ATATÜRK ÜNİVERSİTESİ YAYINLARI
ATATURK UNIVERSITY PUBLICATIONS

Research Article DOI: 10.33418/education.1494637

The Effect of WebQuest Teaching Strategy on Students' Critical Thinking Skills and Attitudes Towards Technology

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***This study was produced from the thesis data of Uğur Bilir, a PhD student in the Department of Mathematics and Science Education at Bursa Uludağ University, Institute of Educational Sciences*

Received Date 05.06.2024
Accepted Date 24.10.2024
Publication Date 09.12.2024

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Cite this article: Bilir, U., & Özdilek, Z. (2024). The effect of webquest teaching strategy on students' critical thinking skills and attitudes towards technology. *Educational Academic Research, 55*, 117-134.

ABSTRACT

In this study, the effect of WebQuest teaching strategy on 6th grade students' critical thinking skills and attitudes towards technology was examined. In the study, simultaneous embedded design, one of the mixed method research designs, was used. The study was conducted in the 2022-2023 academic year with 48 (Experimental group = 23, Control group = 25) 6th grade students from a secondary school in Bursa province. "Critical Thinking Scale", "Attitude Towards Technology Scale" and "Semi-structured Interview Form" were determined as data collection tools. "Mann Whitney U test" and "Wilcoxon Signed Ranks test" were used to analyze quantitative data, while descriptive analysis and content analysis methods were used to analyze qualitative data. As a result of the research, a statistically significant difference was found between the post-test scores of the experimental group and the control group on the critical thinking and attitude towards technology scale in favor of the experimental group. In addition, it was observed that the instruction made a positive contribution to the motivation and self-confidence of the students, made them interested and enthusiastic about the science course, increased their sense of curiosity and made them like the course more.

Keywords: Critical thinking, attitude towards technology, WebQuest

Introduction

In our age, the rapid development of internet technologies has a great impact on education, as it has on many other areas. Internet technologies have enabled the development and widespread use of second-generation web environment tools in education. These developments affect people's lifelong learning experiences, transform them from individuals who passively receive information to individuals who produce and share information with others, and reshape the roles of teachers and students in education. Accordingly, the frequency of use of web technologies in education is rapidly increasing (Doğan, Bilgiç, Duman & Seferoğlu, 2012). The main reason for this situation is that second-generation web tools increase interaction between users and make it easier to access information collaboratively in a virtual environment (Deperlioğlu & Köse, 2010).

Web 2.0 technologies, which define second-generation web tools, include communication pages and wikis, thus allowing users to collaborate and share (Erkul, 2009). In other words, Web 2.0 is a set of technologies and software applications that allow people to interact, collaborate, create information, and share information with others (Kitsantas & Dabbagh, 2011). In recent years, with the integration of Web 2.0 tools into WebQuests, a current version called WebQuest 2.0 has emerged. WebQuests, which only offered the opportunity to browse static texts in the years they were first developed, have become more flexible and useful than before since they use various Web 2.0 tools with the current version developed by Cherner & Fegely (2017).

WebQuest, developed by Bernie Dodge in 1995 to help teachers integrate technology and the web into their lessons, is an inquiry-oriented activity in which students obtain most or all of their information from the internet (Dodge, 1995). In this context, WebQuests, which are a constantly evolving and dynamic internet technology that uses web-based resources, can also be defined as teacher-created web-based lessons (Kaur & Kauts, 2018; Vidoni & Maddux, 2002).

Unlike the lecture method, WebQuest is a more student-centered teaching method in which the teacher sets a frame of reference and assumes the role of a guide (Zendler & Klein, 2018). WebQuests are structured, organized, time-efficient tools used by educators to present a wide range of Internet information to students, giving students the

opportunity to use critical thinking skills (Buffington, 2007; Vidoni & Maddux, 2002). Well-designed WebQuests encourage students to work collaboratively by enabling communication, group work, problem solving, information processing, critical and creative thinking (Agrawal, 2022; Chan, 2007). WebQuest is an extremely flexible and effective learning method as it enables the organization of classroom and extracurricular activities together (Synekop, 2020).

All WebQuests have a standardized format that includes an introduction to engage students, a task description, a step-by-step description of the process to be followed, a set of web-based resources to be used, assessment criteria and a conclusion. This format, which every WebQuest has, consists of six parts (Schrum & Levin, 2009). These are:

Introduction: In this step the learner is oriented to the topic and the problem. The focus of the topic is introduced here, often providing a real-life scenario. In this section the teacher may explicitly mention certain new concepts or principles to prepare the student for the lesson. This section should be engaging, motivating and relevant (Dodge, 2001; Turville, 2013).

Task: This step focuses on what the students need to do. It usually indicates a specific problem to be solved. It is the part where students are given information or explanation about what they are expected to create as a final product when they complete the activities (Dodge, 2001; Lyons, 2008).

Process: This step is where the teacher guides the students through the different steps to reach their goal, the task. The steps can be divided into different, clear and simple subtasks so that all students can easily follow the activity. This section also includes the roles of the learners. The process phase should usually have one or sometimes several products that students are expected to present at the end of the WebQuest and which will form the basis for the final evaluation phase (Dodge, 2001; Dudeney, 2007).

Resources: This step consists of a list of websites that will be used by the students to complete the tasks and that the teacher has pre-selected. To enrich the resources it is very important to include not only web pages but also other types of resources such as videos, songs, maps, etc. This information needs to be specific and carefully selected by the teacher. Pre-selecting resources not only allows the student to focus directly on the content rather than searching and surfing the Internet, but also gives the teacher some control over the specific websites that students will access (Bauer, 2020; Dodge, 2001; Dudeney, 2007).

Assessment: This section includes information on how the information collected will be organized, how the results will be evaluated, and what the evaluation criteria are; in short, it is the section in which it is explained how student performance will be evaluated and rubrics with criteria are given to students (Dodge, 2001). Assessment can be done by teachers, students themselves or their peers (Chatham, 2021).

Conclusion: This is the section where the work done by the students is put forward, what has been learned is summarized and reflected. In this step, thoughts about the results and outcomes are shared with the students. This section provides the closure of WebQuest by encouraging students to continue researching on the topic, reflect on the process and generalize their learning, if any, to other situations (Bauer, 2020; Coil, 2007; Dodge, 2001).

