

Technology-Supported Instruction for Reducing Valency Errors in Teaching Turkish as a Foreign Language: A Mixed-Methods Intervention Study*

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Abstract: This study examined whether technology-supported instruction reduces the valency errors of 47 Hungarian learners of Turkish at pre-A1 and A1-A2 levels and explored changes in these errors within a structured instructional intervention. It contributes to the literature by proposing and empirically examining a technology-supported instructional model designed to reduce valency errors, an area that has received limited attention in intervention-based research in teaching Turkish as a foreign language. The study used a mixed-methods intervention design with a single-group pretest-posttest model. Participants used a researcher-developed website (hizliturkce.com), including instructional videos, Lumi-based Web 2.0 activities, chat, and live support, and attended online lessons focusing on valency over eighteen weeks. Quantitative data were collected using a Turkish achievement test and standardized scales measuring speaking self-efficacy, learning attitudes, and writing attitudes and anxiety, and analyzed using SPSS. Qualitative data were obtained from a practitioner-researcher diary and semi-structured interview forms and analyzed through content analysis. Findings indicate a decrease in valency errors, along with improvements in written expression skills, speaking self-efficacy, and attitudes toward writing. However, occasional technical issues and initial platform use difficulties were identified during implementation.

Keywords: Online, Teaching Turkish as a foreign language, technology, valency, web 2.0.

Türkçenin Yabancı Dil Olarak Öğretiminde İstem Hatalarını Azaltmaya Yönelik Teknoloji Destekli Öğretim: Karma Yöntemli Bir Müdahale Çalışması*

Öz: Bu çalışma, teknoloji destekli eğitimin Türkçeyi yabancı dil olarak öğrenen 47 Macar öğrencinin (pre-A1 ve A1-A2 düzeyleri) istem hatalarını azaltıp azaltmadığını incelemeyi ve yapılandırılmış bir öğretim müdahalesi kapsamında bu hatalardaki değişimi ortaya koymayı amaçlamaktadır. Çalışma, Türkçenin yabancı dil olarak öğretiminde istem hatalarını azaltmaya yönelik teknoloji destekli bir öğretim modelini önermesi ve ampirik olarak incelemesi bakımından literatüre katkı sunmaktadır. Araştırma, tek gruplu öntest-sontest modeline dayanan karma yöntemli bir müdahale çalışması olarak tasarlanmıştır. Katılımcılar, öğretim videoları, Lumi tabanlı web 2.0 etkinlikleri, sohbet ve canlı destek içeren araştırmacı tarafından geliştirilen hizliturkce.com web sitesini kullanmış ve 18 hafta boyunca istem konularına odaklanan çevrim içi derslere katılmıştır. Nicel veriler Türkçe başarı testi ile konuşma öz-yeterliği, öğrenme tutumları, yazma tutumları ve yazma kaygısını ölçen standart ölçeklerle toplanmış ve SPSS ile analiz edilmiştir. Nitel veriler ise araştırmacı günlüğü ve yarı yapılandırılmış görüşme formları aracılığıyla elde edilerek içerik analizi ile incelenmiştir. Bulgular, istem hatalarında azalma ile birlikte yazılı anlatım becerilerinde, konuşma öz-yeterliğinde ve yazmaya yönelik tutumlarda gelişme olduğunu göstermektedir. Fakat uygulama sürecinde zaman zaman teknik sorunlar ve platform kullanımına ilişkin başlangıçta güçlükler olduğu belirlenmiştir.

Anahtar Kelimeler: Çevrim içi, istem, teknoloji, Türkçenin yabancı dil olarak öğretimi, web 2.0.

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Introduction

Learning a new language takes a certain amount of time. The duration of language learning is affected by the closeness of the target language to the learner's native language, at what level and where the language will be learned, the age of the student, at what age they start learning a language, whether they know another language other than their native language, the language learning environment, and motivation. Language teaching courses have designated hours for their language level. A student learning Turkish as a foreign language must take an average of 600-700 hours of Turkish lessons to learn Turkish (Karatay & Tezel, 2023). So, can't this amount be reduced? If so, how can it be done?

In addition to spending hundreds of hours learning a language, students also have challenges while learning a new language and understanding the logic of that language. This challenge arises due to variations in syntax and grammar rules between languages, contributing to the difficulty of the learning process. For example, verbs in the new language might have multiple meanings, be used with different complements, or have varying valency. In the context of teaching Turkish as a foreign language, valency refers to the relationship between verbs and the elements that complete their meaning within a sentence, including the number and type of complements they require. In Turkish, this system is closely related to case markers, and learners frequently experience difficulties in using these structures accurately, which can lead to valency errors (Kaya, 2023). These errors might continue even if the student's language level advances (Altaş Özkan, 1992; Çangal & Başar, 2018; Msakhradze, 2019). If such errors are recurring, reviewing the methods used may help. Studies on this subject include mistakes made during the use of case suffixes (Akdoğan, 1993; Altaş Özkan, 1992; Başutku et al., 2016; Güler & Eyüp, 2016; Kan & Utlu, 2017); problems encountered during the teaching of case suffixes (Melanlıoğlu, 2012; Msakhradze, 2019); and how case suffixes can be taught (Aydın, 1997; Çangal & Başar, 2018; Enser, 2021; Tunçel, 2013; Yılmaz & Temiz, 2015). It has been determined that the system is based on valency views according to levels (Korkmaz, 2021), but what is more important is the development of methods and techniques to improve these errors.

It is of great importance to enrich any educational environment to be developed in the process of teaching Turkish to foreigners with different stimuli and to benefit from these technologies (Baş & Yıldırım, 2018). Allowing students, who frequently use information technologies in their daily lives, to benefit from these technologies while learning a foreign language can positively affect their learning (Hosseini et al., 2021). Although it provides endless opportunities for teaching Turkish as a foreign language (TTFL), it is seen that information technologies are not used enough (Birinci, 2020). However, the more materials that appeal to different senses are used in this field, the more permanent the learning will be. Traditional teaching using only the textbook and classroom blackboard may reduce the student's motivation and interest in the target language. On the other hand, when technology is applied in educational settings, it may increase teacher knowledge and support students' learning and motivation (Boonmoh et al., 2021). Since teaching a foreign language requires a long process, teaching should not start and end in the classroom and can be carried out in any environment, including outside the classroom (Dumanlı Kadızade, 2015). Exposing students to target language not only in the classroom but also outside the classroom and online with the support of technology can shorten their in-class learning time. Interacting with a teacher outside the classroom, where a student can inquire about things they find challenging without the constraints of the classroom setting, has the potential to alleviate learning anxiety and expedite the language learning process (Ali, 2018). Also, teachers have more opportunities to do online evaluations in the era of digital media, and it is almost obligatory to use various modalities of online education in their everyday teaching practice (Al-Obaydi et al., 2023).

Spending more time with technological tools, especially after the COVID-19 pandemic (Al-Obaydi et al., 2023; Shak et al., 2022; Zarei & Navidinia, 2024), has increased the importance of integrating technology into education. In language teaching, technology-based applications are considered valuable not only for supporting learning but also for improving digital literacy and extending learning beyond the classroom.

