-3909-2021
E-mail: sevki.babacan@gop.edu.tr

1. Introduction

Learning begins at birth and continues throughout life. What attitudes, aspirations, and beliefs one has about knowledge are as critical to teaching and learning as how one acquires it. At this point, we should discuss personal characteristics that directly or indirectly affect learning.

Students acquire, interpret, and evaluate new knowledge throughout their educational lives. Psychologists have investigated whether students have sufficient prior knowledge, motivation, and knowledge schemas. They have also examined how beliefs about knowledge and knowing affect them (Hofer, 2001). One's beliefs about a topic affect how one learns it. This is where "epistemological beliefs" come into play. According to the Turkish Language Association (TLA), belief is ''the feeling of being attached to something and believing in it wholeheartedly'', while epistemology literally means "theory of knowledge" (TLA, 2022a; TLA, 2022b). Epistemology is the branch of philosophy concerned with the nature and justification of human knowledge (Hofer & Pintrich, 1997). In other words, it is concerned with defining and accessing knowledge and evaluating its reality (Demir & Akınoğlu, 2010). Epistemological belief concerns what we know and how we know it and the impact of reasoning with beliefs and theories on cognitive processes (Hofer & Pintrich, 1997).

Studying epistemological beliefs and determining how they affect learning helps us better understand the mind and guide students (Schommer, 1990). Many researchers have examined the impact of epistemological beliefs on learning and concluded that epistemological beliefs affect teaching-learning processes in a variety of ways (Ryan, 1984a; Ryan, 1984b; Schommer, 1990; Schommer et al., 1992; Pajares, 1992; Hofer & Pintrich, 1997; Schommer, 1998; Hofer, 2000; Hofer, 2001; Schommer-Aikins & Hutter, 2002; Schommer-Aikins, 2004). Turkish researchers have focused on preservice teachers to determine the impact of epistemological beliefs on teaching (Belet & Güven, 2011; Demir, 2012; Biçer et al., 2013; Kazu & Erten, 2015; Çirkinoğlu Şekercioğlu & Yıldırır, 2018; Bayraktar, 2019). Some researchers have even developed scales for epistemological beliefs (Oksal et al., 2006; Akçay et al., 2016; Kutluca et al., 2018; Arslan & Sarıkaya, 2019).

The Internet has grown at a swift pace over the last three decades. Therefore, researchers have investigated the relationship between the Internet and epistemological beliefs (Bråten et al., 2005; Bråten & Strømsø, 2006; Chiu et al., 2013). In recent years, Turkish researchers have also investigated people's epistemological beliefs about the Internet (Karaoğlan Yılmaz & Kılıç Çakmak, 2016; Yılmaz, 2016; Ata & Alpaslan, 2019; Üztemur & Dinç, 2020; Türkoğlu et al. 2022). Considering that the Internet is the fastest way to access information, it is assumed that all needed is a smartphone, tablet, or laptop. Researchers have recently focused on undergraduate students because they are tech-savvy individuals who turn to the Internet for information. Biddix et al. (2011) argue that accessibility, efficiency, and reliability are becoming increasingly important for undergraduates to access information. Braten et al.

(2019) state that the Internet has provided easy access and has become an essential source of information for academic subjects in recent years. However, they argue that anyone who publish freely on the Internet may compromise quality.

Not all information on the Internet is reliable and Internet users are the ones who should be checking whether information on the Internet is reliable or not. Mason et al. (2011) argue that although educators complain about students' inability to navigate the Internet, the leading cause of the problem is not a lack of skills but rather beliefs about the nature of knowledge and knowing. Kılıç Çakmak et al. (2015) also argue that epistemological beliefs are important for choosing the right strategy for seeking information online and evaluating its effectiveness. Focusing on scientific epistemological views, Lin & Tsai (2008) argue that students with a more constructivist level toward online scientific knowledge are more skilled in web-based learning. Researchers agree that epistemological beliefs can be instrumental in selective and effective web-based learning.

Given that the Internet is the fastest way to access information, we believe it is important to determine geography students' epistemological beliefs about the Internet. By identifying learners' epistemological beliefs, we learn how they learn and obtain data for designing and structuring online information resources and improving educational programs and teaching methods. Researchers have studied the epistemological beliefs of Turkish students from different fields. However, only a few studies have addressed learners' epistemological beliefs about the Internet (Kılıç Çakmak et al, 2015; Karaoğlan Yılmaz & Kılıç Çakmak, 2016; Yılmaz, 2016; Ata & Alpaslan, 2019; Bråten et al, 2019; Türkoğlu et al, 2022). Therefore, this study aimed to contribute to the literature by determining geography students' epistemological beliefs about the Internet.

This study examined geography students' epistemological beliefs about the Internet and individual, academic, and Internet-related variables influencing those beliefs. In this regard, the research questions (RQ) are as follows:

RQ-1: What is the level of geography students' epistemological belief dispositions towards the Internet?

