Analysing the Effect of eTwinning Projects on Teachers' Critical Thinking Disposition*

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Abstract

The purpose of this research was to examine the impact of eTwinning projects on teachers' critical thinking dispositions based on teachers' perspectives regarding various variables. Designed as a sequential explanatory mixed-methods research, this study employed both survey and case study models. The sample consisted of 340 teachers working in public and private schools in Malatya during the 2021-2022 academic year. Among these teachers 158 were selected using criterion sampling method, i.e. participation in eTwinning projects as the key criterion, while the remaining 182 teachers were chosen through simple random sampling. Additionally, 15 participants who participated in eTwinning projects were interviewed to explore their views regarding the contribution of these projects to critical thinking. Data were collected using the Marmara Critical Thinking Dispositions Scale and semi-structured interviews. The findings revealed a statistically significant difference in critical thinking disposition scores between teachers who participated in eTwinning projects and those who did not. Teachers participated to eTwinning projects demonstrated high levels of critical thinking disposition. Regarding the contribution of eTwinning projects to critical thinking, participants highlighted that these projects "enable original thinking while avoiding dogmatism", "enable being result-oriented, and to make perceive, analyse and evaluate accurately" and "help students acquire scientific research skills". These results indicate that eTwinning projects make a significant contribution to the development of teachers' critical thinking skills.

Keywords: Critical thinking disposition, eTwinning, teacher training, projects.

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eTwinning Projelerinin Öğretmenlerin Eleştirel Düşünme Eğilimlerine Etkisinin İncelenmesi*

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Öz

Bu araştırmanın amacı, eTwinning projelerinin öğretmenlerin eleştirel düşünme eğilimleri üzerindeki etkisini öğretmen görüşleri doğrultusunda çeşitli değişkenler açısından incelemektir. Çalışma, sıralı açıklayıcı karma yöntem deseninde tasarlanmış olup tarama ve durum çalışması modellerinden yararlanılmıştır. Araştırmanın katılımcıları 2021-2022 eğitim-öğretim yılında Malatya ilindeki devlet ve özel okullarda görev yapan 340 öğretmenden oluşturmaktadır. Bu öğretmenlerden 158'i, eTwinning projelerine katılmış olma kriteri göz önünde bulundurularak ölçüt örnekleme yöntemiyle belirlenmiştir. Geriye kalan 182 öğretmen ise basit seçkisiz örnekleme yöntemi kullanılarak seçilmiştir. Ayrıca, eTwinning projelerine katılan öğretmenlerin projenin eleştirel düşünmeye katkısına ilişkin görüşlerini derinlemesine incelemek amacıyla 15 katılımcı ile nitel veriler toplanmıştır. Araştırmanın verileri, Marmara Eleştirel Düşünme Eğilimleri Ölçeği ve yarı yapılandırılmış görüşme formu aracılığıyla elde edilmiştir. Araştırma bulguları, eTwinning projelerine katılan öğretmenler ile katılmayan öğretmenler arasında eleştirel düşünme eğilimi puanları açısından katılımcılar lehine anlamlı bir fark olduğunu ortaya koymuştur. eTwinning projelerine katılan öğretmenlerin eleştirel düşünme eğilimlerinin oldukça yüksek düzeyde olduğu tespit edilmiştir. Katılımcılar, eTwinning projelerinin eleştirel düşünmeye katkısına ilişkin olarak, bu projelerin "dogmatizmden uzaklaşarak özgün düşünebilmeyi", "sonuç odaklı olmayı, doğru anlama, analiz ve değerlendirme yapabilmeyi" ve "bilimsel araştırma becerileri kazanmayı" sağladığını ifade etmişlerdir. Bu sonuçlar, eTwinning projelerinin öğretmenlerin eleştirel düşünme becerilerinin gelişimine önemli bir katkı sunduğunu göstermektedir.

Anahtar Sözcükler: Eleştirel düşünme, eTwinning, öğretmen yetiştirme, proje.