In the context of teaching Turkish as a foreign language, a number of studies have examined web-based learning environments and educational platforms from different perspectives, including usability, instructional design, and effectiveness (Aktay & Keskin, 2016; Arıcı & Karacı, 2013; Gök & Karademir, 2020; Göker, 2019). In addition, research focusing on the evaluation of digital learning materials and Web 2.0 environments has emphasized various pedagogical and technical criteria (Nokelainen, 2006; Orehovački & Žajdela Hrustek, 2013; Parlak, 2016). These studies collectively suggest that, although technology-supported environments offer important opportunities, existing tools still require further development in both technical and instructional terms. At the same time, grammatical difficulties—particularly those related to case markers and valency—have been identified as persistent challenges for learners (Akdoğan, 1993; Kan & Utlu, 2017; Korkmaz, 2021; Yılmaz & Temiz, 2015). However, despite the presence of studies examining either technological tools or grammatical difficulties, research that directly integrates technology-supported instruction with

targeted intervention for reducing valency errors remains limited. Therefore, there is a need for instructional designs that not only utilize digital tools but also directly address specific linguistic difficulties such as valency.

In summary, learners of Turkish as a foreign language continue to experience difficulties in using valency structures accurately, even as their overall language proficiency develops. Previous research has identified valency-related errors as persistent and systematic problems for learners; however, these studies have largely remained descriptive in nature. In particular, there is a lack of intervention-based studies that design, implement, and empirically evaluate instructional approaches aimed at reducing valency errors. In this context, there is a need for instructional approaches that move beyond identifying errors and instead focus on supporting learners in overcoming these difficulties. Technology-supported learning environments provide opportunities to offer structured practice, feedback, and extended learning beyond the classroom. Therefore, a web-based instructional environment can be considered as a potential tool to address valency-related difficulties while also supporting broader language development. Within this framework, the present study aims to examine the effects of a technology-supported instructional environment on learners' valency errors and related language outcomes. In addition, variables such as learner attitudes, speaking self-efficacy, and writing-related dispositions are included to provide a more comprehensive understanding of the implementation process. The research questions of the study are presented below:

1. Does technology supported education (TSE) improve students' valency errors in their writing skills?
2. Is TSE effective in improving students' writing skills?
3. Can TSE reduce the language learning time of students?
4. Does TSE affect students' attitudes toward learning Turkish?
5. Does TSE affect students' speaking self-efficacy?
6. Does TSE affect students' writing attitudes and concerns?
7. What are student opinions about TSE?
8. What are the researcher's observations about TSE?

Method

This section of the research explains and presents the research model, the group, the data collection tools used in the research, and information about the data collection process and data analysis.

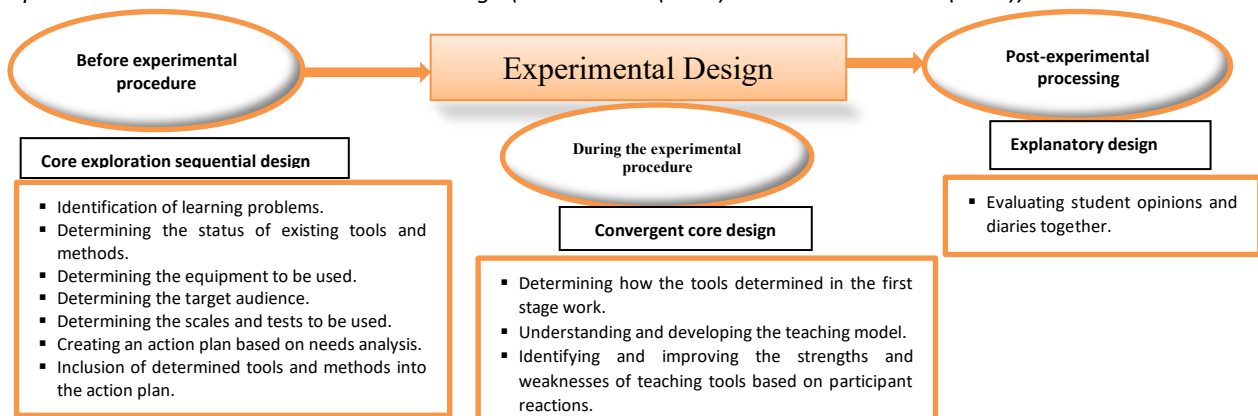
Research Design

This study aimed to teach valency structures to learners of Turkish as a foreign language through technology-supported instruction, to improve their language skills, and to explore changes observed during the learning process. The study was designed as a mixed-methods intervention study employing a single-group pretest–posttest design (Creswell & Creswell, 2018). In this design, both quantitative and qualitative data were collected and integrated to provide a comprehensive understanding of the implementation process. Quantitative data were collected before and after the intervention to examine changes in learners' performance. Qualitative data, including participant experiences and researcher observations, were collected during and after the intervention to support and explain the quantitative findings. This integrated design allowed the study to examine observed changes over time while also providing in-depth insights into the instructional process and learner experiences. However, as the study does not include a control group or randomization, the findings should be interpreted with caution and do not permit causal inferences.

The overall research design, consisting of three stages, is presented in Figure 1.

Figure 1.

Experimental Intervention Mixed Model Design (Sandelowski (1996) as Cited in Creswell (2018)).



Experimental Intervention (Quantitative Data)

The quantitative dimension of the research consists of comparing and analyzing the pre-posttests of the data obtained from the Turkish exam, the written expression exam, and the scales.

Study Group

The study group consists of 47 Hungarian students, 4 males, and 43 females, aged 16-73, with 15 pre-A1, 15 A1, and 17 A2 levels, whom the researcher can easily reach and communicate with in their native language. The fact that all participants are Hungarian constitutes a distinctive feature of the study, as it enables an in-depth examination of a relatively underrepresented learner group; however, it also represents a limitation in terms of the generalizability of the findings.

Students were determined using the maximum diversity method, one of the purposeful sampling methods. "In purposeful sampling, criteria that are considered important for selection are determined. The sample must include criteria that can represent the research universe with all its qualities" (Tavşancıl & Aslan, 2001, 56). In the maximum diversity sampling method, heterogeneity in various aspects is sought within the sample. An attempt is made to identify common points within this diversity. Although the initial study group consisted of 47 participants, the number of participants included in the analyses varied depending on the data collection tools. Some pre-A1 level learners could not complete the pretest due to their lack of prior Turkish knowledge; therefore, achievement test and scale data were analyzed with 32 participants. In addition, written expression data were obtained from only 21 participants who completed the task. Participants who did not complete the relevant instruments were excluded from the corresponding analyses.