When the literature on WebQuest is examined, it is seen that these studies have a positive effect on the academic success of the students (Abbitt & Ophus, 2008; Badmus et al., 2019), contribute positively to their retention levels (Ballıel, 2014; Doğru & Şeker, 2012; Gürgil, 2019; Ünal et al., 2018; Yenmez et al., 2017), increase the students' desire to study (Aslantaş & Tertemiz, 2017; Gürleroğlu, 2019; İzgi & Kalaycı, 2020) and develop cooperative learning skills (Çalgın & Koç, 2017; Irmak, 2021; Katrancı, 2014). It is seen that the studies conducted at the national level are generally carried out on a subject or unit belonging to English or information technologies courses (Bilir & Özdilek, 2024). In this study, WebQuest-supported science activities were carried out in different learning areas in four different units.The reason for the activities and applications in four different units representing each subject area is to measure the effect of the method in different subject areas and to evaluate the effect in different subject areas. In addition, in many studies, variables such as attitudes towards technology and critical thinking skills were investigated in very short periods of time. In our study, since it was thought that the effect of critical thinking and attitude towards technology variables would emerge over a long period of time, the change in these variables was measured at the end of the four units. All activities were carried out through a unique website created by the first researcher. In addition, it is also thought that the WebQuest teaching strategy, which will make students' learning processes more beneficial and at the same time make the learner active in the process, will save students from the boredom of traditional education. In addition, it was found appropriate

to use the WebQuest teaching strategy in this study in order to provide guidance for the problems that occurred during the implementation of the activities carried out using the WebQuest teaching strategy and during the implementation of the method. It is thought that the use of all these activities is important for the literature and will fill a gap.

Purpose of the Study

The purpose of this study is to examine the effects of WebQuest instructional strategy on critical thinking skills and attitudes towards technology of sixth grade students. The sub-problems of the study are as follows:

- Is there a significant difference between the critical thinking skills of the experimental group students who were taught with WebQuest and the control group students who were taught with curriculum-based instruction?
- Is there a significant difference between the attitudes towards technology of the experimental group students who were taught with WebQuest and the control group students who were taught with curriculum-based instruction?
- What are the opinions of the experimental group students about the use of WebQuest teaching strategy?

Methods

Research Design

In this study, a simultaneous embedded design, which is one of the mixed methods, was used. This design has a secondary database that provides a supporting role to the primary method that guides the research (Creswell, 2009). The embedded design is a research design in which a single data set is not sufficient to answer all research questions and qualitative data are integrated into an experimental design as secondary data (Baran, 2019; Creswell & Plano Clark, 2017). Similarly, in this study, qualitative data were used to support the quantitative results of the experimental application.

Research Group

The study was conducted with 48 6th grade students in Nilüfer district of Bursa in the 2022-2023 academic year. The experimental group consisted of 23 students and the control group consisted of 25 students. The school where the application was carried out was selected with the appropriate case sampling method. The main factor in the selection was that the researcher worked in the same school and was familiar with the school climate. The students were randomly assigned to the groups. One of the 6th grade classes in the school was assigned as the experimental group and the other as the control group

Data Collection Tool

While "Critical Thinking Scales" and "Attitude Towards Technology Scale" were used to collect quantitative data, "Semi-structured Interview Form" was preferred to collect qualitative data. Necessary permissions were obtained from individuals and institutions during the data collection process.

Critical Thinking Scales

"Critical Thinking Scales" developed by Demir (2006) were used in the study. These scales were developed by focusing on critical thinking skill areas such as inference, evaluation, explanation, analysis, self-regulation and interpretation. The scale consisted of 6 subscales and 56 questions. The reliability coefficients of the developed scale were calculated as Analysis Scale: .70, Evaluation Scale: .85, Inference Scale: .69, Interpretation Scale: .75, Explanation Scale: .75 and Self-Regulation Scale: .91. The maximum score that can be obtained from the scales is "56" and the minimum score is "0" (Demir, 2006). Critical thinking scales were applied to the students before and after the application.

Attitude Towards Technology Scale

The "Attitude Towards Technology Scale" adapted into Turkish by Yurdugül and Aşkar (2008) was used in the study. The reliability coefficient for all items of the scale was found to be .57. The scale is organized in five-point Likert type and contains a total of 24 items. These items are divided into four different sub-dimensions. These are "Attitude towards Technology", "Disadvantages of Technology", "Benefits and Importance of Technology" and "Technology Access". The scale consists of 7 negative and 14 positive statements. Participants rate each statement between 1 and 5. For negative statements, this scoring is reversed (Yurdugül & Aşkar, 2008). Attitude towards technology scale was applied to the students before and after the implementation.

Semi-Structured Interview Form

The researcher prepared a semi-structured interview form in order to reveal the views of the group about the use of WebQuest teaching strategy. The prepared questions were submitted to the opinions of three faculty members in order to ensure face and content validity, and the interview form was reorganized and finalized to consist of 8 open-ended questions in line with the suggestions received. Care was taken to ensure that the interview form included questions about each variable in the study. The 3rd and 4th questions of the form were prepared for the critical thinking

variable (for the 1st sub-problem), the 1st and 2nd questions were prepared for the attitude towards technology variable (for the 2nd sub-problem), and the other questions were prepared to obtain opinions on the 3rd sub-problem of the research.

The ethical process in the study was as follows:

- Ethics committee approval was obtained from Bursa Uludag University Research and Publication Ethics Committee (Date: 02.07.2021, Number: 2021-06)
- Informed consent has been obtained from the participants.

Data Analysis

In this study using simultaneous embedded design, the researcher collected quantitative data before and after the implementation and qualitative data during and after the implementation in order to reveal the effects of the WebQuest teaching strategy. Quantitative data were collected using "Critical Thinking Scales" and "Attitude Towards Technology Scale", while qualitative data were collected using "Semi-structured Interview Form". The quantitative data obtained with the data collection tools used to answer the sub-problems of the study were analyzed using SPSS 23 software. Since the number of data for both groups in the study was less than 29 (Kalaycı, 2010), the normality of the attitude towards technology scale and critical thinking scales was analyzed with the "Shapiro-Wilk" test and in some cases with skewness and kurtosis values. Nonparametric analyses are performed when the number of individuals studied is less than 30 (Işığıçok, 2022). Since the number of individuals studied was less than 30 and most of the data did not fit the normal distribution, nonparametric analyses were performed in the tests. Mann Whitney-U test and Wilcoxon Signed Ranks test were used to analyze the relevant data. When a significant difference was found in the results obtained from the study, the "eta squared effect size value" was calculated in order to determine the effect size of the significant difference. At the end of the experimental implementation, focus group interviews were conducted with the student groups in which the experimental implementation process was carried out using a semi-structured interview form. The interviews were conducted one by one with the researcher and each focus group in the school's information technologies classroom. With the permission of the students and parents, all the answers received from the students were recorded with a voice recorder. The interviews lasted approximately 6 class hours. In the qualitative part of the study, the data obtained from the focus group interviews with the students using semi-structured interview questions were evaluated using descriptive and content analysis methods.

Validity and Reliability

In line with ethical principles, necessary permissions were obtained from the relevant authorities for the scales used in the study. It was explained to the students that a scientific research would be conducted and detailed information about the study was given.

Since the mixed method approach was adopted in the study, validity and reliability criteria and concepts were realized within the framework of criteria suitable for both quantitative and qualitative research approaches. The validity and reliability calculations of the critical thinking scales and attitude towards technology scales used in the quantitative dimension of the study were made by the scale owners. In qualitative research, the concepts of consistency and verifiability are emphasized instead of reliability, and the concepts of credibility and transferability are emphasized instead of validity (Sönmez & Alacapınar, 2019).

