

The Impact of AI-Supported Philosophy for Children (P4C) Activities on Primary School Students' Language and Thinking Skills

Yapay Zekâ Destekli Çocuklar için Felsefe (P4C) Etkinliklerinin İlkokul Öğrencilerinin Dil ve Düşünme Becerilerine Etkisi

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Abstract: This study investigates the effects of AI-supported Philosophy for Children (P4C) activities on the language and thinking skills of second-grade primary school students. P4C workshops were designed to integrate artificial intelligence tools in developing listening, speaking, reading, and writing skills, as well as higher-order thinking skills including critical and creative thinking, inquiry, and problem-solving. Using an action research design, the study involved 31 students, with data collected through a rating rubric, student products, teacher diaries, and audio-visual recordings. Over a five-week period, students showed marked improvement in productive language skills (speaking and writing) and measurable gains in reading and listening. The activities also enhanced thinking skills, fostering confidence in idea expression, richer vocabulary use, and greater engagement in philosophical inquiry. Additionally, AI-supported P4C increased students' attention, motivation, and participation. Future research should explore AI integration's impact on language and thinking skills across various grade levels.

Keywords: P4C, artificial intelligence, language skills, thinking skills.

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Introduction¹

One of the fundamental goals of 21st-century education is to foster the holistic development of students' language competencies and thinking skills. Among innovative approaches, Philosophy for Children (P4C) stands out for encouraging self-expression through curiosity and critical thinking. Developed under Matthew Lipman's leadership, P4C creates a "community of inquiry" where ideas are shared, discussed, and reflected upon, and has been shown to enhance intellectual and linguistic skills, particularly at an early age (Splitter & Sharp, 1995; Vansieleghem & Kennedy, 2011).

Adaptable to various age groups and disciplines, P4C enables children to think deeply about issues such as knowledge, ethics, and existence, fostering curiosity, reasoning skills, and philosophical questioning in collaborative settings (Mason, 2005). Designed in the 1970s, it aims not to transmit knowledge but to nurture questioning and critical thinking (Haynes, 2016). Lipman emphasized children's capacity for abstract thought and their ability to deepen understanding through lived experiences (Naji, 2013; Tepe, 2015). The "Community of Inquiry" method allows students to share ideas, ask questions, defend positions, and co-construct meaning (Jirásek & Jágerová, 2023), shifting the teacher's role to that of facilitator (Wu, 2021).

Research has shown P4C's contributions to cognitive, social, and affective domains, particularly problem-solving, communication, collaboration, and empathy (Aksoy & Uğraş, 2024). It supports intellectual depth from early childhood and fosters social communication skills (Stanley, 2007). In language learning, P4C encourages meaningful expression through philosophical inquiry (Lipman, Sharp, & Oscanyan, 1980). Dialogues promote active listening, perspective-taking, questioning, and reasoning (Fisher, 2013), thus developing expressive and receptive language skills. Studies report that P4C boosts self-confidence and speaking fluency (Balcı & Eryılmaz, 2024) and reduces speaking anxiety while enhancing motivation

¹ This study was prepared in accordance with the ethical approval of the Social and Humanities Ethics Committee of the Rectorate of Harran University, dated 30.04.2025 and numbered 2025/140.



and language gains in foreign language contexts (Öztürk & Günay, 2023). Akkocaoğlu Çayır (2021) found strong links between P4C practices and language lessons, with gains in idiomatic and metaphorical language tied to thinking skills. It also improves reading comprehension and critical text engagement (Abolmaali & Gavasaraee, 2016; Imani et al., 2016).

With rapid advances in educational technologies, integrating pedagogical approaches with digital tools is increasingly essential. While multiple studies confirm P4C's effectiveness in enhancing thinking and linguistic competence (Acar & Arslan, 2023; Öztürk & Günay, 2023), most are conducted in traditional settings without technological integration. Contemporary research highlights AI-supported platforms' positive effects on motivation and on language and cognitive skills (Ab Wahab et al., 2022).

Combining P4C pedagogy with AI tools presents new opportunities for language and thinking skills development, yet systematic studies at the primary school level remain scarce. This action research investigates the effects of AI-supported P4C activities on primary students' language and thinking skills, incorporating student perspectives to provide both quantitative and qualitative insights. The following research questions guided the study:

1. What is the effect of AI-supported P4C activities conducted with primary school students on their Turkish language skills?
2. What is the effect of AI-supported P4C activities conducted with primary school students on their thinking skills?