Data Collection Technique and Tools

The data collection technique used in the quantitative phase is document review. The documents of the study are the Turkish exam (TE), written expression exam (WEE), and scales administered to the students before and after the applications begin. The quantitative data collection tools of the study are the TE, the WEE the Turkish Learning Attitude Scale (TLAS), the Speaking Self-Efficacy Scale of Those Learning Turkish as a Foreign Language (SSES), and the Written Expression Attitude and Anxiety Scale (WEAA). The scales used in the study were adapted to Hungarian. The back translation method was used when adapting the scale. Although back-translation is time-consuming, it is the most used method in the world to ensure the cultural equality of the scale (Aksayan & Gözüm, 2002). For this purpose, 2 Hungarian Turcologists were selected in addition to the researcher. The first translator translated the Turkish scale into Hungarian, and the second translated the Hungarian scale into Turkish. Translators worked independently and were not allowed to consult each other. The researcher interviewed both and corrected any inconsistencies. In addition to objective evaluations of the translations of the scales, statistical evaluations were also made. Appropriateness of translation should not only be limited to subjective evaluations such as translation and back-translation processes but is also supported by statistical evaluations (Van de Vijver & Hambleton, 1996 as cited in Bayık & Gürbüz, 2016). For this purpose, 20 Hungarian Turcology students who speak Turkish at a proficient level had the Turkish forms of the scales filled in, and three weeks later, the Hungarian form of the scale was applied and analyzed. A comparison was made based on correlation analysis to determine whether there is a relationship between these two applications. TLAS ($r = .85$, $p < .001$); SSES ($r = .87$, $p < .001$); A high level of correlation was found between the Hungarian form and the Turkish form of WEAA ($r = .83$, $p < .001$). Finally, the final Hungarian form of the scale emerged.

TE

There are 15 questions in the exam. 10 are short answer and 5 are multiple choice. Questions 11 and 12 are the highest with .951; Questions 3, 8, and 14 have the lowest Cronbach Alpha value with .943 points. Cronbach's Alpha value being over 0.70 indicates that the exam has high reliability.

TLAS

The Likert-type three-dimensional model developed by Karatay (2011) to obtain data about students' learning attitudes—The "Turkish Learning Attitude Scale", which has a total of 13 items measuring "Turkish learning interest (6 items)", "Turkish learning motivation (4 items)" and "Turkish pragmatic anxiety (3 items)"—was used. Some of the items in the scale are positive, and some (2m, 4m, 7m, 12m, 13m) are negative. Five equally spaced options are given for each item to indicate the frequency of the attitude. These are scored (1-5) (Karatay & Kartallıoğlu, 2016, p. 208). The Cronbach's Alpha value of the reliability coefficient of the TLAS applied in this study was 0.800 for the interest in learning Turkish dimension; It was found to be 0.812 for motivation to learn Turkish and 0.925 for Turkish performance anxiety. Cronbach's Alpha reliability value being over 0.70 indicates that the scale is reliable.

SSES

The scale developed by Kurudayıoğlu & Güngör (2017) is an 11-point Likert type consisting of 17 items. The scale is rated as "0: Definitely Cannot", "10, 20, 30, 40, 50: Moderately Can", "60, 70, 80, 90, 100: Definitely Can". The Cronbach's Alpha value of the CSS applied in this study was found to be 0.97. Cronbach's Alpha reliability value being over 0.70 indicates that the scale has high reliability for the study.

WEAA

The scale consists of 24 items and is a Likert type scored between 1 and 5 points (Strongly disagree - Completely agree). The Cronbach's Alpha value of the reliability coefficient of WEAA applied in this study was found to be 0.884 for the dimension of interest in learning Turkish. Cronbach's Alpha value being over 0.70 shows that the scale is reliable.

Analysis of Data

The data obtained from the Turkish Exam (TE), Written Expression Exam (WEE), Speaking Self-Efficacy Scale (SSES), Turkish Learning Attitude Scale (TLAS), and Writing Attitude and Anxiety Scale (WAAS) were analyzed using SPSS. Prior to the main analyses, the normality of the data was assessed using the Shapiro-Wilk test, as the sample size was below 50. The results indicated that the pre-test writing scores ($W = .96$, $p = .12$), speaking self-efficacy scores ($W = .97$, $p = .21$), and attitude toward learning Turkish ($W = .95$, $p = .08$) met the normality assumption. In contrast, post-test writing scores ($W = .94$, $p = .03$) and writing attitude scores ($W = .93$, $p = .02$) did not meet the normality assumption. The results for TE and WEE also indicated non-normal distribution ($p < .05$). In line with these results, TE and WEE scores were analyzed using the Wilcoxon signed-rank test, whereas TLAS, SSES, and WAAS scores were analyzed using paired samples t-tests.

Application Process

- Pre-implementation (needs determination): In this research, which aimed to eliminate students' valency errors, improve their language skills, and shorten their language learning time through technology-supported education, the following were carried out in the pre-application phase:
- Literature review: A literature review was conducted on error analysis in TTFL, valency, case suffixes, technology, use of technology in education, use of technology in TTFL, e-learning, synchronous and asynchronous learning, distance education, teaching management systems, using Turkish as a foreign language, Turkish teaching websites, language teaching courses, and language learning times.
- Identifying learning and teaching problems: As a result of the literature review, it was determined that those who learn Turkish as a foreign language frequently make mistakes in valency, even as their language level progresses, but the existing literature assesses the current situation and does not propose to offer solutions. Concerning the total course hours determined by national and international institutions that teach Turkish as a foreign language, to learn Turkish at a competent level, students need to take an average of 900-1100 hours of courses (Karatay & Tezel, 2023).
- Determining the status of teaching tools and methods: Although face-to-face courses are used more in TTFL, synchronous and asynchronous e-learning methods are also used. While the demand for distance education is increasing, few local websites are teaching Turkish as a foreign language. It has been determined that existing ones are unsatisfactory.
- Deciding on the teaching tools and methods to be used in the research: Since it is thought that the use of a single method will not be sufficient to cure valency errors and reduce the time for language learning, it was agreed to use more than one method together, including online lessons, asynchronous lessons, teaching activities and lecture videos. A website was established for this purpose.
- Establishing a website that teaches Turkish: First, the website name hizliturkce.com was taken. A MOODLE link is provided with the website. Then, the website was designed. Next, Turkish teaching activities, lecture videos, online lessons, chat, and live support modules were added according to course levels.
- Determining the web 2.0 tool: LUMI was chosen as the Web 2.0 tool because it contains many HP5 activities.
- Determining and theming A1-A2 level topics: After determining the teaching management system and Web 2.0 tool to be used, the researcher first determined and themed A1 and A2 level topics.
- Determining and designing activity types: A total of 63 activities and 211 questions on these topics were prepared for the website. Activity types: Multiple choice (f 22), true or false (f 15), dragging (f 15), filling in the blank (f 6), matching (f 3), and dictation (f 2). The learning areas of the activities are grammar (f 30), reading comprehension (f

26), listening comprehension (f 3), vocabulary teaching (f 2) and pronunciation (f 2). Try again and show solution options are enabled in events. Thus, the student was able to try that activity until he did it correctly.