RQ-2: Do sociodemographic variables (age, gender, etc.) affect geography students' epistemological beliefs about the Internet?

RQ-3: Do academic variables (grade level, conscious choice of the major, satisfaction with the major, etc.) affect geography students' epistemological beliefs about the Internet?

RQ-4: Do Internet-related variables (using the Internet for information and academic purposes, daily Internet usage time for accessing information, and academic purposes) affect geography students' epistemological beliefs about the Internet?

2. Method

2.1. Research Model and Sampling

This descriptive study adopted a survey model. The sample consisted of 221 geography undergraduates from a state university in Turkey in the 2021-2022 academic year.

Participants had a mean age of 21.69 ± 2.56 (min = 18; max = 38). They used the Internet for information and academic purposes for 2.29 ± 1.40 hours (min = 1; max = 6). Table 1 shows all participants' individual, academic, and Internet-related variables.

Table 1. Individual, Academic, and Internet-Related Variables (n=221)

Variable		f	%
Age (year)	≤20	60	27.1
	≥21	161	72.9
Gender	Woman	112	50.7
	Man	109	49.3
Grade level (year)	1	50	22.6
	2	59	26.7
	3	55	24.9
	4	57	25.8
Did you choose your major willingly?	Yes	108	48.9
	Somewhat yes	90	40.7
	No	23	10.4
Are you happy with your major?	Yes	136	61.5
	Somewhat yes	71	32.2
	No	14	6.3
Do you use the Internet for information and academic purposes?	Yes	201	91.0
	No	20	9.0
How many hours do you spend on the Internet for information and academic purposes* * (n=201)	1	74	36.8
	2	59	29.4
	3	34	16.9
	≥4	34	16.9

2.2. Data Collection Instruments and the Process

2.2.1. Personal Information Form

The personal information form was developed by the researcher. The form consisted of items on age, gender, grade level, conscious choice of the major, satisfaction with the major, using the Internet for information and academic purposes, etc. (Table 1).

2.2.2. Internet-Specific Epistemological Belief Scale (ISEBS)

The Internet-Specific Epistemological Belief Scale (ISEBS) was based on epistemological belief proposed by Hofer & Pintrich (1997). The scale was developed by Bråten et al., (2005) and revised by Strømsø & Bråten (2010). The scale was adapted to Turkish by Kılıç Çakmak et al. (2015). The Turkish version has a Cronbach's alpha (α) of .81 (Kılıç Çakmak et al., 2015).

The instrument consists of 16 items rated on a ten-point Likert-type scale ("1=Strongly disagree" to "10=Strongly agree"). It has three subscales: (1) certainty and source of knowledge (eight items), (2) the justification for knowing (four items), and (3) "the structure of knowledge" (four items). The items of the "justification for knowing" are reverse-scored. All other items are positive statements. Higher scores indicate naïve epistemological beliefs about the Internet, while lower scores indicate sophisticated epistemological beliefs about the Internet (Kılıç Çakmak et al., 2015). A score lower than 65 indicates sophisticated epistemological beliefs about the Internet. A score between 65 and 112 indicates moderate epistemological beliefs about the Internet. A score greater than 113 indicates naïve epistemological beliefs about the Internet (Karaoğlan Yılmaz & Kılıç Çakmak, 2016).

2.2.3. Ethical Considerations

The study was approved by the Social and Humanities Research Ethics Committee of Tokat Gaziosmanpaşa University (Date: 17.06.2022 & Session and Decision No: 09.35). Informed consent was obtained from all participants. Authorization was obtained from the authors who adapted the ISEBS to Turkish.

In the data collection process, all students were informed about the purpose and the procedure of the study. The data were collected the students in the classroom using the survey form. Meanwhile, consent forms were gathered from the participant students. It took all participants 15 minutes to fill in the survey.

In addition, permission was obtained via e-mail from the authors who developed the Turkish adaptation of the scale.

2.3. Data Analysis

The Statistical Package for Social Sciences (SPSS for Windows, v.22.0) was utilised for data analysis at a significance level of 0.05. Frequencies, percentage, mean, median, standard deviation, and minimum-maximum values were used for descriptive statistics. Cronbach's alpha was used to assess the reliability of the ISEBS (Table 2).

Table 2. ISEBS Reliability, Kurtosis, and Skewness Values

ISEBS Subscales	Cronbach's alpha internal consistency coefficients	Kurtosis	Skewness
Certainty and source of knowledge	0.929	0.075	-0.426
Justification for knowing	0.912	0.589	0.937
Structure of knowledge	0.908	0.099	-0.790
Total scale	0.770	-0.157	-0.343

Normality was tested using kurtosis and skewness values (± 1). The data analysis revealed a normal data distribution. Thus, parametric tests were applied. For two independent groups, an independent t-test was applied. Also, an Analysis of Variance (ANOVA) was applied for more than two groups. As for post-hoc comparisons, Bonferroni test was utilised.