Method

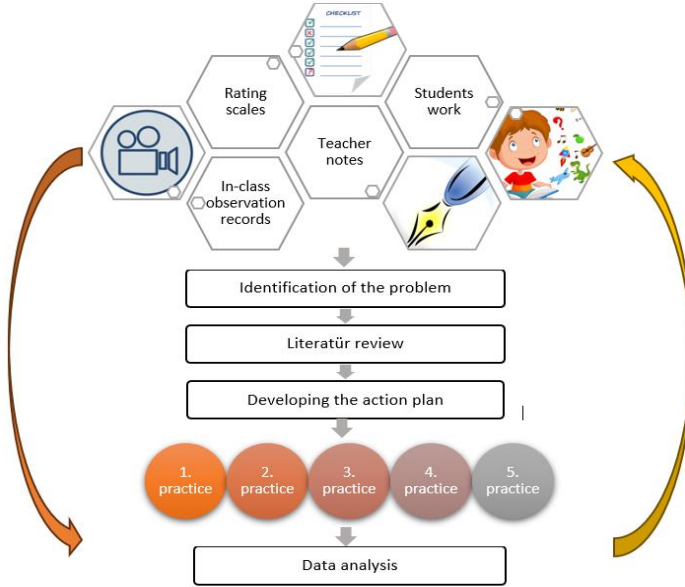
Ethical approval for this study was obtained from the Harran University Social and Human Sciences Ethics Committee, with the decision dated 16.04.2025 and numbered 2025/140.

This study, which examines the development of language skills among second-grade primary school students through AI-supported P4C practices, was designed as an action research study. In action research, field experts are directly involved in the process and advance the action in a cyclical manner (Hinchey, 2008). Within this design, the researcher is both knowledgeable about the theoretical framework and actively engaged in testing a new approach, making necessary adjustments throughout the



process (Yıldırım & Şimşek, 2018). The process followed during the study is illustrated in Figure 1.

Figure 1. *Action Research Plan*



An examination of Figure 1 shows that, in the initial phase, the researchers conducted P4C workshops aimed at enhancing students' thinking skills. Analysis of student outputs, audio and video recordings, teacher journals, and rubrics indicated that, although there was improvement in thinking skills, the overall class average for self-expression and language skills had not reached the desired level. To address this issue, a literature review was conducted, and an action plan was developed based on the findings. Following each implementation, audio and video recordings, teacher notes, student outputs, and assessment rubrics were reviewed, and necessary interventions and adjustments were made to improve process. Upon completion of all activities, the collected data were organized and reported.

Problem Definition

One of the researchers, also the classroom teacher, conducted P4C workshops in their class. While these workshops enhanced students'

critical thinking, it was determined that adaptations were needed to better support language skills. Data were shared with the second researcher, an expert in the field, and a joint literature review was conducted. In line with contemporary educational paradigms, it was assumed that integrating AI into P4C would positively impact language development. This assumption stemmed from the view that, given children's short attention spans and high exposure to stimuli, P4C activities should be adapted to sustain engagement.

Research Setting and Participants

The study was carried out with 31 second-grade students (16 male, 15 female) in a public primary school in Ankara, Türkiye. Operating since 2021, the school has 31 classrooms, 1,033 students, and facilities including a gymnasium, music and art workshops, and smart boards with internet access. All participants had basic reading and writing skills, though at varying levels. The classroom also contained a library with books for different reading levels.

Role of the Researcher/Classroom Teacher and Ethical Principles

In action research, participants contribute to problem identification, implementation, and evaluation (Bargal, 2008). One researcher, serving as the classroom teacher, collaborated with the second researcher in preparation, activity design, and evaluation. The school administration was informed, parental consent was obtained, and students' identities were coded (S1, S2, etc.). Ethical approval was granted by the Social Sciences Ethics Committee of a public university (Decision No: 2025/140).

Data Collection

Data were collected using a rating rubric, audio-video recordings, teacher field notes, and student products.

Rating Rubric: A rating rubric—defining criteria and performance levels for specific tasks (Andrade, 2005) was applied after each implementation. Learning objectives were first determined, followed by identifying listening, speaking, reading, and writing skills (Brookhart, 2013). Criteria were jointly developed by the researchers, with performance levels defined for each (Arter & McTighe, 2001). The rubric was piloted, revised, and reviewed by a Turkish language expert. Each rubric, designed for the four



language skills, had scores ranging from 5 to 20. Post-implementation, both researchers scored collaboratively and entered results into SPSS for basic analysis.

Teacher (Field) Notes: Field notes involve recording notable events or challenges observed during the research (Fetterman, 2010). In this study, the classroom teacher systematically documented observations in the natural learning environment. These records were later analyzed and interpreted collaboratively with the second researcher.

Action Plan and Implementation: To address students' challenges in expressing thoughts, the researchers conducted a literature review to identify effective strategies. In line with contemporary educational needs, AI-supported applications were selected. The process followed the cyclical nature of action research, with adjustments made based on emerging data (Curtis et al., 2010). Details of themes and implementation steps are presented in Table 1.