Introduction

Teachers play a crucial role in shaping future generations, and their ability to adapt to educational innovations is essential. eTwinning as a platform aligned with 21st-century skills supports teachers' professional growth by promoting communication, collaboration, and the integration of technology into education (MEB, 2019). Through eTwinning projects, teachers collaborate with their colleagues, exchange innovative ideas, and strengthen cross-cultural communication (MEB, 2019; Ruiz & Lopez, 2018). Research shows that teachers involved in eTwinning projects prefer activity-based teaching methods, reflecting a shift toward interactive and student-centered learning (Avcı, 2021). This approach highlights the platform's role in modernizing education and preparing teachers for a digital, interconnected world.

As education increasingly demands technological integration and cross-cultural collaboration, eTwinning has become a vital tool for empowering teachers. The platform enhances teachers' professional development by improving their use of technology and foreign language skills (Avcı, 2021; Yılmaz, 2012). It also fosters effective communication among educators, building collaborative networks (Camilleri, 2016). Additionally, eTwinning enriches learning by exposing participants to diverse perspectives and cultures (Crişan, 2013). These activities boost teachers' motivation and engagement (Ruiz & Lopez, 2018). Participation in eTwinning offers benefits such as cultural exploration, improved language skills, social connections, self-awareness, and confidence through knowledge sharing (Yılmaz, 2012). The platform also provides insights into European educational developments, promotes intercultural interaction, and enhances technological literacy, all essential for 21st-century skills (eTwinning, 2023). By integrating these elements, eTwinning equips teachers to thrive in a digital and interconnected educational landscape (Huertas-Abril & Muszyńska, 2022).

In a globalized and technology-driven era, eTwinning prepares teachers with essential 21st-century skills (Alkan & Kavcar, 1998; Bolat, 2017). Teachers are key to societal progress, and eTwinning helps them develop digital literacy, language proficiency, and intercultural understanding (eTwinning, 2023; MEB, 2019). The platform fosters collaboration, knowledge exchange, and the sharing of best practices (Papadakis, 2016). It also enhances the reputation of educational institutions by promoting innovation and collective growth (Napal-Fraile et al., 2024). Through real-world learning experiences, eTwinning increases student engagement and motivation (Huertas-Abril & Muszyńska, 2022).

Critical thinking is a vital skill in 21st-century education, fostering innovation and adaptability. Teachers need critical thinking to navigate social changes, solve problems, and think creatively (Acar & Peker, 2021). Critical thinking involves evaluating information objectively and seeking solutions free from bias (Facione, 2015). Teachers with strong critical thinking skills are open-minded, analytical, and able to discern cause-and-effect relationships (Paul & Elder, 2006). These skills help teachers organize information, reason analytically, and maintain unbiased perspectives, which are essential in modern education (Facione, 2015).

To achieve educational excellence, teachers must foster critical thinking in students (Ekinci & Aybek, 2010). Teachers who encourage critical thinking help students develop original and analytical thought, applicable in diverse contexts (Paul & Elder, 2006). Educators who promote critical thinking enhance students' cognitive development and foster positive attitudes toward this skill (Seferoğlu & Akbıyık, 2006). Higher-order thinkers are curious, original, and consistently engage in critical thought (Holma, 2015). By prioritizing critical thinking, teachers prepare students to tackle complex challenges with creativity and rigor. Critical thinking also helps teachers address educational challenges, such as integrating technology and meeting diverse learning needs (Arce Saavedra & Blumen, 2022). It enables teachers to assess situations objectively, consider multiple perspectives, and choose effective actions. Teachers with strong critical thinking skills are more likely to engage in professional development, reflecting on and improving their practices (Liu et al., 2022). This commitment to growth benefits both teachers and students. Additionally, such teachers are more open to experimenting with innovative strategies and adapting to students' needs.

Beyond the classroom, critical thinking equips teachers to guide students in addressing global issues like climate change and social inequality (Rauscher & Badenhorst, 2021). By fostering thoughtful analysis and decision-making, teachers help students engage with these challenges constructively.