- Shooting lecture videos and uploading them to the site: 21 summary lecture videos were shot for the determined grammar topics. After these videos were assembled, they were uploaded to the hizliturkce.com website designed with the Moodle teaching management system.
- Opening social media accounts: Since students spend a lot of time on social media and it is easy to communicate with students on social media, YouTube and Instagram pages have been opened where they can ask their questions and access course materials; Facebook and Messenger groups were established, and an e-mail account was obtained for the site to send assignments.
- Creation of the action plan: An Action Plan for implementing online courses has been created.
- Promotion of the website and Turkish courses: The promotion of the website was made by the researcher in the social media environments where Hungarian students were present, with a short video shot in the students' native languages in a studio environment. In addition, a meeting was held with the students, and they were told that they had to do the activities on the website, watch the videos, and attend online classes for 18 weeks.
- Implementation of pre-tests: After students registered on the website, they were asked to take Turkish and written expression exams prepared by the researcher and fill out the sent scales. Turkish exam 32; 21 students took the writing exam and 32 students filled out the scales. Students who do not speak Turkish did not take the Turkish exam.
- Application sequence (Development-correction): Applications lasted 18 weeks. For 18 weeks, students used the website, watched the videos and did the activities there, and attended online classes via Microsoft Teams for 2 hours, 2 days a week, for a total of 72 hours. There is no time limit for events and videos on the website. The aim here is to ensure that individuals are responsible for their learning and to consider individual differences in learning speeds. Apart from these, students were able to chat with each other in the chat section, complete the writing assignments given to them after classes, and send them to the teacher via e-mail. The teacher made corrections and gave feedback to the students. When they wanted to ask a question or about a subject they did not understand, they could write to the teacher, that is, the researcher, via live support. When they experienced a systemic, technical problem, the researcher connected to the students' computers remotely and solved their technical problems. In this process, students' reactions were observed, thus the strengths and weaknesses of the teaching tools were understood, and their good aspects were improved.
- Post-implementation (Evaluation): To evaluate the implemented action plan, the Turkish exam, written expression exam, and scales collected from the students online via Google Forms at the end of the A2 level were examined and feedback was given to the students about the improvement in their valency errors and the development of their language skills.
- Qualitative phase: The qualitative dimension of the research consists of the structured Technology Supported Education Student Interview Form (TSESIF) and content analysis of the researcher's observations.
- Participants: The study group consists of 47 Hungarian students at 15 pre-A1, 15 A1, and 17 A2 levels who use the hizliturkce.com website. Students were determined using the maximum diversity method, one of the purposeful sampling methods.
- Qualitative data collection techniques and tools: The data collection technique to be used in the qualitative phase is document review. "Document review includes the analysis of written materials containing information about the phenomenon or phenomena targeted to be investigated. Document review or analysis can be a stand-alone research method, or it can also serve as an additional source of information when other qualitative methods are used (Yıldırım & Şimşek, 2018)." The data collection tools of the study are the structured student interview form and the researcher's diary.
- Structured student interview form: Four target questions regarding the implementation of technology-supported education were prepared by the researcher by taking expert opinions. The opinions of two field experts were taken for the prepared questions. The questions in the technology-supported education student interview form (TSESIF) are aimed at obtaining students' opinions and suggestions about the teacher, online courses, website, and application process.

- Researcher's diaries: Diaries were used to track the process of implementing technology-supported educational activities and the development of this process. To observe and describe the effect of this process and education on the students, diaries were kept by the researcher in line with the action plan. Observation notes were taken by the researcher throughout the training process regarding the development of the students and the implementation process.
- Analysis of qualitative data: Documents in the qualitative phase were examined with content analysis techniques. There is categorization and summarization by coding based on the themes determined in the content analysis. "The basic process of content analysis is bringing together similar data within the framework of certain concepts and themes and to organize and interpret them in a way that the reader can understand."

Findings

Findings Regarding the First Problem of Research

The impact of technology-supported education applied in solving this problem on students' valency errors was examined. The results of the 15-question Turkish grammar exam taken before the start of the practices and at the end of the 18-week practices were compared.

Table 1.

Students' TE Pre-Post Test Scores

	N	The lowest	The highest	\bar{X}	S
1. TE pre-test	32	,0	97,0	44,27	35,03
2. TE post-test	32	61,0	100,0	90,10	10,88

After TSE, the students' pre-test average score in the Turkish exam is (44.27) and their post-test average score is (90.22). The students' post-test Turkish achievement scores are higher than their first test scores.

Table 2.

TE Wilcoxon Signed Ranks Test Results

Pre-post tests	N	Rank means	Rank sum	z	P	Cohen's d
Negative order	0a	.00	.00	-4.646	.000	0,820
Positive order	28b	14.50	406.00			
Equal	4c	-	-	-	-	
Total	32	-	-	-	-	

As a result of the analysis, a significant difference was found between the students' pre-test scores taken before the application and the post-test scores after the application, $p < 0.05$. It was concluded that technology-supported education is effective in treating students' valency errors.

The effect size value calculated for the application ($d=0.820$) found a large effect. This effect size shows that there is a significant difference between the student's pre-test scores and post-test scores and that the technology-supported education plan has successful and effective results.

Findings Regarding the Second Problem of Research

In solving this problem, students' one-question written expression exam results were used. Table 2 shows the number of words and valences used by students in written expression exams.

Table 3.

WEE Descriptive Statistics Results

	N	The lowest	The highest	Total	\bar{X}	S
1. Word account at first exam	21	13.00	138.00	1122.00	53.42	30.71
2. Word account at last exam	21	39.00	192.00	1989.00	94.71	47.66
3. Total used valency at first exam	21	2.00	39.00	257.00	12.23	8.05
4. Total used valency at last exam	21	8.00	50.00	468.00	22.28	12.68

The analysis of the written expression exams showed that students used between 13 and 138 words in the first exam and between 39 and 192 words in the final exam. The total number of words increased from 1122 in the first exam to 1989 in the final exam. Similarly, the number of valency structures used ranged from 2 to 39 in the first exam and from 8

to 50 in the final exam. In total, 257 valency structures were identified in 1122 words in the first exam, whereas 468 valency structures were identified in 1989 words in the final exam.

Table 4.

WEE Wilcoxon Signed-Rank Test Results

Pre-post tests	N	Rank means	Rank total	z	p	Cohen's d
Negative order	2a	1.50	3.00	2.497b	.013	0,54
Positive order	8b	6.50	52.00			
Equal	11c					
Total	21					

b. Based on negative ranks

As a result of the analysis, a significant difference was found between the students' YAS pre-test scores taken before the application and their YAS post-test scores after the application ($p < 0.05$). The effect size ($d=0.54$) was determined to be at a medium effect level. As a result, it can be said that technology-supported education positively improves students' use of valences in their written expressions.

Findings Regarding the Third Problem of Research

To solve this problem, it was utilized from the basic level course hours by language of CEFR.

Table 5.

Basic Level Course Hours by Language of CEFR

Language	English	French	Spanish
CEFR	288	225	150

When Table 5 is examined, the average number of instructional hours required to reach the basic level in languages such as English (180–200 hours), French (135 hours), and Spanish (150 hours) is presented based on CEFR estimates. The Turkish Exam (TE) results obtained after 72 hours of instruction on hizliturkce.com indicate that learners reached the targeted level within this instructional period. These data are also presented in Table 1.

Findings Regarding the Fourth Problem of Research

In solving this problem, the effect of technology-supported education on students' attitudes towards learning Turkish was examined.

Table 6.