3. Results

Results of the study are presented under each research question as in the following.

3.1. RQ-1: What is the level of geography students' epistemological belief dispositions towards the Internet?

Table 3 shows the participants' ISEBS total and subscale scores to seek answers to the first research question. Participants had a mean ISEBS total score of 96.13 ± 17.96 they had mean ISEBS "certainty and source of knowledge," "justification for knowing," and "structure of knowledge" scores of 53.26 ± 15.39, 14.51 ± 8.34, and 28.36 ± 8.56, respectively.

Table 3. ISEBS Scores (n=221)

ISEBS Subscales	Number of items	$\overline{x}$	Median	SD	Min. – Max.
Certainty and source of knowledge	8	53.26	53.00	15.39	8 - 80
Justification for knowing	4	14.51	13.00	8.34	4 - 40
Structure of knowledge	4	28.36	31.00	8.56	4 - 40
Total	16	96.13	97.00	17.96	44 - 137

3.2. RQ-2: Do sociodemographic variables (age, gender, etc.) affect geography students' epistemological beliefs about the Internet?

Table 4 shows the distribution of ISEBS total and subscale scores by age and gender to seek answers to the second research question. Age affected our participants' ISEBS "justification for knowing" subscale scores (t = -2.077 p = 0.039). Participants over 20 years of age (15.21 ± 8.81) had a significantly higher mean ISEBS "justification for knowing" subscale score than those younger than 20 (12.61 ± 6.59). Gender did not affect our participants' ISEBS total and subscale score (p>0.05) (Table 4).

Table 4. The Distribution of ISEBS Total and Subscale Scores by Age and Gender (n=221)

Variable (n)	Certainty and source of knowledge	Justification for knowing	Structure of knowledge	Total
	$\bar{x} \pm SD$	$\bar{x} \pm SD$	$\bar{x} \pm SD$	$\bar{x} \pm SD$
Age (year)				
≤20 (60)	53.12 ± 16.22	12.61 ± 6.59	29.45 ± 6.63	96.03 ± 15.12
≥21 (161)	53.00 ± 16.20	15.21 ± 8.81	27.95 ± 9.16	96.18 ± 18.96
t	t = 0.412	t = -2.077	t = -1.154	t = -0.054
p	p = 0.681	p = 0.039	p = 0.250	p = 0.957
Gender				
Woman (112)	53.96 ± 13.08	14.24 ± 8.36	28.20 ± 8.62	95.57 ± 18.39
Man (109)	53.41 ± 14.56	14.78 ± 8.34	28.52 ± 8.53	96.72 ± 17.57
t	t = 0.139	t = -0.487	t = -0.275	t = -0.476
p	p = 0.890	p = 0.626	p = 0.783	p = 0.634

3.3. RQ-3: Do academic variables (grade level, conscious choice of the major, satisfaction with the major, etc.) affect geography students' epistemological beliefs about the Internet?

Table 5 shows the distribution of ISEBS total and subscale scores by academic variables to seek answers to the third research question. Grade level affected our participants' ISEBS "certainty and source of knowledge" subscale scores (F=3.147 p=0.026). Second-year students (49.71 ± 15.86) had a significantly lower mean ISEBS "certainty and source of knowledge" subscale score than their fourth-year counterparts (57.43 ± 13.13). Grade level affected our participants' ISEBS "justification for knowing" subscale scores (F=5.660 p=0.001). Third-year students (18.01 ± 9.84) had a significantly higher mean ISEBS "justification for knowing" subscale score than first (12.48 ± 6.64) and fourth-year (12.54 ± 7.24) students. Grade level affected our participants' ISEBS "structure of knowledge" subscale scores (F=4.060 p=0.008). Fourth-year students (30.38 ± 7.61) had a significantly higher mean ISEBS "structure of knowledge" subscale score than their third-year counterparts (26.16 ± 9.80). Grade level affected our participants' ISEBS total score (F=2.750 p=0.044). The multiple comparison test results showed that fourth-year students (100.36 ± 15.93) had a significantly higher ISEBS total score than second-year students (91.32 ± 18.48). There was no significant difference in ISEBS total and subscale scores between participants who chose their major willingly and those who did not (p>0.05). Similarly, there was no significant difference in ISEBS total and subscale scores between participants who were happy about their major and those who were not (p>0.05) (Table 5).