In order to ensure credibility (internal validity) in the qualitative dimension of the study, a long time was spent with the students in the field and the development of the students was observed over a long period of time. In order to increase credibility, data collection tools were enriched and thus an in-depth understanding was achieved. Again, in order to increase the credibility of the study, the answers given by the students to the questions in the focus group interview were given as direct quotations using descriptive analysis in the findings section. In addition, the focus group interviews were conducted by the researcher, and with the permission of the students and parents, the interviews were audio-recorded with a cell phone. After the recordings were analyzed and transcribed, these recordings were kept. After the data recorded by the researcher were analyzed and transcribed, the first version of these analyzes was presented to the students and the students stated that the data belonged to them. In order to fulfill the criterion of transferability, which is the equivalent of external validity in quantitative research, "detailed description" was made and "purposive sampling" was used. In order to examine whether the data obtained from the study were consistent or not, a faculty member contributed to the research as an external observer at every stage of the research and every stage of the study, such as the creation and implementation of the study and data collection tools, was examined by this expert in order to ensure the consistency criterion. In order to ensure the verifiability condition in the study, the confirmation review method was used, and the findings obtained from the study were determined and checked whether they were obtained from the raw data by getting support from a faculty member. In addition, all raw data

obtained from the research were stored to be presented upon request.

Results

After the analysis of the data obtained during the study, the findings are given under the subheadings "Regarding Critical Thinking Skills", "Regarding Attitude Towards Technology" and "Findings and Comments on Student Opinions".

Findings and Comments on Critical Thinking Skills

The pre-test and post-test score means and standard deviations of the students in the experimental and control groups on the critical thinking scale are given in Table 1.

Table 1.
Critical Thinking Scale Pre-test Post-test Score Means and Standard Deviations

Group	n	Pre-test		Post-test	
		$\overline{x}$	ss	$\overline{x}$	ss
Experiment	23	48.60	7.34	48.65	3.74
Control	25	47.56	7.44	42.0	6.83

As seen in Table 1, the mean scores of the groups on the critical thinking scale before and after the application are different from each other. While the mean score of the students in the experimental group on the pre-test of the critical thinking scale was 48.60 before the application, it became 48.65 after the application. The mean scores of the students in the control group on the pre-test and post-test of the critical thinking scale were found to be 47.56 and 42.0, respectively. According to this finding, the mean score of the students in the experimental group on the post-test of the critical thinking scale was higher than the mean pre-test score, while the opposite result was found for the students in the control group.

Wilcoxon signed rank test was used to determine whether there was a statistically significant difference between the critical thinking pre-test and post-test scores for dependent samples (See Table 2).

Table 2.
Wilcoxon Signed Rank Test Analysis Results for the Critical Thinking Scale of the Experimental and Control Groups

	Group	Test Type	n	Z	*p*
Critical Thinking Scale	Experiment	Pre-test	23	.564	.573
		Post-test	23		
	Control	Pre-test	25	2.518	.012
		Post-test	25		

When Table 2 is examined, it is seen that there is no statistically significant difference between the pre- and post-test scores of the critical thinking scale in the experimental group (Z= -.564, p=.573). Therefore, it can be concluded that the WebQuest teaching strategy does not contribute to the critical thinking skills of the students in the experimental group. On the other hand, it is seen that there is a statistically significant difference between the pre- and post-test scores of the critical thinking scale of the control group (Z= -2.518, p=0.012). However, the post-test scores of the students in the control group are lower than the pre-test scores. This supports the conclusion that program-based teaching is ineffective in increasing the general critical thinking skills of the control group students. It is thought that the fact that the critical thinking scales consist of a large number of pages and questions may have distracted the students and therefore caused the post-test scores to be lower than the pre-test scores.

Mann Whitney-U test was conducted to determine whether there was a statistically significant difference between the critical thinking pre-test and post-test scores for independent samples. The results are presented in Table 3.

Table 3.
Mann Whitney-U Test Analysis Results Regarding the Critical Thinking Scale of the Experimental and Control Groups

Group	Test Type	n	U	Z	*p*
Experiment	Pre-test	23	258.0	-.61	.54
Control		25			
Experiment	Post-test	23	101.0	-3.85	.00
Control		25			

According to the pre-test results, there is no statistically significant difference between the groups (U=258.00, Z= -.610, *p*=.542). These findings show that the students in the experimental and control groups were at similar levels in terms of critical thinking skills before the experimental application. Therefore, it can be concluded that there is equivalence between the groups in terms of critical thinking skills.

The post-test scores of the experimental and control groups, a significant difference was found in favor of the experimental group in terms of critical thinking skills (U=101.00, Z=-3.858, *p*=.00). When the ranking averages are taken into account, the post-test scores of the students in the experimental group are higher than those in the control group. However, this difference does not mean that there is an increase in the critical thinking skills of the experimental group students as a result of the WebQuest applications.

The results of the Mann Whitney-U test analysis of the post-test scores of the experimental and control groups according to the critical thinking sub-dimensions are presented in Table 4.

Table 4.

Mann Whitney-U Test Analysis Results of Post-test Scores of Experimental and Control Groups According to Critical Thinking Sub-Dimensions

Sub-dimensions	Group	n	Rank Averages	U	Z	*p*
Analysis	E	23	27.83	211.0	-1.66	.09
	C	25	21.44			
Evaluation	E	23	31.61	124.0	-3.51	.00
	C	25	17.96			
Inference	E	23	34.74	52.0	-5.06	.00
	C	25	15.08			
Interpretation	E	23	34.85	49.50	-5.00	.00
	C	25	14.98			
Explanation	E	23	33.89	71.50	-4.55	.00
	C	25	15.86			
Self-regulation	E	23	18.57	151.0	-2.82	.00
	C	25	29.96			

*$p \leq .05$, E=Experiment, C=Control.

According to Table 4, when the post-test mean scores of the experimental and control groups are examined according to the critical thinking analysis dimension, it is seen that the post-test mean ranking of the experimental group (27.83) is higher than the post-test mean ranking of the control group (21.44). According to the results, no significant difference was found between the post-test scores of the experimental and control groups in terms of the critical thinking analysis sub-dimension (U=211.00, Z= -1.66, *p*=.09). These results show that the experimental group cannot be statistically distinguished from the control group in terms of general critical thinking skills.

In the critical thinking evaluation sub-dimension of the experimental group, the post-test ranking average (31.61) was higher than that of the control group (17.96), indicating the superiority of the experimental group in evaluation skills. A significant difference was found between the experimental and control groups in the critical thinking evaluation sub-dimension (U=124.00, Z= -3.51, *p*=.00). The eta squared value obtained was calculated as .10, which indicates a medium effect size according to the criteria specified by Büyüköztürk (2013) (.10<.14). These findings reveal that the experimental group can be statistically distinguished from the control group in terms of evaluation skills.