Critical thinking is thus essential for educators, enabling them to improve their teaching and prepare students for a complex world (Mao et al., 2021). Creating a respectful learning environment is crucial for developing students' critical thinking skills (Costa, 1991). However, possessing critical thinking skills is not enough; individuals must also have dispositions to use them (Paul & Elder, 2006). Without this disposition, individuals may struggle to apply their skills effectively (Holma, 2015). Therefore, fostering a critical thinking disposition is essential for both students and teachers, as it influences professional development and the ability to nurture these skills in students (Acar & Peker, 2021; Ricketts & Rudd, 2004).

This study explores how eTwinning projects affect teachers' critical thinking skills, factors like gender, age, education level, subject area, and professional experience. Gender is included because research suggests women tend to collaborate more effectively (Belenky et al., 1986). Age is considered because critical thinking often improves as people grow older (King & Kitchener, 1994). Education level is examined since higher education is linked to stronger critical thinking abilities. Subject area is analyzed because science and social science teachers may differ in their critical thinking approaches (Pithers & Soden, 2000). Finally, professional experience is evaluated because teaching skills often develop with years of practice (Hargreaves & Fullan, 2012).

The critical thinking dispositions of eTwinning teachers still remain understudied, highlighting the need to explore how eTwinning projects influence these skills. This study addresses this gap by investigating the extent to which eTwinning teachers possess critical thinking skills, how eTwinning contributes to their development, and the nature of their critical thinking dispositions. The main purpose of this research was to examine the impact of eTwinning projects on teachers' critical thinking dispositions based on teachers' perspectives, considering various variables. The study explored the following research questions to achieve this aim.

1) Do the critical thinking disposition levels of teachers with and without eTwinning experience differ significantly?

2) What is the critical thinking disposition level of teachers participating in eTwinning projects?

3) Does/Is the critical thinking disposition levels of teachers participating in eTwinning projects;

   a. differ significantly in terms of gender?
   b. significantly related to their age?
   c. differ significantly in terms of field of expertise?
   d. differ significantly in terms of education level?
   e. significantly related to their professional seniority?
   f. significantly related to the number of participation in eTwinning projects?
   g. differ significantly in terms of having a quality label award?

4) What are the opinions of eTwinning teachers regarding the contribution of eTwinning projects to their critical thinking skills?

Method

Research Design

This research employed a sequential explanatory mixed-methods design, combining quantitative and qualitative approaches in order to thoroughly analyze data (Büyüköztürk et al., 2020). First, quantitative data was collected and analyzed through a survey model, a descriptive method that depicts the current state of a phenomenon (Yıldırım & Şimşek, 2018). This provides a broad understanding of the topic. Next, qualitative data was collected through interviews following a case study model, which allows for an in-depth exploration of individuals, events, and contexts, offering a holistic view of the research problem (Yıldırım & Şimşek, 2018). The interviews focused on understanding eTwinning teachers' perspectives on the impact of the projects on their critical thinking skills. By integrating these methods, it was aimed to provide a detailed and comprehensive understanding of the link between eTwinning projects and the development of critical thinking among teachers.

Research Sample / Participants

Survey models involve systematic data collection from an entire population or a selected sample to make general conclusions about a larger group (Yıldırım & Şimşek, 2018). In this study, the population and sample were first defined for quantitative data collection, followed by the selection of participants for qualitative data. The population included teachers working at public and private schools in Malatya during the 2021-2022 academic year. The sample consisted of 340 teachers: 158 were selected using criterion sampling, a purposive method where participants must meet specific criteria (Büyüköztürk et al., 2020). The criterion was experience in participation in eTwinning projects. The remaining 182 teachers were chosen through simple random sampling.

For the qualitative phase, 15 volunteer teachers with eTwinning experience were selected using criterion sampling. This method focuses on individuals with specific characteristics, ensuring a well-defined target group (Büyüköztürk et al., 2020). The primary criterion was their involvement in eTwinning projects. These participants were chosen to explore, analyze, and evaluate their perspectives on how eTwinning contributes to critical thinking development. By combining these sampling methods, the study ensured a consistent and systematic approach to data collection, enhancing the research's validity and reliability. This structured process allowed for a comprehensive understanding of the impact of eTwinning projects on teachers' critical thinking skills.