Table 5. The Distribution of ISEBS Total and Subscale Scores by Academic Variables (n=221)

Variable (n)	Certainty and source of knowledge	Justification for knowing	Structure of knowledge	Total
	$\overline{x} \pm$ SD	$\overline{x} \pm$ SD	$\overline{x} \pm$ SD	$\overline{x} \pm$ SD
Grade level (year)				
1 (50)	55.12 ± 14.47	12.48 ± 6.64	30.38 ± 6.31	97.98 ± 17.62
2 (59)	49.71 ± 15.86	14.86 ± 8.15	26.74 ± 9.17	91.32 ± 18.48
3 (55)	51.07 ± 16.91	18.01 ± 9.84	26.16 ± 9.80	95.25 ± 18.83
4 (57)	57.43 ± 13.13	12.54 ± 7.24	30.38 ± 7.61	100.36 ± 15.93
F	F = 3.147	F = 5.660	F = 4.060	F = 2.750
p	p = 0.026	p = 0.001	p = 0.008	p = 0.044
Bonferroni	2<4	1<3, 4<3	3<4	2<4
Did you choose your major willingly?				
Yes (108)	54.35 ± 13.77	13.12 ± 7.60	29.05 ± 7.67	96.52 ± 16.28
Somewhat yes (90)	51.93 ± 16.22	15.86 ± 8.89	27.95 ± 9.32	95.75 ± 19.40
No (23)	53.39 ± 19.23	15.73 ± 8.68	26.59 ± 9.41	95.82 ± 20.33
F	F = 0.604	F = 2.992	F = 0.891	F = 0.049
p	p = 0.547	p = 0.052	p = 0.412	p = 0.952
Are you happy with your major?				
Yes (136)	54.45 ± 14.80	13.65 ± 8.32	29.11 ± 8.35	97.22 ± 17.30
Somewhat yes (71)	52.38 ± 15.58	15.54 ± 8.07	27.23 ± 8.63	95.16 ± 18.93
No (14)	46.21 ± 18.86	17.57 ± 9.09	26.71 ± 9.91	90.50 ± 19.21
F	F = 2.010	F = 2.235	F = 1.405	F = 1.043
p	p = 0.136	p = 0.109	p = 0.248	p = 0.354

3.4. RQ-4: Do Internet-related variables (using the Internet for information and academic purposes, daily Internet usage time for accessing information, and academic purposes) affect geography students' epistemological beliefs about the Internet?

Table 6 shows the distribution of ISEBS total and subscale scores by Internet-related variables to answer the fourth research question. The results showed that participants who used the Internet for information and academic purposes had a significantly lower mean ISEBS "justification for knowing" subscale score than those who did not (t = -2.497 p = 0.013). Participants' ISEBS total and subscale scores did not significantly differ by how many hours they spent on the Internet for information and academic purposes (p>0.05) (Table 6).

Table 6 The Distribution of ISEBS Total and Subscale Scores by Internet-Related Variables

Variable (n)	Certainty and source of knowledge	Justification for knowing	Structure of knowledge	Total
	$\overline{x} \pm$ SD	$\overline{x} \pm$ SD	$\overline{x} \pm$ SD	$\overline{x} \pm$ SD
Do you use the Internet for information and academic purposes? (n=221)				
Yes (201)	53.90 ± 15.14	14.07 ± 8.01	28.58 ± 8.35	96.56 ± 18.03
No (20)	46.90 ± 16.79	18.90 ± 10.32	26.10 ± 10.36	91.90 ± 17.14
t	t = 1.952	t = -2.497	t = -1.240	t = -1.107
p	p = 0.052	p = 0.013	p = 0.216	p = 0.269
How many hours do you spend online for information and academic purposes? (n=201)				
1 (74)	51.95 ± 14.76	15.39 ± 8.16	27.47 ± 8.56	94.82 ± 17.91
2 (59)	57.30 ± 14.54	13.08 ± 7.98	29.42 ± 8.01	99.81 ± 17.23
3 (34)	55.32 ± 13.78	12.17 ± 7.77	30.17 ± 8.11	97.67 ± 17.14
≥4 (34)	50.79 ± 17.47	14.82 ± 7.73	27.97 ± 8.69	93.58 ± 20.21
F	F = 2.004	F = 1.718	F = 1.109	F = 1.224
p	p = 0.115	p = 0.165	p = 0.347	p = 0.302

4. Discussion

The study aimed to identify geography students' epistemological beliefs about the Internet and the variables that influence these beliefs in order to better understand their learning characteristics. Our participants had moderate (unclear) epistemological beliefs about the Internet, suggesting that geography students have traditional beliefs about what knowledge is and how knowledge is acquired. Research has shown that preservice teachers and nurses have moderate (unclear) epistemological beliefs about the Internet (Karaoğlan Yılmaz & Kılıç Çakmak, 2016; Türkoğlu et al., 2022). Yılmaz (2016) also reported that professional teachers had moderate (unclear) epistemological beliefs about the Internet. The findings are consistent with the literature. For example, the participants had naïve epistemological beliefs about the Internet regarding the ''certainty and source of knowledge'' and ''structure of knowledge'', while they had sophisticated epistemological beliefs about the Internet regarding the ''justification for knowing''. Kılıç Çakmak et al. (2015) state that learners have changing or unchanging beliefs about online information sources. Our results suggest that geography students believe the Internet is a good source of information. In other words, they accept online information sources for what they are and have unchanging beliefs that the Internet contains detailed, concrete, and specific information about course-related topics. The results

regarding the "justification for knowing" indicate that geography students use their cognition, think critically and check other sources for accuracy before accepting online information.