In the inference sub-dimension, the post-test mean rank of the experimental group (34.74) is significantly higher than the post-test mean rank of the control group (15.08), which shows the superiority of the experimental group in inference skills. According to the results, a significant difference was found between the experimental and control groups in the critical thinking inference sub-dimension (U=52.00, Z= -5.06, *p*=.00). The calculated eta squared value was found to be .45, which indicates a large effect size (.45>.14). The results show that the experimental group is statistically significantly different from the control group in terms of inference skills.

In the interpretation sub-dimension, the post-test rank average of the experimental group (34.85) is significantly higher than the post-test rank average of the control group (14.98), which shows the superiority of the experimental group in interpretation skills. A significant difference was found between the experimental and control groups in the critical thinking interpretation sub-dimension (U=49.50, Z= -5.00, *p*=.00). The calculated eta square value was found to be .46, which indicates a large effect size (.46>.14). These findings show that the experimental group was statistically significantly different from the control group in terms of interpretation skills.

In the explanation sub-dimension, the post-test rank average of the experimental group (33.89) is significantly higher than the post-test rank average of the control group (15.86), which shows the superiority of the experimental group in explanation skills. According to the results, a significant difference was found between the experimental and control groups in the critical thinking explanation sub-dimension (U=71.50, Z= -4.55, *p*=.00). The calculated eta squared value was found to be .37, which indicates a large effect size (.37>.14). These findings show that the experimental group is statistically significantly different from the control group in terms of explanation skills.

In the self-regulation sub-dimension, the post-test mean rank of the experimental group (18.57) is significantly lower than the post-test mean rank of the control group (29.96), indicating the superiority of the control group in self-regulation skills. According to the results, a significant difference was found between the experimental and control groups in the critical thinking self-regulation sub-dimension (U=151.00, Z= -2.82, *p*=.00). The calculated eta squared value was found to be .15, indicating a large effect size (.15>.14). These results show that the control group is statistically significantly different from the experimental group in terms of self-regulation skills.

According to the results, a significant difference was found in the critical thinking skill levels of the groups in all sub-

dimensions except the analysis sub-dimension. Results were obtained in favor of the experimental group in the evaluation, inference, interpretation and explanation sub-dimensions, and in favor of the control group in the self-regulation sub-dimension. The eta squared values calculated according to the sub-dimensions were determined as .10, .45, .46, .37, .15, respectively. It was observed that the significant difference between the post-test mean scores of the experimental and control group students, except for the evaluation sub-dimension, was at a large level. In the evaluation sub-dimension, the significant difference in favor of the experimental group (.10<.14) was found to be at a medium level. These findings indicate that the experimental process applied to the experimental group was generally effective, but that it needs to be improved in the analysis and self-regulation sub-dimensions.

Findings and Comments on Attitudes Towards Technology

In this part of the research, the answer to the second sub-problem of the study was sought. In Table 5, the pre-test and post-test mean scores and standard deviation values for the attitude scale towards technology are presented.

Table 5.

Attitude Scale Towards Technology Pre-test Post-test Mean Scores and Standard Deviations

Group	n	Pre-test		Post-test	
		$\overline{x}$	ss	$\overline{x}$	ss
Experiment	23	3.25	.58	3.82	.42
Control	25	3.17	.34	3.20	.64

According to Table 5, differences are observed between the mean scores of the groups on the attitude scale towards technology before and after the experimental application. While the mean pre-test score of the attitude scale towards technology of the students in the experimental group was 3.25, it was recorded as 3.82 after the experimental application. The attitude scale pre-test and post-test mean scores of the students in the control group were determined as 3.17 and 3.20, respectively. According to these findings, it was observed that the post-test mean scores of the students in the experimental and control groups on the attitude scale towards technology were higher than the pre-test mean scores.

The Mann Whitney-U test results for the attitude scale towards technology are presented in Table 6.

Table 6.

Mann Whitney-U Test Analysis Results Regarding the Attitude Scale Towards Technology for the Experimental and Control Groups

	Mann Whitney-U					
	Group	Test Type	n	U	Z	*p*
Attitude Scale Towards Technology	*Exp. Control	Pre-test	23 25	284	-.07	.94
	*Exp. Control	Post-test	23 25	106	-3.74	.00

* Experiment

According to the pre-test results, there is no statistically significant difference between the groups (U=284.00, Z= -.072, *p*=.942). This shows that the attitude levels of the experimental and control groups towards technology were similar before the application. However, a significant difference was found between the post-test scores of the groups' attitude scale towards technology in favor of the experimental group (U=106.00 Z= -3.748, *p*=.000). The post-test scores of the students in the experimental group were statistically significantly higher than those in the control group. According to the findings, the calculated eta square value (.77>0.14) indicates a large effect size. The results obtained show that the WebQuest teaching strategy contributes positively to the students' attitudes towards technology (See Table 6).

Table 7.

Wilcoxon Signed Rank Test Analysis Results Regarding Pre-test and Post-test Scores of the Attitude Scale Towards Technology of the Experimental and Control Groups

Wilcoxon Marked Ranks					
	Group	Test Type	n	Z	*p*
Attitude Scale Towards Technology	*Exp.	Pre-test	23	2.66	.00
		Post-test	23		
	Control	Pre-test	25	.386	.70
		Post-test	25		

* Experiment

Table 7 presents the Wilcoxon Signed Rank test results for the attitude scale towards technology for the experimental and control groups. The analyses show that there was a significant increase in the attitude of the experimental group towards technology; a statistically significant difference was found between the pre-test and post-test scores of the experimental group's attitude towards technology (Z=2.66, *p*=.008). The eta squared value was calculated as .24, which indicates a large effect size (.24>.14). These findings show that the WebQuest teaching strategy positively affected the attitudes of the students in the experimental group towards technology.

According to the Wilcoxon Signed Rank test findings performed on the pre-test and post-test scores of the attitude scale towards technology belonging to the control group, no significant difference was found between the pre-test and post-test scores of the control group students (Z= .386, *p*=.70). This finding shows that program-based teaching did not provide a significant change in the attitudes of the control group students towards technology.

Findings and Comments on Student Opinions

The third sub-problem of the study is; "What are the opinions of the experimental group students regarding the use of the WebQuest teaching strategy?" For this purpose, qualitative data collection tools were used and researcher observations and student interviews were used. Interviews were conducted with students in focus groups of 3-4 people using the "Semi-Structured Interview Form" consisting of 8 questions. The findings from the interview questions are given below. Table 8 shows the content analysis results of the students' computer and internet usage levels before they used the WebQuest teaching strategy in science courses.

Table 8.