TLAS-Related Groups T-Test Results

Groups	n	\bar{x}	X	Std. Deviation	T	df	p
Pretest	32	4,1707					
Post test	32	4,1827	-,01202	,35714	-,190	31	,850

As a result of the analyses, no significant difference was found between the students' pre-test mean scores before the training (4,1707) and the post-test mean scores after the training (4,1827), $p > 0.05$.

Findings Regarding the Fifth Problem of Research

In solving this problem, the effect of technology-supported education on students' speaking self-efficacy was examined.

Table 7.

SSES-Related Groups T-Test Results

Groups	n	\bar{x}	X	Std. Deviation	t	Df	p	Cohen's d
Pretest	32	35,90						
Post test	32	50,62	-14,72	12,25	-6,795	31	,000	0,59

As a result of the analysis, a significant difference was found between the students' pre-test scores before the training (35,90) and the post-test scores after the training (50,62), $p < 0.05$. The effect size ($d=0.59$) was determined to be at the medium effect level. It was concluded that the training was effective on the students' speaking self-efficacy.

Findings Regarding the Sixth Problem of Research

In solving this problem, the effect of technology-supported education on students' written expression attitudes and concerns was examined.

Table 8.

WEAA-Related Groups T-Test Results

Groups	N	\bar{x}	X	Std. Deviation	t	Df	p	Cohen's d
Pretest	32	4,1771						
Post test	32	4,3086	-13151	-23117	-3,218	31	0,03	0,250

As a result of the analysis, a significant difference was found between the pre-test scores of the students before the training (4,1771) and the post-test scores after the training (4,3086), ($p < 0.05$). The effect size ($d=0.25$) was determined to be at the small effect level. It was concluded that the training was effective in students' written expression of attitudes and concerns.

Findings Regarding the Seventh Problem of Research

In solving this problem, content analysis of students' answers to TSESIF was used. Opinions and suggestions about the teacher conducting the application, the website, and online courses were divided into themes according to the answers given.

10 out of 47 students (21%) stated that the teacher's communication skills were good, as an example of the positive factors they saw during their education; 2 of them (4%) stated that the teacher motivates the students and ensures their participation in the lesson; 1 (2%) stated that the teacher came to the lessons prepared; 6 of them (13%) stated that the teacher taught the lesson effectively.

“What are your opinions about the hizliturkce.com website?”

47 students gave the following answers to this question: 21 of the students (45%) stated that the hizliturkce.com website was useful, understandable, and beneficial to them and that they liked to use this site (17%). that it allowed them to learn; 15 of them (32%) stated that the videos were short and this made it easier for them to understand, the grammar explanations in the videos had a positive effect on their learning, and they liked the explanation style of the teacher in the video and that these were useful for them; 3 (6%) stated that they had the opportunity to apply what they learned on the website; 7 of them (15%) stated that they could repeat the information they learned from the website without any time limit; 1 (2%) said the website improved their reading skills; 1 (2%) stated that the website improved their speaking and writing skills; 1 (2%) stated that the website increased the learning speed; 1 (2%) stated that thanks to the live support on the website, they asked questions that they could not ask during the lesson and received quick answers.

“What are your opinions about online courses?”

47 students gave the following answers to this question: 1 (2%) of the students said that they liked the division of the courses into themes; 9 of them (9%) stated that the lessons were useful, interesting, entertaining, understandable and good, so they liked the lessons; 4 of them (9%) stated that correcting the homework given after class was beneficial for them; 7 of them (15%) stated that since the recordings of online courses were available on the website, they could re-watch the courses they could not watch for various reasons; 2 (4%) stated that the online classroom environment was positive; 1 (2%) stated that their understanding skills improved; 1 (2%) stated that online courses improved speaking skills; 2 (4%) said they liked the fact that the lessons were free; 1 (2%) said that they could learn Turkish this way; 3 of them (6%) stated that they needed Hungarian to be used occasionally in lessons; 1% and 2% liked that the course materials and the language of instruction were in Turkish; 5 (11%) said they liked the lessons; 1 (2%) stated that online courses gave them confidence in learning Turkish.

“Do you have any suggestions regarding the website and the application process, if so, what are they?”

47 students gave the following answers to this question: 2 of the students (4%) stated that online courses should be divided into themes according to subjects in the website interface and that they had difficulty in finding the courses they completed; 2 (4%) stated that activities could be increased; 1 (2%) stated that if there were short stories on the website, it would motivate them and they would be able to apply what they had learned; 1 (2%) stated that an exam could have been added; 1 (2%) said they wanted a dictionary section to be added; One of them (2%) stated that the different language levels of students in online courses caused him to have speaking anxiety.

Researcher's Diaries

In solving this problem, the researcher's diaries were analyzed. These observations are related to four themes: contributing to the language of technology-supported education, observations about contributing to the twenty-first-

century accumulation, observations about contributing to Turkish teaching, and observations about the limited details of technology-supported education rates.

The contribution of technology-supported education to language skills

Contribution to speaking skills

Having mixed levels in the classroom caused students who knew less Turkish to become anxious and hesitate to speak because of students who knew better Turkish. It has been observed that, especially after learning the simple tenses topic, students started to make sentences and participated more in speaking activities.

Contribution to writing skills

Correcting the hand-written weekly writing assignments and sending them back to the students reduced writing errors enabled students to develop positive attitudes towards writing and improved their writing skills.

Contribution to reading skills

In the first weeks of the practices, students had problems with pronunciation in reading activities. They especially had difficulty pronouncing the sounds "ı", and the letters "ğ" and "â", which do not exist in Hungarian. The problem in their pronunciation continued until the end of the A1 level. After starting A2 lessons, students who gained phonetic awareness understood the differences between sounds they could not previously distinguish, improved their vocabulary, and began to read and create sentences more accurately and fluently.

Contribution to listening skills

Playing a song or watching a video about that subject at the end of the lessons increased students' interest in the lesson. In particular, the songs related to the learned grammatical structure enabled the students to develop positive attitudes toward that grammatical structure and to have fun. The adjustable playback speed of the videos on the website created awareness among students about their listening speed and made it easier for them to listen to and understand the teacher during the lesson.

Contribution to twenty-first century skills

Contribution to information and communication technologies (ict) literacy

At the beginning of the technology-supported education process, students had to first register on the website, learn how to use the site, and contact live support whenever they got stuck. Then, before the practices started, they had to fill out the scales prepared and sent to them via Google Forms and take the Turkish exam. To attend live classes, they had to download the Microsoft Teams application and learn how to use the camera and microphone during the lesson. After classes started, they had to take photos of their writing work or scan their homework and send it to the teacher via e-mail. To do these, information, and communication technologies (ICT) literacy skills are required. Before the applications start, students will be able to register on the website, use live support, and download the Microsoft Teams software before online classes start. It was observed that they had problems using the camera and microphone during the lesson and sending their homework via e-mail. It was observed that when A2 courses started, students improved in information and communication technologies (ICT) literacy and did not experience the mentioned problems.

How technology-supported education accelerates Turkish learning

Providing preliminary preparation for lessons

The website has videos that cover the grammar topics taught in the course. Therefore, students who wish to learn the subject before the lesson can watch the videos. By watching the videos beforehand, completing the activities, and reaching out to live support, when necessary, students can spend less time reviewing the grammar topic during the lesson. As a result, they come to class well-prepared, and more applications can be made in the course.