Karaoğlan Yılmaz & Kılıç Çakmak (2016) reported that undergraduate students had moderate epistemological beliefs regarding the "certainty and source of knowledge" and "structure of knowledge" and close to sophisticated epistemological beliefs regarding the "justification for knowing." Türkoğlu et al. (2022) found that nursing students had moderate epistemological beliefs regarding the "certainty and source of knowledge" and "structure of knowledge" and above-moderate epistemological beliefs regarding the "justification for knowing." Yılmaz (2016) documented that professional teachers had naïve epistemological beliefs about the Internet regarding the "certainty and source of knowledge" and "structure of knowledge" and sophisticated epistemological beliefs about the Internet regarding the "justification for knowing."

Age affected the participants' ISEBS "justification for knowing" subscale scores. Participants over 20 had a significantly higher mean ISEBS "justification for knowing" subscale score than those younger than 20. This result suggests that geography students younger than 20 have more sophisticated beliefs about the Internet regarding the justification for knowing than those over 20. This result is the opposite of what we expected. Other researchers have also reported contradictory results regarding the effect of age on people's epistemological beliefs about the Internet. For example, some researchers have found that age does not affect people's epistemological beliefs about the Internet (Yılmaz, 2016; Türkoğlu et al., 2022)

Gender did not affect the participants' epistemological beliefs. Researchers have documented similar results. For example, Yılmaz (2016) found that male and female teachers had similar epistemological beliefs about the Internet. Ata & Alpaslan (2019) also reported that male and female preservice teachers had similar epistemological beliefs about the Internet. On the other hand, Türkoğlu et al. (2022) determined that women had more sophisticated epistemological beliefs about the Internet than men. More research is warranted to investigate the gender variable. These contradictory results suggest that individuals' epistemological beliefs about the Internet require further qualitative research in terms of the effect of gender.

Grade level affected the participants' ISEBS total and subscale scores. Second-year students had a significantly lower mean ISEBS "certainty and source of knowledge" subscale score than their fourth-year counterparts. This result suggests that second-year students have more sophisticated epistemological beliefs about the Internet regarding the ''certainty and source of knowledge'' than their fourth-year counterparts. Third-year students had a significantly higher mean ISEBS "justification for knowing" subscale score than first- and fourth-year students. This result suggests that first- and fourth-year students have more sophisticated epistemological beliefs about the Internet regarding the ''justification for knowing'' than their third-year counterparts. Fourth-year students had a significantly higher mean ISEBS "structure of knowledge" subscale score than their third-year counterparts. This result suggests that third-

year students have more sophisticated epistemological beliefs about the Internet regarding the ''structure of knowledge'' than their fourth-year counterparts. Fourth-year students had a significantly higher ISEBS total score than second-year students. This result suggests that second-year students have more sophisticated epistemological beliefs about the Internet than their fourth-year counterparts. Notably, these findings are the opposite of what was expected because we assumed that students would have more sophisticated epistemological beliefs about the Internet as they got older. We can attribute these findings to students taking different courses as they move on to the next grade. This may have affected how they perceive online sources of information. First-year students mostly take compulsory common courses, while they take major area courses as they move on to the next grade. In addition, geography students take courses with different contents and from different academics who employ different methods and techniques to deliver the courses. This may have also affected how geography students perceive online sources of information. Further research is needed to better reveal the effect of year of study on geography students' epistemological beliefs about the Internet. Moreover, educators may need to revise the curriculum and change the learning outcomes to help geography students develop sophisticated epistemological beliefs about the Internet. Researchers have reported different results regarding the effect of grade level on undergraduates' epistemological beliefs about the Internet. For example, Türkoğlu et al. (2022) found that grade level did not affect undergraduates' epistemological beliefs about the Internet. On the other hand, Çirkinoğlu Şekercioğlu & Yıldırır (2018) indicated a positive correlation between grade level and epistemological beliefs. However, we should remember that epistemological beliefs about the Internet may differ from general epistemological beliefs.