Results of Content Analysis of Students' Computer and Internet Usage Levels Before Teaching Science Courses with WebQuest Teaching Strategy

Theme	**Cat	Codes	Freq. (f)	Percent (%)
Computer and Internet Use Before WebQuest	No	--	7	21.21
	Very little	Listening to music	2	24.24
		Playing games	4	
		Watching videos	2	
	Yes	Listening to music	4	54.55
		Playing games	9	
		Watching videos	4	
		Recipe	1	
	Total		33	100

* Some students expressed more than one opinion. **Category

When the opinions regarding the question "What is your level of computer and internet usage before teaching your science courses with WebQuest activities?" in the focus group interview conducted within the scope of the research were examined; 21.21% of the students stated that they did not use computers and internet before the WebQuest teaching strategy or could not use them because they did not know how to use them. 24.24% of the students stated that they used them very little/rarely before the WebQuest learning strategy, and 54.55% of them stated that they used computers and internet.

Some of the views of the students in the group (21.21%) who did not use/could not use computers and the internet before the WebQuest teaching strategy are as follows: "*I did not use the computer much before, it was just sitting on the side* (S5)" "*I had never used a computer before until I met WebQuest* (S7)" "*I used to never use a computer before, I could not use it* (S20)"

Before the WebQuest teaching strategy, the students in the group who used the computer and the internet very little (24.24%) used the computer and the internet for purposes such as listening to music (2), watching videos (2) and playing games (4). Some of the student opinions on this are as follows: "*I did not use the computer very often before. When I did, I mostly used it to play games and watch videos* (S6)" "*I did not know how to use the computer before, I only used the computer for playing games* (S18)" "*Before WebQuest, I could hardly do anything on the computer, I did not know anything about computers, I used to open YouTube, listen to music and play games* (S3)"

Students who used computers and the internet before the WebQuest teaching strategy (54.55%) stated that they used computers and the internet for recipes (1), listening to music (4), watching videos (4) and playing games (9). Some of the student opinions on this are as follows: "*Before WebQuest, I used the computer mostly for entertainment purposes* (S1)" "*Before this method, I did not use the internet and the computer for studying. I used them mostly for watching videos and playing games* (S9)" "*For example, I used the internet mostly for recipes* (S10)" "*Before WebQuest, I used the computer for games and sometimes I researched things I did not know* (S11)"

From here, it is understood that most of the students (78.79%) used computers and the internet more or less before teaching science courses with the WebQuest teaching strategy. When the purposes of students' computer and Internet use are examined, it is seen that they use them mostly for entertainment purposes such as listening to music, watching videos and playing games.

Table 9 shows the results of content analysis regarding the students' computer and internet usage levels and the development of their computer and internet usage skills after teaching science courses with the WebQuest teaching strategy.

Table 9.
Results of Content Analysis on the Development of Computer and Internet Usage Levels and Computer and Internet Usage Skills of Students After Teaching Science Courses with WebQuest Teaching Strategy

Theme	**Cat.	Codes	Freq. (f)	Percent (%)
Computer and internet usage level and skill developmen	Positive Impact	Doing research	15	39.48
		Studying	7	18.42
		Preparing a presentation	7	18.42
		Topic repetition	2	5.26
		Doing homework	3	7.90
		Playing games	4	10.52
		Total	38	100

* Some students expressed more than one opinion.
** Category

When the content analysis results of the focus group interview conducted within the scope of the research regarding the question "To what extent did your computer and internet usage level and skills improve after WebQuest activities?" were examined, it was seen that all students' computer and internet usage levels and skills increased after teaching science courses with the WebQuest teaching strategy. After completing their lessons with the WebQuest teaching strategy, students started to use computers and the Internet for purposes such as doing research (39.48%), studying (18.42%), preparing presentations (18.42%), doing homework (% 7.90), and reviewing topics (5.26%). It can be said that some of the students (10.52%) continue to use computers and the Internet for playing games as they did before.

Some of the opinions of students (39.48%) who used computers and the internet for research purposes after teaching science courses with the WebQuest teaching strategy are as follows: "I used to not research topics that I don't know, but now I do. Thanks to this, my research skills and typing skills have improved (S3)" "With WebQuest, my research skills on the internet have improved, and I have also improved myself. I am now using a computer to do research (S6)" "I think WebQuest has increased my computer and internet usage skills. Now, instead of just surfing the internet, I am also using it for my homework. Now, I use well-known, reliable sites when researching information (S10)" "After WebQuest, I can do research much faster. After WebQuest, my research and typing speed has increased (S12)"

Some of the opinions of students (18.42%) who used computers and the internet for studying purposes after teaching science courses with the WebQuest teaching strategy are as follows: "After WebQuest, I now use the computer for studying, doing research and taking notes (S2)" "After WebQuest, I learned how to use the computer better, I learned how to prepare and give presentations. Since I use the computer more for teaching purposes, my father bought me a new computer (S9)" "After I met WebQuest, I started playing games very little. Now, I watch useful content to contribute to my lessons. I watch educational videos about lessons (S18)"

Some of the opinions of students (18.42%) who used computers and the internet for presentation preparation after teaching science courses with the WebQuest teaching strategy are as follows: "I learned that computers are not just games, I learned how to make a Powerpoint presentation (S21)" "I learned how to prepare and give a presentation. This will be useful in my other classes as well. My self-confidence increased (S13)" "For example, I did not know how to prepare a presentation. I was typing slowly on the keyboard, I could not find the letters. After I met WebQuest, I can type smoothly, I learned how to prepare and give a presentation (S2)"

Some of the views of students (10.52%) who used computers and the internet for gaming purposes after teaching science courses with the WebQuest teaching strategy are as follows: "*Nothing changed in terms of gaming after WebQuest, but I started doing more research* (S11)" "*After WebQuest, the frequency of watching videos decreased, but I still play games* (S16)"

The opinions of students (7.90%) who used computers and the internet for homework purposes after teaching science courses with the WebQuest teaching strategy are as follows: "I can now use the computer better, I can write faster and I now do my work on the computer. That is why I do more research and use the computer when doing my homework (S14)" "*After WebQuest, I started doing most of my research on the computer* (S23)" "*I think WebQuest increased my computer and internet usage skills. Now I use it for my homework instead of just surfing the internet* (S10)"

The opinions of the students (5.26%) who used computers and the internet for repetition purposes after teaching science courses with the WebQuest teaching strategy are as follows: "*With WebQuest, I started using the computer for research, preparing presentations, studying and repetition* (S4)" "*WebQuest was very good for repetition of topics and reinforcing information* (S13)"

Table 10 shows the results of the content analysis regarding the change in students' interest levels towards technology after teaching science courses with the WebQuest teaching strategy.

Table 10.
Results of Content Analysis on the Change in Students' Interest Levels in Technology After Teaching Science Courses with WebQuest Teaching Strategy

Theme	**Cat.	Codes	Freq. (f)	Percent (%)
Interest in Technology	Positive Impact	Positive Attitude	5	21.74
		Increased interest	10	43.46
		Awareness formation	1	4.35
		Curiosity	2	8.70
		Love of technology	1	4.35
		Willingness	2	8.70
		Keeping up with technological developments	2	8.70
Total			23	100

** Category

When the content analysis results of the focus group interview conducted within the scope of the research were examined regarding the change in the interest levels of the students towards technology after they taught their science courses with the WebQuest teaching strategy regarding the question "Did teaching the science course in this way cause any change in your interest in technology? If so, can you explain it?", all of the students (100%) stated that the WebQuest teaching strategy provided them with an interest in technology or increased their current interest. 43.46% of the students stated that WebQuest increased their interest in technology, 21.74% developed a positive attitude towards technology, 8.70% increased their desires, 8.70% became curious about technology, 4.35% became aware, 4.35% loved technology, and 8.70% followed technological developments.