Research Instruments and Procedures

Quantitative data were collected using the Marmara Critical Thinking Dispositions Scale (Özgenel & Çetin, 2018), a valid and reliable tool designed to measure critical thinking dispositions. The scale consists of 28 items across six factors "reasoning, reaching judgment, search evidence, search the truth, open-mindedness, and systematicity" explaining 56.35% of the total variance. Its overall reliability coefficient was 0.91, with significant item-total and corrected item-total correlations (Özgenel & Çetin, 2018). In this study, the scale was administered to 340 teachers, and internal consistency analysis was conducted to assess reliability. As shown in Table 1, the Cronbach's Alpha coeffcients for all factors and the overall scale were over 0.70 threshold, confirming sufficient reliability (Özçomak & Çebi, 2017). This demonstrates the scale's reliability in measuring critical thinking dispositions in the context of this research.

Table 1. *Cronbach Alpha internal consistency coefficient*

Factors	Number of Items	Items	Cronbach Alpha
Reasoning	6	1-6	.884
Reaching judgment	6	7-12	.840
Searching for the truth	4	13-16	.831
Searching for evidence	4	17-20	.769
Open-mindedness	4	21-24	.824
Systematicity	4	25-28	.765
Total	28	1-28	.949

For the semi-structure interviews, first an interview form was prepared and reviewed by experts for clarity, scope, and understandability. A pilot study with four teachers led to the creation of a semi-structured interview form with 11 questions, tailored for practical use. Teachers were informed that they could withdraw at any time without justification. With their consent, interviews were recorded, transcribed, and shared with participants to verify accuracy. After their feedback, the analysis began. This process ensured ethical integrity, data accuracy, and respect for participants' autonomy and perspectives.

Data Analysis

Quantitative data were analyzed using statistical software, with a significance level of $p < 0.05$. Descriptive statistics and inferrential analysis were used to summarize and interpret the data, while effect size calculations were used to assess the magnitude of significant differences or associations (Özçomak & Çebi, 2017). This approach ensured a thorough evaluation of both statistical and practical significance.

For qualitative data, content analysis was employed to systematically interpret and examine interview transcripts in depth, uncovering nuanced insights (Yıldırım & Şimşek, 2018). Transcripts were shared with participants for verification to ensure accuracy. Once confirmed, the data were coded, and frequency tables were created to organize findings. A researcher-developed codebook was reviewed by an expert to ensure coding reliability and consistency. Themes were then derived by grouping related codes, with expert feedback validating their coherence. Refinements were made as needed. In the findings, relationships between codes and themes were explained and supported by direct participant quotes, providing authentic evidence for the outcomes. This method ensured a rigorous and transparent analysis process.

Ethical Procedures

Write After receiving ethical permission from İnönü University, Social and Human Sciences Scientific Research Ethics Committee dated 06/01/2022 and numbered 2022/1-7, application permission numbered E-34259660-605.01-43772458 was obtained from Malatya Provincial Directorate of National Education on 17/02/2022. Then, the data collection process was started.

Results

This section presents and interprets the findings obtained in accordance with the sub-problems established to examine the impact of eTwinning projects on teachers' critical thinking dispositions based on their perspectives.

Critical Thinking Disposition Levels of Teachers

The study's first sub-problem aimed to determine whether there is a significant difference in critical thinking dispositions between teachers who participate in eTwinning projects and those who do not. To address this, the normality of the data distribution for each scale factor and the total score was tested. Since the data did not follow a normal distribution, the Mann-Whitney U test, a non-parametric method, was used to compare the groups. This test is suitable for analyzing differences when data are not normally distributed, ensuring reliable results.

The analysis of critical thinking disposition levels between eTwinning and non-eTwinning teachers was presented in Table 2.