Participants who used the Internet for information and academic purposes had a significantly lower mean ISEBS "justification for knowing" subscale score than those who did not. This result suggests that geography students who use the Internet for information and academic purposes have more sophisticated epistemological beliefs about the Internet regarding the justification for knowing. In other words, geography students who use the Internet for information and academic purposes think more critically about the online information they can access. Türkoğlu et al. (2022) reported two findings. First, the reasons for using the Internet do not affect undergraduates' epistemological beliefs about the Internet. Second, undergraduates who do not find the Internet safe enough for accessing accurate information have more developed epistemological beliefs about the Internet. At this point, the purpose of using the Internet becomes important. Researchers point out that undergraduates spend time on the Internet talking to their friends on social medial platforms and playing online games rather than searching for information for academic purposes (Ata & Alpaslan, 2019; Türkoğlu et al., 2022). Therefore, we must teach students how to use the Internet to help them improve academically. Ata & Alpaslan (2019) found that the purpose of using the Internet impacted epistemological beliefs. In other words, they argue that students who use the Internet for educational or scientific purposes have lower beliefs about the certainty and immutability of information on the Internet than those who use it for other purposes. This

result suggests that students who use the Internet for academic or scientific purposes have more sophisticated epistemological beliefs about it. Hava (2019) also maintains that students who use the Internet more for educational purposes have more advanced search strategies and higher Internet use self-efficacy. These students are more likely to check the accuracy and timeliness of online information and solve related problems on their own.

Duration of the Internet use did not affect the epistemological beliefs of the participants about the Internet. However, Yılmaz (2016) reported that teachers who used the Internet for 2-3 hours a day had more sophisticated epistemological beliefs about the Internet than others. Ata & Alpaslan (2019) also found that preservice teachers who used the Internet for 1-2 hours a day used it for specific purposes and had more sophisticated epistemological beliefs about justifying their goals with personal experiences than others. In addition, they determined that preservice teachers who used the Internet for 3-4 hours a day spent time on social media platforms and did not view the Internet as a source of information. These different results suggest that we need more research to investigate the effect of the frequency of Internet use on people's epistemological beliefs about the Internet.

5. Conclusions and Suggestions

In conclusion, geography students have moderate/unclear epistemological beliefs about the Internet. No difference exists between male and female geography students in epistemological beliefs about the Internet. There is no difference in epistemological beliefs about the Internet between geography students who chose their major willingly and those who did not. There is no difference in epistemological beliefs about the Internet between geography students who are happy with their major and those who are not. Moreover, how many hours geography students use the Internet does not affect their epistemological beliefs about it. On the other hand, geography students younger than 20 have more sophisticated beliefs about the Internet regarding the ''justification for knowing'' than those over 20 years of age. Geography students who use the Internet for information and academic purposes have more sophisticated epistemological beliefs about the Internet regarding the ''justification for knowing''. Second-year geography students have more sophisticated epistemological beliefs about the Internet than their fourth-year counterparts.

Universities should include courses on the Internet and information technologies in their curricula. Experts should develop secure web content and resources for geography education. Academics should help students acquire the knowledge and develop the skills they need to access secure Internet-based information sources.

Declaration of Conflicting Interests and Ethics

The authors declare no conflict of interest.

References

Akçay, B., Usta Gezer, S., & Akçay, H. (2016). Öğretmen adayları için epistemolojik inançlar ölçeği uyarlama çalışması [The adaptation study of the epistemological beliefs scale for pre-service teachers]. *Erzincan University Journal of Faculty of Education, 18*(2), 1514-1536. https://doi.org/10.17556/jef.99043

Arslan, Ş. F., & Sarıkaya, Ö. (2019). Epistemolojik inanç ölçeğinin tıp eğitimi alanı için geçerlik ve güvenirlik çalışması [Reliability and validity study of the epistemological belief questionnaire for medical education]. *Tıp Eğitimi Dünyası, 18*(54), 10-20. https://doi.org/10.25282/ted.434912

Ata, R., & Alpaslan, M. M. (2019). İnternet tabanlı epistemolojik inançlar ölçeği Türkçe uyarlama çalışması ve öğretmen adayları ile bir inceleme [Turkish adaptation of Internet based epistemological beliefs scale and an ınvestigation with pre-service teachers]. *Mersin University Journal of Faculty of Education*, *15*(3), 893-908. https://doi.org/10.17860/mersinefd.516351

Bayraktar, Ş. (2019). Pre-service primary school teachers' scientific epistemological beliefs and attitudes toward science: Is there a relationship? *World Journal of Education, (9)*6, 83-97. https://doi.org/10.5430/wje.v9n6p83

Belet, Ş. D., & Güven, M. (2011). Sınıf öğretmeni adaylarının epistemolojik inançlarının ve bilişüstü stratejilerinin incelenmesi [Meta-cognitive strategy usage and epistemological beliefs of primary school teacher trainees]. *Kuram ve Uygulamada Eğitim Bilimleri*, *11*(1), 31-57.