43.46% of the students stated that WebQuest increased their interest in technology. Some of the student opinions on this issue are as follows: "*I was not as interested in computers as I am now. After the WebQuest projects we carried out, I became more interested in technology* (S5)" "*I used to think that creating a website was a very difficult thing, but after you created this WebQuest site and explained it to us, I researched it and saw that it was not so difficult. Technology is generally something that attracts me, it is a field that I am interested in. Thanks to WebQuest, my interest in technology increased even more* (S7)" "*There has been a change in my interest in technology. I used to not use technology for my lessons, now I have learned that the internet can be used for different purposes* (S18)"

21.74% of the students stated that WebQuest helped them develop a positive attitude towards technology. Some of the student opinions on this issue are as follows: "*Before this strategy, I was not very interested in technology and social media. WebQuest contributed a lot to me, my manual skills improved. Now I have a more positive view of technology* (S2)" "*After the WebQuest strategy, I approach technology with more sympathy. I can say that my view of technology has changed positively* (S3)" "*Yes, my interest has increased. I have gained awareness, I have seen that technology contributes to us more. I can say that my view of technology has changed positively* (S9)"

8.70% of the students stated that WebQuest made them more enthusiastic about technology. The student opinions about this are as follows: "*My interest and enthusiasm for technology increased. I learned to use the computer better* (S15)" "*I used to not look at the computer much, but later I started to spend more time with the computer, especially in terms of lessons. "My willingness has increased* (S16)"

8.70% of the students stated that WebQuest triggered their curiosity about technology. The student opinions about this are as follows: "*Previously, I was not interested in technological devices such as phones, computers, tablets. After WebQuests, I became more interested in technology* (S12)" "*Thanks to this study, I started to wonder about many things and started to research. Since my interest in technology has increased, I now use the computer more often and faster* (S19)"

8.70% of the students stated that WebQuest enabled them to follow technological developments. Student opinions on this matter are as follows: "*My perspective on technology has changed with WebQuest. A new development or news about technology arouses curiosity in me and excites me. My trust and awareness of the Internet has increased. I used to believe in every piece of news and information, now I research the accuracy of information on the Internet* (S1)" "*The latest developments in technology now attract my attention more. For example, flying cars attract my attention, new phones attract my attention. For example, some phones are charged with the energy they receive from the sun. I do research on science, engineering marvels attract my attention* (S17)"

One student (4.35%) stated that WebQuest made him love technology. The student's opinion on this is as follows: "After these applications we did, I realized that other things could be done on the computer, that it was a small world. This made me love and be interested in computers and the internet more (S13)"

Table 11 shows the results of the content analysis of students' views on the contribution of the WebQuest teaching strategy to their thinking skills.

Table 11.
Results of Content Analysis of Students' Views on the Contribution of WebQuest Teaching Strategy to Thinking Skills

Theme	Category	Codes	Freq. (f)	Percent (%)
Contribution to thinking skills	Positive Impact	Activities used	12	48
		Group work	3	12
		Using the webquest site	1	4
		Daydreaming	2	8
		Designing activity	4	16
		Positive attitude towards the lesson	2	8
		Interest and curiosity	1	4
Total			25	100

* Some students expressed more than one opinion.

When the content analysis results of the views of the students on the contribution of the WebQuest teaching strategy to their thinking skills regarding the question "Do you think that the WebQuest teaching strategy improves your thinking skills? If yes, how?" of the focus group interview conducted within the scope of the research were examined, all of the students (100%) stated that the WebQuest teaching strategy made a positive contribution to their thinking skills. 48% of the students stated that the activities used during WebQuests, 16% due to activity design, 12% due to group work, 8% due to daydreaming during WebQuests, 8% due to positive attitudes towards the course, 4% due to using the WebQuest site and 4% due to the development of interest and curiosity towards the course improved their thinking skills.

48% of the students stated that the activities used during the WebQuests contributed positively to their thinking skills. Some student opinions on this are as follows: "*Yes, while doing the activities, they are done in a certain way, but we constantly thought about how we could do it differently as a group. I think my thinking skills improved thanks to this* (S1)" "*I think my thinking skills improved thanks to WebQuest, because we were very active thanks to WebQuests, we learned a lot of things. The activities we did improved and supported our thinking skills* (S2)" "*Yes, I think it improved. The activities in the WebQuest, the summaries we made after watching the videos, using the site for the subjects we were bad at, repeating and reinforcing our knowledge, all these improved our thinking skills* (S8)"

16% of the students stated that designing activities during WebQuests contributed positively to their thinking skills. Some student opinions on this issue are as follows: "*Yes, it did. Most of all, I thought a lot while designing the activities* (S12)" "*I was thinking during the design phase while doing the activities, I was thinking while taking notes of important information after watching the videos. This activity environment improved my thinking skills* (S14)"

12% of the students stated that group work during WebQuests contributed positively to their thinking skills. The student opinions on this issue are as follows: "Since we were doing the lessons in groups in WebQuest, I constantly thought, "*Can we be in the best group?" I was thinking while doing the activities in the design phase, and I was thinking while taking notes of important information while watching the videos. This activity environment improved my thinking skills* (S14)" "*It has improved. For example, in some of the poster preparation activities in WebQuests with my friends, I always thought about what would be on the poster and how we should design it. I think more than before when I design something* (S10)" "*When we were doing an activity, we first thought individually with our group friends, then put forward our ideas and agreed on a thought. I think this situation triggered my thinking skills* (S9)"

8% of the students stated that imagining during WebQuests contributed positively to their thinking skills. Student opinions on this issue are as follows: "*Yes, I think this strategy improved my thinking skills. I think I can think more practically thanks to WebQuest. It improved my imagination, I am constantly designing activities and homework in my head* (S18)" "*For example, while preparing posters, we mostly did not use printouts but imagined and drew by ourselves, and during this time we thought about how we could draw the pictures in a more beautiful and interesting way. I think these thinking processes also contributed to our thinking skills* (S1)"

8% of the students stated that the activities and practices

carried out during the WebQuests helped them develop a positive attitude towards the course, and that this contributed positively to their thinking skills. The student opinions on this issue are as follows: "*Previously, I never listened to science lessons, I didn't think, and I didn't participate in the lesson. Now, I like the lesson, I think about the information related to the lesson. I aim to be more successful now. I think it contributed to me* (S7)" *For example, in Turkish lessons, when our teacher said, "Think about this topic," I would close the book and say, "I thought about it," but I wasn't actually thinking about anything. After we started teaching the lessons with WebQuest, my desire and curiosity increased and now I think when I am asked a question about the passage. I think this situation triggered my thinking skills* (S12) "

4% of the students stated that using the WebQuest application site during WebQuests improved their thinking skills. One student's opinion on this is as follows: "*Yes, I think it improved my thinking skills. For example, after watching the videos on the site, I kept thinking about them. This increased my thinking capacity. I used to think about a problem superficially without going into too much detail, but now I think about a problem in more detail* (S20)"
4% of the students stated that the activities and practices carried out during the WebQuests triggered their interest and curiosity towards the course, and that this situation contributed positively to their thinking skills. One student's opinion on this issue is as follows: "*After I started to study the courses with WebQuest, my interest and curiosity towards the course increased. I think this situation triggered my thinking skills* (S12)"

Table 12 asks students whether they tried different methods when looking for a solution to a problem or issue and what they did in this process, and the results of the content analysis of their opinions on this matter are given.