Table 2. *Critical thinking disposition levels of eTwinning teachers and non-eTwinning teachers*

Factors	Non-eTwinning Teachers		eTwinning Teachers			
	Mean Rank	N	Mean Rank	N	U	p
Reasoning	155.93	182	187.28	158	11726.5	.003*
Reaching judgment	148.19	182	196.20	158	10317.5	.000*
Searching for the truth	145.12	182	199.73	158	9759	.000*
Searching for evidence	142.55	182	202.69	158	9291.5	.000*
Open-mindedness	159.46	182	183.21	158	12369.5	.024*
Systematicity	144.78	182	200.13	158	9696.5	.000*
Total	146.90	182	197.68	158	10083.5	.000*

The results showed a statistically significant difference in all factors and the total score of the scale (p < 0.05), with eTwinning teachers scoring higher than non-eTwinning teachers. The effect sizes varied across factors: the "search the truth" factor had a medium effect size (r = -0.311), while the "reasoning" (r = -0.162), "reaching judgment" (r = -0.246), "search evidence" (r = -0.284), "open-mindedness" (r = -0.122), "systematicity" (r = -0.287), and total score (r = -0.258) factors had small effect sizes. These findings indicated that participation in eTwinning projects positively influences teachers' critical thinking dispositions, with varying degrees of impact across different factors.

Critical Thinking Disposition Scores of eTwinning Teachers

The second sub-problem of the study aimed to determine the level of critical thinking dispositions among teachers participating in eTwinning projects. To address this, the scores for each factor of the scale were analyzed, and the minimum, maximum, mean, and standard deviation values were calculated,

as shown in Table 3. This analysis provided a detailed overview of the distribution and variability of critical thinking dispositions among participants.

Table 3. *Statistical values of eTwinning teachers' responses to each factor*

Factors	Minimum	Maximum	Mean	S
Reasoning	19.00	30.00	27.3544	2.76713
Reaching judgment	18.00	30.00	27.0823	2.70871
Searching for the truth	12.00	20.00	18.4051	1.80600
Searching for evidence	10.00	20.00	18.0633	1.97978
Open-mindedness	9.00	20.00	17.3608	2.63784
Systematicity	9.00	20.00	18.3228	1.88953
Total	93.00	140.00	126.5886	11.43975
Average	3	5	4.52	.409

The results revealed that the lowest score was 93, the highest was 140, the arithmetic mean was 4.52, and the standard deviation was 0.409. These findings indicate that eTwinning teachers exhibited a very high level of critical thinking disposition.

Examining Critical Thinking Disposition Scores of eTwinning Teachers by Some Variables

The third sub-problem explored whether critical thinking dispositions among eTwinning teachers significantly differed/associated by/with some variables including gender, age, education level, field of expertise, seniority, number of eTwinning projects participated in, and whether they had received the Quality Label award. To address this, difference and correlation analyses were conducted for each factor and the total score of the scale. Before the analysis, the normality of the data distribution was tested to ensure the appropriate selection of statistical methods.

The difference analysis of the level of critical thinking dispositions of eTwinning teachers by gender was given in Table 4. As shown in Table 4, there was no statistically significant difference between teachers' critical thinking dispositions scores by gender (p>0.05) in all factors and the "total" of the scale.

Table 4. *Level of critical thinking disposition of eTwinning teachers by gender*

	Female		Male			
Factors	N	Mean Rank	N	Mean Rank	U	p
Reasoning	119	82.86	39	69.26	1921.0	.096
Reaching judgment	119	83.49	39	67.32	1845.5	.051
Searching for the truth	119	82.02	39	71.82	2021.0	.204
Searching for evidence	119	80.46	39	76.58	2206.5	.635
Open-mindedness	119	81.94	39	72.06	2030.5	.231
Systematicity	119	83.12	39	68.45	1889.5	.071
Total	119	83.23	39	68.13	1877.0	.073

The correlation analysis for the relationship between the level of critical thinking dispositions of eTwinning teachers by age was given in Table 5. According to the Table 5, there was no statistically significant relationship between age and critical thinking dispositions in either factors or in the "total" of the scale (p>0.05).

Table 5. *The Relationship Between Age and Level of Critical Thinking Dispositions of eTwinning Teachers*

Variable	Factors	N	r	p
Age	Reasoning	158	.000	.999
	Reaching judgment	158	-.004	.995
	Searching for the truth	158	.007	.933
	Searching for evidence	158	.006	.943
	Open-mindedness	158	.105	.188
	Systematicity	158	.060	.456
	Total	158	.052	.519

The Kruskal Wallis H analysis of the level of critical thinking dispositions of eTwinning teachers by education level was given in Table 6. According to the Table 6, there was no statistically significant difference between teachers critical thinking disposition levels by education level.