Facilitating communication

Students who were hesitant to ask questions in the classroom environment, who could not attend the lecture, but who watched the live lecture video afterward and still had questions, gained the self-confidence to ask the teacher questions, as they asked these questions via live support and received quick feedback, and the communication with these students, which could not be provided adequately in the classroom environment, could be provided outside the lessons thanks to technology.

Limitations of technology-supported education

Problems of the internet and distance education tools

Some students wanted to participate in the practices but could not attend the classes due to internet problems. Some students could not attend classes or came late due to power outages or lost internet connection. Since all students turned on cameras at the same time, students had to have a high-speed connection. Thus, internet connection has occasionally caused problems.

Discussion and Conclusion

Valency errors, a fundamental aspect of Turkish as a foreign language, are observed even among advanced learners (Altaş Özkan, 1992). Possible reasons for this include differences between learners' native languages and Turkish, the continued use of traditional teaching methods, and limited opportunities for individualized feedback in crowded classrooms. In technology-supported learning environments, however, teachers may have more opportunities to provide individualized and timely feedback. In the present study, students received regular feedback on their written assignments, and both qualitative findings and student statements indicated that this feedback was perceived as beneficial. Similar findings regarding the role of feedback in language learning have been reported in previous studies (Aydın, 2019; Baki, 2015; Ceylan, 2017; Çangal, 2020; Gürbüz, 2018; Özbal, 2017; Şenol Ebrin, 2022; Turhan, 2016; Yavuz, 2014; Yorgancı, 2021).

Regular attendance and sustained engagement are important factors in language learning. In this study, technology-supported education (TSE) was designed to provide flexibility in instructional time and access to learning materials. CEFR-based estimates indicate that reaching basic levels in languages such as English, French, and Spanish requires a substantial number of instructional hours (Karatay & Tezel, 2023). In the present study, learners completed the instructional process within 72 hours and achieved a high success rate in the A2 level exam. However, as the study does not include a control group or a parallel instructional program, this comparison should be considered as contextual rather than experimental.

Technology-supported education also enabled students to revisit course materials, receive feedback, and access support outside the classroom. Qualitative findings indicated that students benefited from these opportunities and perceived them as supportive of their learning process. These findings are consistent with previous research highlighting the role of technology in supporting flexible and individualized learning environments.

There is a well-established relationship between academic success, motivation, and attitude (Aksoğan & Özdemir, 2022; Boonmoh et al., 2021; Tüm, 2014). In this study, students' attitudes remained generally positive throughout the process. This may be associated with the flexible learning environment and continuous access to learning materials provided by TSE. Interview findings also support this interpretation. Similarly, previous studies have shown that technology-supported environments can enhance motivation and engagement (Mistler Jackson & Songer, 2000).

Speaking anxiety is another important factor affecting language learning. Consistent with previous research (Gün, 2015), students initially showed hesitation in speaking activities. However, qualitative findings suggested that students became more willing to participate in speaking tasks over time and reported increased confidence. These changes may be related to increased familiarity with the content and opportunities for practice.

Writing is one of the most challenging skills for language learners due to both linguistic and cognitive demands (Karakoç Öztürk, 2012). In this study, students reported that receiving feedback on their writing supported their learning process. Qualitative data also indicated that timely feedback contributed to increased willingness to write and reduced anxiety. These findings are in line with previous research emphasizing the importance of feedback in developing writing skills.

This study has several limitations that should be considered when interpreting the findings. The absence of a control group and the use of a single-group pretest–posttest design limit the ability to draw causal conclusions. In addition, the comparison with CEFR-based instructional hours should be interpreted as contextual rather than experimental.

Furthermore, participant numbers varied across analyses due to incomplete data. In addition, learners at different proficiency levels (pre-A1, A1, and A2) were included within the same intervention without controlling for level differences, which may have influenced the internal validity of the findings. Despite these limitations, the study provides important insights into the use of technology-supported instruction for addressing valency errors and supporting language learning processes in Turkish as a foreign language.

Suggestions

Attention should be paid to user-friendliness in website design: ease of access to any category, content that loads quickly, and a theme that is readable and that does not tire the eyes. Activities, short stories, and a glossary can be added to the website, as both practice tools for students and aids in learning.

Ethics Committee Approval Information

This study was approved by the Human Research Ethics Committee (Protocol No. 2022/244). Ethical approval was granted at the committee meeting held on June 27, 2022 (Meeting No. 2022/07).

Conflict of Interest

Conflict of Interest No conflict of interest exists for this manuscript for any of the authors.

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Author Contributions

S.K. conceived and designed the study, collected and analyzed the data, and wrote the manuscript. H.K supervised the research, contributed to the study design, and reviewed and edited the manuscript. All authors approved the final version of the manuscript.

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Genişletilmiş Özet

Giriş

Yeni bir dil öğrenmek; hedef dilin öğrencinin ana diline yakınlığı, öğrenmenin gerçekleştiği çevre, öğrencinin yaşı, dil öğrenmeye başlama yaşı, ana dil dışında başka bir yabancı dil bilip bilmemesi ve bireysel motivasyon gibi çok sayıda değişkenden etkilenen uzun soluklu ve çok boyutlu bir süreçtir. Alan yazında, Türkçeyi yabancı dil olarak öğrenen bir bireyin işlevsel bir dil düzeyine ulaşabilmesi için görece uzun bir öğretim sürecine ihtiyaç duyduğu vurgulanmaktadır. Bu süreçte öğrenciler yalnızca zaman harcamamakta, aynı zamanda yeni bir dilin yapısal mantığını kavrama ve hedef dilin sözdizimi ile dilbilgisi kurallarını içselleştirme konusunda da çeşitli güçlüklerle karşılaşmaktadır. Bu güçlüklerin en belirgin olanlarından biri, fiillerin cümle içinde anlamlarını tamamlayan öğelerle kurduğu anlamsal ve sözdizimsel ilişkiyi ifade eden istem konusudur. Türkçede istem, diğer bir deyişle fiil tamlayıcısı ya da valens, özellikle durum ekleriyle yakından ilişkili olduğundan, yabancı öğrencilerin bu yapıları doğru kullanmada zorlandıkları görülmektedir. Literatür incelendiğinde, istem hatalarının türlerini belirlemeye yönelik betimleyici çalışmaların bulunduğu, ancak bu hataların öğretimsel müdahalelerle nasıl azaltılabileceğine odaklanan deneysel araştırmaların daha sınırlı olduğu anlaşılmaktadır.