Table 12.

Results of Content Analysis of Students' Views on Trying Different Solution Methods When Looking for a Solution to a Problem or Issue

Category	Codes	Freq. (f)	Percent (%)
Methods of finding a solution to a problem	Getting help from elders	4	22.22
	Using technology	4	22.22
	Using newspapers, books, magazines	3	16.67
	Doing research	7	38.89
	Total	18	100

In the focus group interview conducted within the scope of the research, students stated that they tried different ways to find a solution to a problem or issue in their daily lives in response to the question "Do you try different methods when looking for a solution to a problem or issue? What do you do during this process? Do you think WebQuest contributed to this?" 38.89% of the students stated that they searched for a solution to a problem or issue by doing research, 22% by asking for help from their elders, 22.22% by using technology, and 16.67% by using newspapers, books, and magazines.

38.89% of the students stated that they try to find a solution to a problem or issue in their daily lives by doing research. Some of the student opinions on this are as follows: "*Especially when I am studying, I do research from different sources when solving a problem or a question* (S1)" "*I do detailed research and think in detail. When I encounter a problem, I think of many ways and choose the most appropriate one* (S12)"

22.22% of the students stated that they try to find a solution to a problem or issue in their daily lives by getting help from their elders. Some of the student opinions on this are as follows: "*When I encounter a problem, I try different ways. I try all the ways that come to my mind until the problem is solved. If I cannot find a solution, I ask for help from my elders in the family* (S1)" "*Yes, when I encounter a problem, I try different ways. If I cannot find a solution, I ask my friends, family or elders* (S14)"

22.22% of the students stated that they try to find a solution to a problem or issue in their daily lives by using technology. Some of the student opinions on this are as follows: "*I try all the methods that come to my mind until the problem is solved. Usually one of them solves the problem but if it doesn't, I use technology first* (S1)" "*Yes, I try different methods. For example, when I study, I use not only books but also computers* (S2)" "*I try different methods to find solutions to the problems I encounter in my daily life. I mostly do research on the internet and look for solutions* (S22)"

16.67% of the students stated that they try to find a solution to a problem or issue in their daily lives by referring to newspapers, books or magazines. Some of the student opinions on this are as follows: "*Yes, when I encounter a problem, I try different ways to solve it. For example, while studying, I do research not only in books but also on the computer, magazines etc.* (S2)" "*When I encounter a problem in my life, I think that there are many ways to solve that problem. I try different ways. I do research in books,*

newspapers and magazines (S3)"

Students (52.13%) also stated that they found a solution to a problem or issue more easily after the course process with WebQuest and that WebQuest contributed positively to this process. Some of the student opinions on this are as follows: "*I think WebQuest contributed to this. With this method, I can produce many fast, logical and different solutions* (S1)" "*WebQuest pushed me to try different methods while looking for a solution to a problem. I question more than before that there is more than one solution to a problem* (S2)" "*I think WebQuest contributed to me trying different solutions to problems* (S5)".

Discussion

In this study, in which the effect of WebQuest teaching strategy on 6th grade students' critical thinking skills and attitudes towards technology was examined, it was determined whether there was a difference in the critical thinking skills and attitudes towards technology of the experimental and control group students before the application. The analysis of the pretests of the critical thinking scale and attitude towards technology scale of the experimental and control groups revealed that there was no statistically significant difference between the groups. The fact that there was no difference between the groups at the beginning of the study and the conditions were similar was interpreted positively in terms of the equivalence of the groups. In the use of experimental methods, it is extremely important that the groups have similar pretest scores before the application in terms of equivalence of the groups (Büyüköztürk, 2013; Çepni, 2014). Factors such as selecting the experimental and control groups from the same school branches and students having similar socio-economic conditions can be considered as factors affecting the equality of the groups. In their study on critical thinking levels and factors affecting critical thinking, Öztürk and Ulusoy (2008) determined that demographic characteristics such as place of residence, age, family education status and characteristics such as grade point average and class level affect critical thinking skills. Similarly, Bilgiç and Tosun (2016) also found in their studies on critical thinking levels and factors affecting critical thinking that the grade the student is attending the school he/she graduated from, the level of parental education and family income, and family structure affect the critical thinking levels of students. Other factors that affect the equality of groups can be considered, such as students being selected from the same school branches, living in the same environment, having similar family structures and socio-economic conditions.

In the study, a significant difference was found between the critical thinking skills posttest scores of the groups in favor of the experimental group. It is not enough to say that there was an increase in the critical thinking skills of the experimental group students as a result of WebQuest applications only by looking at this difference. The data obtained from the focus group interviews conducted with the students after the instruction supported that there was an increase in the critical thinking skills of the experimental group students who used the WebQuest instructional strategy. Accordingly, it can be said that the WebQuest instructional strategy used in teaching topics and concepts in science courses is more effective in increasing students' critical thinking skills than the instruction based on the current curriculum. Although there are studies in the literature showing that WebQuest instructional strategy has a positive effect on students' critical thinking skills and supporting the findings of the current study (Bilir & Özdilek, 2022; Liang & Fung, 2020), there are also studies showing the opposite results. For example, Çalgın and Koç (2017) found that the WebQuest strategy applied in 6th grade did not contribute to students' critical thinking skills. In this study, students worked individually in WebQuests and did not do group work. However, the WebQuest strategy is a strategy that prioritizes students' presence in collaborative work environments. The lack of positive results in this study is due to the individual work of the students.