Table 6. *Level of critical thinking dispositions of eTwinning teachers by education level*

	Bachelor's		Master's		Doctorate			
Factors	N	Mean rank	N	Mean rank	N	Mean rank	X^2	p
Reasoning	116	80.99	39	77.41	3	49.17	1.628	.443
Reaching judgment	116	81.46	39	76.62	3	41.33	2.543	.280
Searching for the truth	116	81.58	39	76.77	3	34.50	3.631	.163
Searching for evidence	116	81.83	39	74.85	3	50.00	2.084	.353
Open-mindedness	116	80.82	39	78.74	3	38.17	2.681	.262
Systematicity	116	81.80	39	75.65	3	40.67	2.954	.228
Total	116	81.71	39	75.94	3	40.50	2.706	.258

The Kruskal Wallis H analysis of the level of critical thinking dispositions of eTwinning teachers by their field of expertise was given in Table 7.

Table 7. *Level of critical thinking dispositions of eTwinning teachers by field of expertise*

	Language		Basic Edu.		Culture			
Factors	N	Mean rank	N	Mean rank	N	Mean rank	X^2	p
Reasoning	66	92.27	50	78.50	42	60.62	13.172	.001*
Reaching judgement	66	91.76	50	75.64	42	64.83	9.748	.008*
Searching for the truth	66	91.99	50	73.54	42	66.96	9.874	.007*
Searching for evidence	66	88.43	50	76.89	42	68.57	5.420	.067
Open-mindness	66	86.08	50	77.43	42	71.63	2.840	.242
Systematicity	66	88.33	50	83.19	42	61.24	10.254	.006*
Total	66	91.99	50	76.46	42	63.49	10.362	.006*

According to the Table 7, no significant difference was found between teachers' levels critical thinking disposition scores regarding "searching for evidence" and "open-mindedness" factors (p>0.05). However, statistically significant differences were found between critical thinking dispositions scores of eTwinning teachers from "reasoning", "reaching judgment", "searching the truth", "systematicity" factors and the "total" scale according to their field of expertise (p <0.05). The scores of eTwinning teachers taking language courses were significantly higher in the "reasoning", "reaching judgment", "search evidence", "systematicity" factors and the "total" of the scale. The calculated effect sizes for these differences were medium in the "reasoning" factor (r = -0.337), in the "reaching judgment" factor (r = -0.381), in the "search evidence" factor (r=-0.407), in the "systematicity" factor (r=-0.361), and in the "total" of the scale (r=-0.397).

The correlation analysis of the level of critical thinking dispositions of eTwinning teachers by professional seniority was given in Table 8.

Table 8. *The Relationship between seniority of eTwinning teachers and critical thinking dispositions*

Variable	Factors	N	r	p
Professional Seniority	Reasoning	158	.001	.987
	Reaching judgment	158	-.022	.780
	Searching for the truth	158	-.023	.770
	Searching for evidence	158	-.054	.499
	Open-mindedness	158	.072	.372
	Systematicity	158	.001	.987
	Total	158	-.022	.780

As shown in Table 8, it was seen that there was no statistically significant relationship between professional seniority and critical thinking dispositions factors and the "total" of the scale (p>0.05).

The correlation analysis of the level of critical thinking dispositions of eTwinning teachers and number of participation was given in Table 9. According to the Table 9, it was found that there was a statistically significant and positive relationship between the number of eTwinning participation and "searching for evidence" ($r=0.178$; $p<0.05$). So, it was seen that when the number of participation in eTwinning projects increased, there was a significant increase in the critical thinking dispositions in terms of "searching for the truth" factor.

Table 9. *The relationship between the number of eTwinning teachers' participation in the project and their critical thinking disposition level scores*

Variable	Factors	N	r	p
Number of Participation	Reasoning	158	.131	.101
	Reaching judgment	158	.104	.195
	Searching for the truth	158	.136	.088
	Searching for evidence	158	.178	.025*
	Open-mindedness	158	.088	.269
	Systematicity	158	.131	.101
	Total	158	.104	.195

The results of difference analysis of the critical thinking disposition scores of eTwinning teachers by receiving a quality label award was given in Table 10.