Yabancı dil öğretiminde sınıf içi geleneksel yöntemlerin ötesine geçerek eğitim ortamını farklı duyuşsal uyaranlarla zenginleştirmek ve çağdaş bilgi iletişim teknolojilerinden yararlanmak, öğrenmenin niteliği açısından önemli görülmektedir. Yalnızca ders kitabı, tahta ve sınıf içi etkileşim ile sınırlı kalan öğretim modelleri öğrencinin hedef dile olan ilgisini zamanla azaltabilirken, teknoloji destekli eğitim modelleri çoklu duyuya hitap eden yapıyla öğrenmeyi daha dikkat çekici ve dinamik hâle getirebilmektedir. Özellikle küresel salgın döneminden sonra çevrim içi araçların eğitim süreçlerinde daha yaygın bir biçimde kullanılmaya başlanması, bilgi ve iletişim teknolojilerinin öğretim ortamlarına daha görünür biçimde dâhil olmasına yol açmıştır. Öğrencilerin sınıf dışında da hedef dille etkileşimini sürdürmesini sağlayan web tabanlı platformların dil öğrenme kaygısını azaltma, içsel motivasyonu destekleme ve öğrenme sürecini daha esnek hâle getirme potansiyeli taşıdığı söylenebilir. Bununla birlikte, mevcut dijital eğitim araçlarının hem pedagojik hem teknik açıdan geliştirilmesi gerektiği; özellikle fiil istemi gibi belirli zorlukları hedef alan yapılandırılmış öğretim tasarımlarına ihtiyaç duyulduğu görülmektedir.

Bu çerçevede araştırmanın temel amacı, teknoloji destekli öğretim ortamlarının Türkçeyi yabancı dil olarak öğrenen pre A1, A1 ve A2 düzeylerindeki Macar öğrencilerin istem hataları üzerindeki etkisini incelemektir. Çalışmada ayrıca öğrencilerin yazılı ve sözlü dil becerilerinin teknoloji desteğiyle nasıl değiştiği, öğrenme süresine ilişkin olası katkılar, Türkçe öğrenmeye yönelik tutumlar, konuşma öz yeterliği ve yazma kaygısı da değerlendirilmiştir.

Yöntem

Bu araştırma, öğrencilerin fiil istem yapılarını öğrenmelerini desteklemeyi, dil becerilerini bütüncül olarak geliştirmeyi ve öğrenme süreci boyunca gözlemlenen değişimleri ortaya koymayı amaçlayan, tek gruplu ön test-son test modeline dayalı karma yöntemli bir müdahale çalışması olarak tasarlanmıştır. Bu desen kapsamında nicel veriler, uygulamanın öğrenci performansı ile bazı duyuşsal değişkenler üzerindeki etkisini istatistiksel olarak incelemek amacıyla toplanmış; nitel veriler ise nicel bulguları desteklemek, açıklamak ve sürecin nasıl işlediğini daha ayrıntılı biçimde anlamlandırmak için kullanılmıştır. Bununla birlikte, kontrol grubunun bulunmaması ve seçkisiz atama yapılmaması, sonuçların yorumlanmasında dikkate alınması gereken sınırlılıklar arasında yer almaktadır.

Araştırmanın çalışma grubu, araştırmacının ana dillerinde anlaşabildiği on altı ile yetmiş üç yaş aralığındaki dört erkek ve kırk üç kadın olmak üzere toplam kırk yedi Macar öğrenciden oluşmaktadır. Katılımcılar, amaçlı örnekleme yöntemlerinden maksimum çeşitlilik örnekleme ile seçilmiş ve grupta farklı dil yeterlik düzeylerinde öğrencilerin yer almasına dikkat edilmiştir. Çalışmanın yalnızca Macar öğrencilerle yürütülmüş olması, bir yandan belirli bir dil grubuna odaklanmayı mümkün kılarken, diğer yandan bulguların genellenebilirliği açısından sınırlılık oluşturmaktadır.

Nicel verilerin toplanmasında doküman incelemesi tekniğinden yararlanılmıştır. Bu kapsamda araştırmacı tarafından geliştirilen çoktan seçmeli ve kısa cevaplı sorulardan oluşan Türkçe dilbilgisi sınavı ile yazılı anlatım sınavı kullanılmıştır. Öğrencilerin duyuşsal özelliklerini ölçmek amacıyla Türkçe Öğrenme Tutum Ölçeği, Yabancı Dil Olarak Türkçe Öğrenenler İçin Konuşma Öz Yeterlik Ölçeği ve Yazılı Anlatım Tutum ve Kaygı Ölçeği de araştırmaya dâhil edilmiştir. Ölçekler geri çeviri yöntemi kullanılarak Macarcaya uyarlanmış ve kültürel eşdeğerlikleri istatistiksel olarak kontrol edilmiştir. Nitel veriler ise uzman görüşü alınarak hazırlanan yapılandırılmış öğrenci görüşme formu ve araştırmacının süreç boyunca tuttuğu gözlem günlükleri aracılığıyla elde edilmiştir.

Uygulama süreci, ön hazırlıkların ardından on sekiz hafta süren çevrim içi bir program şeklinde yürütülmüştür. Öğretim ortamı olarak araştırmacı tarafından tasarlanan ve bir öğrenme yönetim sistemi üzerine kurulan eğitim web sitesi kullanılmıştır. Bu dijital platform; sürükle-bırak, boşluk doldurma, doğru-yanlış ve dikte gibi farklı formatlarda hazırlanmış

etkileşimli etkinliklerle ve konu anlatım videolarıyla desteklenmiştir. Öğrenciler süreç boyunca siteyi kendi hızlarında kullanmış, etkinlikleri tekrar edebilmiş ve eş zamanlı çevrim içi derslere düzenli olarak katılmıştır. Ayrıca canlı destek ve sohbet modülleri aracılığıyla araştırmacı ile iletişim sürdürülerek öğrenme süreci bireyselleştirilmiştir.

Nicel verilerin analizinde SPSS programından yararlanılmıştır. Örneklem sayısının ellinin altında olması nedeniyle verilerin normal dağılım gösterip göstermediği istatistiksel sınamalarla test edilmiştir. Dağılımın normal olmadığı belirlenen sınav sonuçları için parametrik olmayan testler, normal dağılım koşullarını sağlayan tutum, öz yeterlik ve kaygı ölçekleri için bağımlı gruplar t-testi kullanılmıştır. Nitel veriler içerik analizi tekniğiyle kodlanmış, ortak temalar belirlenmiş ve bütüncül biçimde yorumlanmıştır.

Bulgular

Araştırmanın nicel bulguları, teknoloji destekli öğretim sürecinin öğrencilerin fiil istemiyle ilgili başarılarında belirgin bir gelişimle ilişkili olduğunu göstermektedir. Eğitim öncesi ve sonrası uygulanan dilbilgisi değerlendirmeleri karşılaştırıldığında, öğrencilerin son test puanlarında artış görülmüştür. Yapılan analizler, uygulama öncesi ve sonrası performanslar arasında anlamlı bir fark bulunduğunu ve öğretim sürecinin dilbilgisel doğruluk üzerinde olumlu bir etkisi olabileceğini düşündürmektedir.

Yazılı anlatım verileri incelendiğinde, öğrencilerin süreç sonunda daha uzun metinler ürettikleri ve istem yapılarını daha sık kullandıkları görülmektedir. Ayrıca istem yapılarını bağlama daha uygun ve daha doğru kullanma eğiliminde oldukları anlaşılmaktadır. Bu bulgular, teknoloji destekli öğretim sürecinin yalnızca kural bilgisini değil, bu bilginin yazılı üretime aktarımını da desteklediğini düşündürmektedir. Başka bir deyişle, öğrenciler süreç ilerledikçe hem daha fazla yazabilmiş hem de istem yapılarını daha işlevsel biçimde kullanabilmiştir.