When the results related to the relationship between the groups and sub-dimensions are examined, a significant difference was found in the post-test critical thinking skill levels of the groups in all sub-dimensions except the analysis sub-dimension. There is a significant difference in favor of the experimental group in the evaluation, inference, interpretation and explanation sub-dimensions, and in favor of the control group in the self-regulation sub-dimension. Since the eta square values for the analysis, inference, interpretation, explanation and self-regulation sub-dimensions are above .14, it is seen that the significant difference between the post-test mean scores of the groups except for the evaluation dimension is high, and the significant difference in favor of the experimental group in the evaluation sub-dimension is moderate. The fact that there is no significant difference in all sub-dimensions of the scale in the experimental and control groups suggests that the experimental procedure applied to the students was partially effective on their critical thinking skills. According to the research results, it can be said that the WebQuest teaching strategy improved the students' critical thinking skills of evaluation, inference, interpretation and explanation. It can be thought that this situation may be due to the WebQuest teaching strategy and activities used in the lessons for 20 weeks. The students worked on the WebQuest activities in groups, investigated and questioned

the tasks given in the WebQuests while performing them collaboratively, used their higher-order thinking skills in the meantime, and made presentations to their friends after the activities were completed, answered the questions posed by the class and made various explanations. The results of this study show some similarities with the results obtained by Bilir and Özdilek (2022) regarding the effect of WebQuest-supported research and inquiry strategy on students' critical thinking skills in a different sample group at the same grade level. When the results obtained from the study are compared with the results of Bilir and Özdilek's (2022) study in terms of sub-dimensions, they overlap with the results of the evaluation, inference, interpretation and explanation sub-dimensions, while the results of the analysis and self-regulation sub-dimensions differ. In this respect, the results of the study partially overlap with this study. In the mentioned study, there was no significant difference between the groups in terms of the self-regulation sub-dimension, while in the current study, no significant difference was found between the groups in terms of the analysis sub-dimension. The sub-dimensions may have been affected by other variables or the difference in the sample group may have caused this situation.

The quantitative findings of the study were also supported by the qualitative findings obtained from the focus group interviews held with the students at the end of the education. The experimental group students stated that the WebQuest teaching strategy caused development in their thinking skills and their ability to find solutions to problems when they encountered them in daily life. Students claimed that the activities used in the WebQuest applications, the process of designing these activities, the use of technology, the group work performed and the application site used caused development in their critical thinking skills. The result that the WebQuest teaching strategy has a positive contribution to the students' critical thinking skills is also supported by the qualitative findings in various studies in the literature. Vidoni and Maddux (2002) discussed the theory and practice of WebQuest and projected how WebQuests can develop critical thinking skills in students. The most important conclusion from the study is that WebQuests encourage students to think critically and develop existing critical thinking skills. In another study, Özgeldi and Yakın (2021) revealed that the WebQuest process encourages students to think critically.

When the results obtained regarding the attitude towards technology, which is another variable of the study, are examined, it is revealed that there is a significant difference with a high effect size value in favor of the experimental group between the post-test scores of the attitude scale towards technology. In addition, it is seen that there is a statistically significant difference with a high effect size value between the pre-test and post-test scores of the attitude scale towards technology of the experimental group, but there is no statistically significant difference between the pre-test and post-test scores of the control group students.

At the same time, as a result of focus group interviews conducted with students after the instruction, findings regarding the WebQuest instruction strategy of the experimental group students support the quantitative findings obtained, such as the development of positive attitudes and awareness towards technology, increased interest and curiosity, liking and willingness to use technology, and the desire to follow technological developments. Based on these results, which are presented with both quantitative and qualitative data, it can be said that the WebQuest teaching strategy used in teaching subjects and concepts in science courses is more effective in increasing students' attitudes towards technology than the teaching provided based on the current program. Similarly, when the studies conducted in the literature are examined, there are studies that support this result. Bilir and Özdilek (2022) also taught 6th graders with a WebQuest-supported research and inquiry-based learning strategy and examined the effect of this strategy on students' attitudes towards technology and revealed that WebQuest-supported activities and practices improved students' attitudes towards technology. In another study, Ünal (2012) questioned the effect of the WebQuest strategy on students' attitudes towards web-supported study and revealed that the WebQuest strategy positively affected students' attitudes towards web-supported study. This finding is consistent with the finding obtained from our study. Yilmaz and Aydin (2013) examined the attitudes of 6th, 7th and 8th grade secondary school students towards technology and the factors affecting these attitudes. According to the results of the study, the students stated that their attitudes towards technology were positive because technology was in their areas of interest and useful in their lessons. The findings are consistent with the qualitative findings obtained in our study.

When the literature is examined, it is possible to come across other studies that question students' attitudes towards technology. When these studies are examined, it is seen that various Web 2.0 applications positively affect students' attitudes towards technology. Köse, Bayram, and Benzer (2021) revealed that argumentation applications supported by Web 2.0 tools positively affect students' attitudes towards technology. In another study, Akbaba and

Ertaş-Kılıç (2022) found that implementing science courses with Web 2.0 applications positively affected students' attitudes towards technology. These results are consistent with the results of the study. WebQuest is also one of the Web 2.0-supported strategies, and from this perspective, it can be said that courses supported by these tools positively contribute to students' attitudes towards technology. In courses conducted with Web 2.0 applications, students mostly made applications with tools such as computers, the internet, etc., and it was observed that students who were digital natives and prone to technology in our age became better in this sense.

Conclusion and Recommendations

In this study where the WebQuest teaching strategy was used, it can be said that the WebQuest teaching strategy improved students' attitudes towards technology and critical thinking skills. It was also determined that the teaching provided positively contributed to students' motivation and self-confidence, made students interested and enthusiastic about science lessons, and made them like the lesson more. The following suggestions were presented in line with the results of the research:

- In this study, WebQuest-supported activities and applications were carried out with 6th grade students in four different units representing each subject area. WebQuest-supported activities can be carried out with students in different grades of the secondary school level by integrating them into different teaching strategies and methods.
- In the study conducted, the effect of WebQuest teaching strategy on students' critical thinking skills and attitudes towards technology was examined. In future studies, the effect of WebQuest teaching strategy on different variables can be investigated.
- In order for new WebQuest applications to be more efficient, the Ministry of National Education should provide training to teachers and practitioners to develop their digital competencies such as "Effective use of information and communication technologies" and "WebQuest preparation." Moreover, if these trainings are provided in the form of trainer training, more teachers will be reached across the country, thus increasing the use and quality of WebQuest.
- In classes where the WebQuest teaching strategy will be used, the class should be divided into separate groups of 3-4 students from all achievement levels and students should be encouraged to work together. It is recommended that groups are not crowded so that students do not have difficulty dividing the work.
- In studies to be carried out with the same strategy, the impact on academic success, knowledge retention and digital literacy can also be investigated.

Ethics Committee Approval: Ethics committee approval was received from Bursa Uludağ University Social and Human Sciences Research and Publication Local Ethics Committee (Date: 02.07.2021, Number: 2021-06).

Informed Consent: Consent was obtained from the participants and parents.

Peer-review: Externally peer-reviewed.

Author Contributions: Concept-Z.Ö., UB.; Supervision-Z.Ö.; Resources-UB; Data Collection and/or Processing; U.B.; Analysis and/or Interpretation-U.B.; Literature Review-Z.Ö.; Writing-U.B.; Critical Review-Z.Ö.

Conflict of Interest: The authors have no conflicts of interest to declare.

Financial Disclosure: The authors declared that this study has received no financial support.

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Appendix-1. WebQuest Sample Pages