Table 10. *Critical thinking disposition levels of eTwinning teachers by quality label award*

	Unawarded		Awarded			
Factors	N	Mean rank	N	Mean rank	U	p
Reasoning	83	74.71	75	84.80	2715.0	.152
Reaching judgment	83	75.83	75	83.56	2808.0	.280
Searching for the truth	83	73.55	75	86.08	2619.0	.071
Searching for evidence	83	69.36	75	90.73	2270.5	.002*
Open-mindedness	83	76.52	75	82.80	2865.0	.337
Systematicity	83	75.81	75	83.58	2806.5	.268
Total	83	73.79	75	85.82	2638.5	.098

According to the Table 10, there was a significant difference between the participating teachers' quality label award and "searching for evidence" factor ($p<0.05$). There was no statistically significant difference between the teachers' levels of critical thinking dispositions according to receiving the eTwinning quality label award in other factors and the "total" of the scale. As can be seen from the mean ranks, this difference was in favor of the quality label awarded teachers. However, the effect size of this difference in the "searching for evidence" factor in favor of receiving the quality labelwas small ($r = 0.048$).

The contribution of eTwinning Projects to eTwinning Teachers' Critical Thinking

The fourth sub-problem of the study was formulated as follows: "What are the perspectives of teachers participating in eTwinning projects regarding the contribution of these projects to critical thinking?" To address this question, teachers involved in eTwinning projects were asked a series of questions related to critical thinking and the role of eTwinning projects in fostering critical thinking skills.

The responses provided by the participating teachers through semi-structured interviews were analyzed using content analysis. As a result of the analysis, three main themes and thirteen sub-themes were identified, which are presented along with their corresponding frequencies. This structured approach allowed for a detailed exploration of the teachers' views, providing valuable insights into how eTwinning projects influence and enhance critical thinking dispositions among educators.

The findings derived from this analysis were presented in Table 11.

Table 11. *Findings on the contribution of eTwinning projects to critical thinking*

Theme	Sub-Theme	*f*	*%*
Enables original thinking, while avoiding dogmatism	Being open to innovations and different ideas	39	36
	Respecting different ideas	31	28
	Not being close-minded	23	21
	Being able to express one's own thoughts	16	15
	Total	109	100
Enables being result-oriented, and making accurate perception, analysis and evaluation	Obtaining information from reliable sources	41	42
	Being solution-oriented	22	23
	Questioning and reaching a judgment	20	21
	Examining from various perspectives	14	14
	Total	97	100
Helps students acquire scientific research skills	Tendency towards research	47	31
	Working in groups and collaboration	33	22
	Being open to technological innovation	30	20
	Communication skills	25	16
	Working in a disciplined manner	17	11
	Total	152	100

Enables Original Thinking, while Avoiding Dogmatism

eTwinning teachers believe that participating in eTwinning projects helps them embrace innovation and diverse ideas. One of the teachers (T3) explained: *"It brings people with different perspectives together to collaborate and create something new. This process encourages the emergence of unique solutions and products."* Through these projects, teachers learn to respect differing opinions. As another teacher (T6) noted: *"You learn to respect people even when you disagree with them."* eTwinning projects also prevent teachers from becoming rigid in their thinking. The teacher (T3) added: *"It stops you from fossilizing your ideas and makes you more open to others' perspectives."* Additionally, teachers feel empowered to express their viewpoints. The teacher (T5) shared: *"Everyone shares their opinion before a common idea is formed. We then decide which approach is more suitable and widely accepted."*

Enables Being Result-Oriented, and Making Accurate Perception, Analysis and Evaluation

eTwinning projects encourage teachers to seek reliable information and avoid misinformation. The teacher (T4) stated: *"It's crucial for cyber security and accessing accurate information online. It teaches us not to believe everything we see and helps us analyze information critically."* Teachers also learn to set clear goals and strategies, focusing on problem-solving. The teacher (T3) explained: *"Each project is created to address a specific problem or goal. The focus is on collaboration and producing meaningful outcomes."* Teachers evaluate information carefully and draw well-informed conclusions. The teacher (T14) said: *"We start by understanding the problem, conducting thorough research, and gathering necessary information. This process enhances our reasoning skills."* Furthermore, teachers examine ideas from multiple angles. The teacher (T14) added: *"We conduct multifaceted research to fully understand the topic, which allows us to explore it in depth and create effective, tangible results."*