Öğrencilerin yeni bir dili öğrenmek için gereksinim duyduğu standart sürelerle ilişkin değerlendirmeler, uygulama kapsamında elde edilen ilerlemenin görece sınırlı bir ders saati içinde gerçekleştiğini göstermektedir. Bununla birlikte, bu bulgunun doğrudan bir süre kısalması olarak yorumlanması yerine, teknoloji destekli öğretimin öğrenme sürecini destekleyebilecek bir unsur olarak değerlendirilmesi daha temkinli bir yaklaşım olacaktır.

Duyuşsal değişkenlere ilişkin bulgular, öğrencilerin konuşma öz yeterlik algılarında eğitim sonrasında artış olduğunu göstermektedir. Benzer biçimde, yazılı anlatıma yönelik tutumlarda olumlu yönde bir değişim olduğu ve yazma kaygısında azalma gözlemlendiği anlaşılmaktadır. Türkçe öğrenmeye yönelik genel tutumların ise süreç başında zaten olumlu olduğu, uygulama sonunda bu olumlu düzeyin korunduğu görülmektedir. Bu durum, teknoloji destekli öğretimin öğrencilerin mevcut motivasyonlarını sürdürmelerine katkıda bulunmuş olabileceğini düşündürmektedir.

Nitel görüşmelerden elde edilen veriler, öğrencilerin süreci genel olarak yararlı, motive edici ve erişilebilir bulduklarını göstermektedir. Eğitim platformunun anlaşılır olması, videoların kısa ve öz biçimde hazırlanması ve ders kayıtlarının tekrar izlenebilmesi, öğrenciler tarafından olumlu bulunan yönler arasında yer almaktadır. Öğretmenin iletişim becerileri ve geri bildirimleri de öğrenme sürecini destekleyici unsurlar olarak öne çıkmıştır. Bunun yanında, kısa hikâyeler ve etkileşimli sözlükler gibi ek içerik önerileri, öğrencilerin platformun zenginleştirilmesine yönelik beklentilerini göstermektedir.

Araştırmacı gözlem günlükleri de teknoloji destekli uygulamanın dil becerilerine çok yönlü katkılar sunduğunu düşündürmektedir. Sürecin başında, karma seviyeli çevrim içi sınıflarda başlangıç düzeyindeki öğrencilerin konuşma konusunda daha çekingen davrandıkları gözlenmiştir. Ancak zamanla kuralların kavranması ve daha fazla uygulama yapılmasıyla birlikte bu öğrencilerin öz güven kazandıkları ve konuşma etkinliklerine daha etkin biçimde katıldıkları görülmüştür. Yazma ödevlerine e-posta yoluyla verilen bireyselleştirilmiş geri bildirimlerin, öğrencilerin sistemli hatalarını fark etmelerinde ve yazmaya karşı daha olumlu bir tutum geliştirmelerinde etkili olduğu gözlenmiştir. Okuma becerilerinde ise ana dillerinde bulunmayan bazı Türkçe seslerin telaffuzunda başlangıçta yaşanan güçlüklerin zamanla azaldığı, öğrencilerin fonetik farkındalık geliştirdikleri ve daha akıcı okumaya yöneldikleri belirlenmiştir. Dinleme becerileri bakımından videoların oynatma hızının ayarlanabilmesi, öğrencilerin anlamayı kendi hızlarına göre düzenleyebilmelerine olanak sağlamıştır. Bunun yanında, öğrencilerin sistem kurulumu, canlı görüşme araçlarının kullanımı ve el yazısı ödevlerin dijital ortama aktarılması gibi alanlarda başlangıçta yaşadıkları teknik güçlükleri zamanla aştıkları ve dijital okuryazarlık becerilerinde gelişim gösterdikleri görülmüştür. Buna karşılık, internet bağlantısı ve elektrik kesintileri gibi dışsal sorunlar çevrim içi eğitimin temel sınırlılıkları arasında yer almıştır.

Sonuç ve Tartışma

Araştırma sonuçları birlikte değerlendirildiğinde, teknolojiyle desteklenen ve dikkatli biçimde yapılandırılmış bir öğrenme ortamının, Türkçeyi yabancı dil olarak öğrenen bireylerin fiil istemi konusundaki güçlüklerini azaltmada destekleyici bir rol oynayabileceği anlaşılmaktadır. Özellikle etkileşimli içerikler, tekrar edilebilir etkinlikler ve bireyselleştirilmiş geri bildirimler, öğrencilerin kendi öğrenme hızlarında ilerlemelerine ve hata örüntülerini daha görünür hâle getirmelerine katkı sağlamış görünmektedir.

Kalabalık yüz yüze sınıflarda her öğrencinin hatasına anında ve ayrıntılı geri bildirim vermek her zaman kolay olmayabilmektedir. Bu bağlamda, dijital platformların sunduğu esnek yapı ve dönüt imkânı, öğretim sürecini tamamlayıcı

bir unsur olarak değerlendirilebilir. Öğrencilerin istedikleri zaman etkinliklere dönebilmeleri, ders kayıtlarını yeniden izleyebilmeleri ve canlı destek yoluyla sorularına yanıt alabilmeleri, öğrenmenin sürekliliğini güçlendiren etmenler arasında yer almaktadır.

Bununla birlikte, bulguların doğrudan ve kesin nedensel sonuçlar olarak yorumlanmaması gerekir. Çalışmada karşılaştırılabilir bir kontrol grubunun bulunmaması, tek gruplu desenin kullanılması ve farklı dil düzeylerindeki öğrencilerin aynı süreçte yer alması, yorumların dikkatli yapılmasını gerektirmektedir. Ayrıca öğrenme süresine ilişkin değerlendirmelerin, doğrudan deneysel bir karşılaştırma yerine bağlamsal bir çerçevede ele alınması daha uygun görülmektedir.

Araştırma aynı zamanda teknoloji destekli öğretimin yalnızca dilsel gelişimle sınırlı kalmayıp öğrencilerin dijital becerileri ve öğrenme süreçlerine katılım biçimleri üzerinde de etkili olabileceğini göstermektedir. Öğrencilerin başlangıçta yaşadıkları teknik uyum sorunlarını zamanla aşmaları, bu tür uygulamaların dijital okuryazarlık açısından katkı sunabileceğini düşündürmektedir. Ancak teknik altyapıya bağlı sorunlar, bu uygulamaların planlanmasında göz önünde bulundurulması gereken önemli bir değişkendir.

Özetle teknoloji destekli eğitimin, Türkçenin yabancı dil olarak öğretimi bağlamında, özellikle istem gibi diller arası farklılık gösteren dilbilgisel yapıların öğretiminde işlevsel bir yaklaşım sunduğu söylenebilir. Gelecekte kontrol gruplu desenlerin kullanıldığı, farklı dil gruplarının araştırmaya dâhil edildiği çalışmalar yapıp daha uzun vadelerde bu eğitimin etkilerine bakılabilir.