Biçer, B., Er, H., & Özel, A. (2013). Öğretmen adaylarının epistemolojik inançları ve benimsedikleri eğitim felsefeleri arasındaki ilişki [The relationship between the epistemological beliefs and educational philosophies of the teacher candidates adopted]. *Eğitimde Kuram ve Uygulama, 9*(3), 229-242. Retrieved from https://dergipark.org.tr/tr/pub/eku/issue/5457/73998

Biddix, J. P., Chung, C. J., & Park, H. W. (2011). Convenience or credibility? A study of college student online research behaviors. *The Internet and Higher Education, 14*(3), 175-182. https://doi.org/10.1016/j.iheduc.2011.01.003

Bråten, I., Brandmo, C., & Kammerer, Y. (2019). A validation study of the Internet-specific epistemic justification inventory with Norwegian preservice teachers. *Journal of Educational Computing Research*, *57*(4), 877-900. https://doi.org/10.1177/0735633118769438

Bråten, I., & Strømsø, H. I. (2006). Epistemological beliefs, interest, and gender as predictors of Internet-based learning activities. *Computers in Human Behavior, 22*(6), 1027–1042. https://doi.org/10.1016/j.chb.2004.03.026

Bråten, I., Strømsø, H. I., & Samuelstuen, M. S. (2005). The relationship between Internet-specific epistemological beliefs and learning within Internet technologies. *Journal of Educational Computing Research, 33*(2), 141–171. https://doi.org/10.2190/E763-X0LN-6NMF-CB86

Chiu, Y.-L., Liang, J.-C., & Tsai, C.-C. (2013). Internet-specific epistemic beliefs and self-regulated learning in online academic information searching. *Metacognition and Learning, 8*(3), 235–260. https://doi.org/10.1007/s11409-013-9103-x

Çirkinoğlu Şekercioğlu, A. G., & Yıldırır, H. E. (2018). Examination of the epistemological beliefs of the teacher candidates according to some variables. *Necatibey Eğitim Fakültesi Elektronik Fen ve Matematik Eğitimi Dergisi*, *12*(1), 205-227. https://doi.org/10.17522/balikesirnef.437742

Demir, M. K. (2012). İlköğretim bölümü öğretmen adaylarının epistemolojik inançlarının incelenmesi [Investigation of the epistemological beliefs of primary school candidate teachers]. *Uludağ University Journal of Faculty of Education 25*(2), 343-358. Retrieved from https://dergipark.org.tr/tr/pub/uefad/issue/16696/173555

Demir, S., & Akınoğlu, O. (2010). Epistemolojik inanışlar ve öğretme öğrenme süreçleri [Epistemological beliefs in teaching learning processes]. *Marmara University Atatürk Eğitim Fakültesi Eğitim Bilimleri Dergisi, 32*, 75-93. Retrieved from https://dergipark.org.tr/tr/pub/maruaebd/issue/357/1942

Hava, K. (2019). Öğretmen adaylarının çevrimiçi bilgi arama stratejileri ile eğitsel internet kullanım öz-yeterlik inançları arasındaki ilişkinin incelenmesi [An examination of the correlation between pre-service teachers' online information searching strategies and educational Internet use self-efficacy beliefs]. *Bolu Abant İzzet Baysal University Journal of Faculty of Education, 19*(4), 1724-1736. https://doi.org/10.17240/aibuefd.2019..-556854

Hofer, B. K. (2000). Dimensionality and disciplinary differences in personal epistemology. *Contemporary Educational Psychology, 25*(4), 378–405. https://doi.org/10.1006/ceps.1999.1026

Hofer, B. K. (2001). Personal epistemology research: Implications for learning and teaching. *Journal of Educational Psychology Review, 13*(4), 353-383. https://doi.org/10.1023/A:1011965830686

Hofer, B. K., & Pintrich P. R. (1997). The development of epistemologieal theories: Beliefs about knowledge and knowing and their relation to learning. *Review of Educational Research, 67*(1), 88-140. https://doi.org/10.3102/00346543067001088

Karaoğlan Yılmaz, F. G., & Kılıç Çakmak, E. (2016). Internet-specific epistemological beliefs and online information searching strategies of pre-service teachers: Gender and department differences. *Participatory Educational Research (PER), 3*(2), 63-80. http://dx.doi.org/10.17275/per.16.10.3.2

Kazu, İ. Y., & Erten, P. (2015). Öğretmen adaylarının epistemolojik inançlarının incelenmesi [Investigation of pre-service teachers' epistemological beliefs]. *Dicle University Ziya Gökalp Journal of Faculty of Education, 25,* 57-75. Retrieved from https://dergipark.org.tr/tr/pub/zgefd/issue/47936/606383

Kılıç Çakmak, E., Karaoğlan Yılmaz, F. G., & Yılmaz, R. (2015). İnternete yönelik epistemolojik inanç ölçeğinin uyarlama çalışması [Adaptation of Internet-specific epistemological belief scale]. *Eğitim Teknolojisi Kuram ve Uygulama, 5*(1), 55-71. https://doi.org/10.17943/etku.47870