Helps Students Acquire Scientific Research Skills

eTwinning projects encourage teachers to use scientific research methods, such as analyzing and synthesizing information, fostering a research-oriented mindset. The teacher (T3) noted: *"The research process must be scientific because it leads to a product and follows a structured plan. Every activity involves research and effort to create something meaningful."* Collaboration is another key aspect, as teachers work together to solve problems. The teacher (T12) shared: *"Joint projects and events help us find common ground and develop solutions together."* Teachers also become more open to technological innovations, learning to use Web 2.0 tools effectively. The teacher (T2) said: *"eTwinning has greatly improved my technological skills. I can now use various Web 2.0 tools in my classes, making lessons more engaging and helping students improve their tech skills."* Communication skills are also enhanced through these projects. The teacher (T6) explained: *"Teachers in eTwinning projects communicate clearly, share ideas, and develop a common plan. Collaboration and communication are at the heart of these projects."* Finally, teachers work in a structured and disciplined manner, following specific plans and strategies. The teacher (T4) added: *"eTwinning encourages project-based, planned, and disciplined work. You follow an annual plan and upload your progress regularly, ensuring consistency."*

Discussion, Conclusion and Recommendations

There was a significant difference between the critical thinking disposition scores of eTwinning teachers and non-eTwinning teachers in favor of eTwinning teachers. This result is similar with the results, eTwinning applications contributed to professional development, eTwinning activities had a positive impact on professional development, eTwinning projects increased the ability to create innovative ideas (Yılmaz, 2022) and eTwinning activities increased their professional development (Avcı, 2021).

The level of critical thinking dispositions of eTwinning teachers was very high. This result is similar with the results, Web-2.0 tools improved critical thinking (Gündüz Çetin & Gündoğdu, 2022), the critical thinking dispositions of teachers working in primary schools were at a high level (Erden, 2009), the critical thinking dispositions of science teacher candidates were at a good level (Öztürk, 2020), the critical thinking disposition level of kindergarten administrators was high (Turkut, 2020).

While there was no significant difference in the critical thinking dispositions of eTwinning teachers by gender and educational background variables, there was a significant difference in favor of the award winners in the "search the truth" factor according to the receiving a quality label variable. By field of expertise variable, significant differences were observed in the "reasoning", "reaching judgment", "searching for evidence", "systematicity" factors and the "total" of the scale in favor of language teachers. While there was no significant relationship by age and seniority; a positive and significant relationship was found between the number of participation in eTwinning projects and the "search the truth" factor scores. These results are similar with the results, professional seniority, field of expertise, education level, graduated higher education program were the predictors of critical thinking disposition (Erden, 2009), teachers' critical thinking disposition, graduated program, education level, school level, seniority, overseas experience and international project preparation were important predictors (Altaş, 2021).

Regarding to the contribution of eTwinning projects to the eTwinning teachers's critical thinking, participants stated that eTwinning projects enable them to "think originally and away from dogmatism", "be result-oriented, make correct perception, analysis and evaluation", and to "acquire scientific research skills". This result is similar with the results, eTwinning application put up teachers in point of integrating with technology and improving professional skills and a sense of success were one of the most substantial motivators of participation in eTwinning projects (Gündüz Çetin & Gündoğdu, 2022).

Considering that eTwinning projects improve the critical thinking skills of teachers, it is recommended that the projects be disseminated on a provincial basis and all teachers are encouraged to be involved in the projects. Training can be provided by the Ministry of Education to teachers to increase their interest, knowledge and experience regarding to eTwinning projects. Seminars can be organized by the Ministry of Education regarding to the use of Web-2.0 tools and their integration into courses. The problem-solving deftness and creativity degree of teachers who participate and do not participate in eTwinning projects can be investigated. The communication skills of teachers participating in eTwinning projects can be examined.

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