Kutluca, A. Y., Soysal, Y., & Radmard, S. (2018). Öğrenmeye yönelik epistemolojik inançlar ölçeğinin uygulamalı uyarlama ve güvenirlik çalışması [Reliability and applied adaptation study of the epistemological belief scale towards learning]. *Eğitimde Kuram ve Uygulama, 14*(2), 129-152. https://doi.org/10.17244/eku.335287

Lin, C.-C., & Tsai, C.-C. (2008). Exploring the structural relationships between high school students'scientific epistemological views and their utilization of information commitments toward online science information. *International Journal of Science Education, 30*(15), 2001–2022. https://doi.org/10.1080/09500690701613733

Mason, L., Ariasi, N., & Boldrin, A. (2011). Epistemic beliefs in action: Spontaneous reflections about knowledge and knowing during online information searching and their influence on learning. *Learning and Instruction, 21*(1), 137–151. https://doi.org/10.1016/j.learninstruc.2010.01.001

Oksal, A., Şenşekerci, E., & Bilgin, A. (2006). Merkezi epistemolojik inançlar ölçeğinin geliştirilmesi: Geçerlik ve güvenirlik [Development of the central epistemological beliefs scale: The validity and reliability study]. *Uludağ University Journal of Faculty of Education, 19*(2), 371-381. Retrieved from https://dergipark.org.tr/tr/pub/uefad/issue/16684/173375

Pajares, M. F. (1992). Teachers' beliefs and educational research: Cleaning up a messy construct. *Review of Educational Research, 62*(3), 307–332. https://doi.org/10.3102/00346543062003307

Ryan, M. P. (1984a). Monitoring text comprehension: Individual differences in epistemological standards. *Journal of Educational Psychology, 76*(2), 248–258. https://doi.org/10.1037/0022-0663.76.2.248

Ryan, M. P. (1984b). Conceptions of prose coherence: Individual differences in epistemological standards. *Journal of Educational Psychology, 76*(6), 1226–1238. https://doi.org/10.1037/0022-0663.76.6.1226

Schommer, M. (1990). Effects of beliefs about the nature of knowledge on comprehension. *Journal of Educational Psychology, 82*(3), 498–504. https://doi.org/10.1037/0022-0663.82.3.498

Schommer, M. (1998). The influence of age and education on epistemological beliefs. *British Journal of Educational Psychology, 68*(4), 551–562. https://doi.org/10.1111/j.2044-8279.1998.tb01311.x

Schommer, M., Crouse, A., & Rhodes, N. (1992). Epistemological beliefs and mathematical text comprehension: Believing it is simple does not make it so. *Journal of Educational Psychology, 84*(4), 435–443. https://doi.org/10.1037/0022-0663.84.4.435

Schommer-Aikins, M. (2004). Explaining the epistemological belief system: Introducing the embedded systemic model and coordinated research approach. *Educational Psychologist, 39*(1), 19–29. https://doi.org/10.1207/s15326985ep3901_3

Schommer-Aikins, M., & Hutter, R. (2002). Epistemological beliefs and thinking about everyday controversial issues. *The Journal of Psychology, 136*(1), 5–20. https://doi.org/10.1080/00223980209604134

Strømsø, H. I., & Bråten, I. (2010). The role of personal epistemology in the self-regulation of Internet-based learning. *Metacognition and Learning, 5*(1), 91–111. https://doi.org/10.1007/s11409-009-9043-7

TLA (2022a). Turkish Language Association (TLA) [Türk Dil Kurumu (TDK)] Retrieved 2022, 01.05 from https://sozluk.gov.tr/

TLA (2022b). Turkish Language Association (TLA) [Türk Dil Kurumu (TDK)] Retreived 2022, 03.05 from https://sozluk.gov.tr

Türkoğlu, N., Kavuran, E., & Karaca, S. (2022). Hemşirelik öğrencilerinin internete yönelik epistemolojik inançlarının belirlenmesi [Determination of the epistemological beliefs of nursing students towards the Internet]. *Akdeniz Journal of Medicine, 8*(2), 113-120. https://doi.org/10.53394/akd.1057325

Üztemur, S., & Dinç, E. (2020). Tarih öğretimi bağlamında internete özgü epistemik gerekçelendirme ölçeğinin Türk kültürüne uyarlaması [Adaptation of Internet-specific epistemic justification inventory to Turkish culture in the context of history teaching]. *Turkish History Education Journal, 9*(1), 152–169. https://doi.org/10.17497/tuhed.683267

Yılmaz, R. (2016). Öğretmenlerin internete yönelik epistemolojik inançlarının incelenmesi [Investigating teachers' Internet-specific epistemological beliefs]. *In Proceedings Book 10th International Computer and Instructional Technologies Symposium (ICITS 2016 Annual Symposium, May 16-18),* (s.946–957). Rize: Recep Tayyip Erdoğan University. Retrieved from http://www.icits.net/bildiri-kitapciklari/