Table 1. *AI-Supported P4C Activities*

Order	Theme	Stimulus	Artificial Intelligence Support	Language Skill
1.	Dream- Reality	AI drawing	ChatGPT/ Dall.E/Natural Reader/ Story Jumper/ Google Speech-to- Text API	Listening / Speaking / Reading / Writing
2.	Respect for differences	Spork	ChatGPT/ Dall.E/Natural Reader/ Story Jumper/ Google Speech-to- Text API	Listening / Speaking / Reading / Writing
3.	Friendship	Alexander and the wide-up mouse	ChatGPT/ Dall.E/Natural Reader/ Story Jumper/ Google Speech-to- Text API	Listening / Speaking / Reading / Writing
4.	Familial love	Where the Wild Things Are	ChatGPT/ Dall.E/ Microsoft Azure Neural TTS/Canva	Listening / Speaking / Reading / Writing
5.	Mutual help	Three Cats One Wish	ChatGPT/ Dall.E/ Microsoft Azure Neural TTS /Story Jumper/ Google Speech-to-Text API	Listening / Speaking / Reading / Writing

According to Table 1, each of the five application processes, structured around different themes, began with a distinct stimulus. Activities targeting listening, speaking, reading, and writing skills were then implemented through the AI applications listed in the table. While most activities



took place in the classroom, some were completed at home with family support. In qualitative research, credibility and transferability are key to ensuring trustworthiness (Creswell, 2014). To strengthen credibility, prolonged engagement, data triangulation, negative case analysis, and an external observer were utilized (Guba, 1981).

Prolonged Engagement: Long-term interaction with the setting enables deeper understanding and detection of unexpected details (Creswell & Poth, 2018). The dual role of the researcher as classroom teacher allowed natural observation of in-class and out-of-class processes, supporting detailed data collection.

Triangulation: Reliability was enhanced through multiple data sources, including assessment rubrics, semi-structured interviews, and teacher field notes (Silverman, 2013).

Negative Case Analysis: When findings contradicted existing data, the process was restructured, and new activities were designed accordingly (Creswell & Poth, 2018).

External Observer: An external observer, who did not directly participate in activities, provided an objective perspective during data collection and analysis (Creswell & Poth, 2018). In this study, one researcher led the activities while the other verified observations and interpretations.

Consistency: Dependability and confirmability require that different researchers reach similar interpretations (Lincoln & Guba, 1985). The two researchers first evaluated data independently, then resolved inconsistencies through discussion (Nowell et al., 2017).

Transferability and Credibility: Transferability depends on providing detailed descriptions so readers can relate findings to similar contexts (Lincoln & Guba, 1985; Nowell et al., 2017). Accordingly, findings were enriched with visual materials and direct student quotations, ensuring a comprehensive and contextualized report.

Findings

This section presents the findings regarding the impact of AI-supported P4C workshops on the development of language skills among second-grade students.

1st Implementation (05.05.2025–09.05.2025)



In the first implementation, AI-supported activities were organized to enhance the development of students' basic language skills demonstrated during the P4C workshops. The theme of this session was determined as "*Imagination and Reality*."

Speaking

At the initial stage of the P4C session, a drama activity titled "*What Would I Be If I Imagined?*" was conducted as a warm-up exercise. Subsequently, the AI-generated visual shown in Figure 2 was used, and students were asked to reflect on the image. Volunteer students took turns sharing what the visual evoked in their minds.

What is real, and what is imaginary?

Are the things we see in our dreams real?

Does an imaginary friend truly exist?

Is a cartoon character real?

If something cannot be seen but can be felt, is it real?

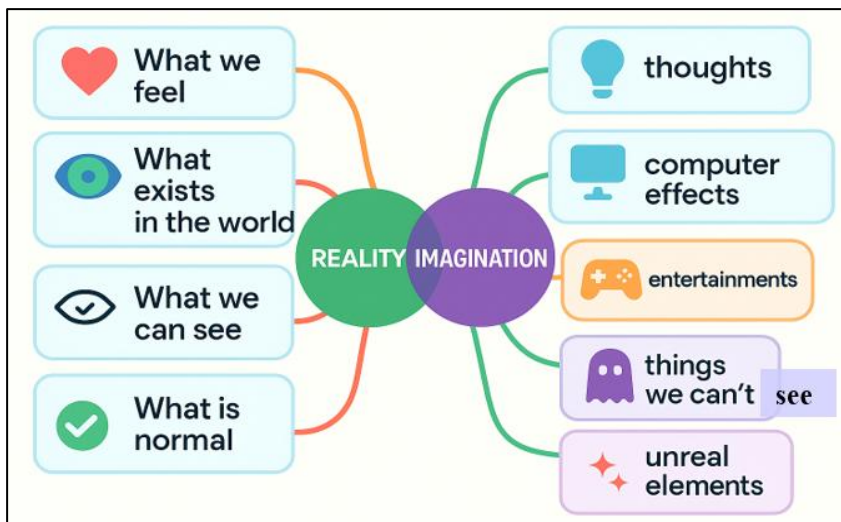
Figure 2. *AI-generated visual*



Subsequently, the following questions were posed to the students, and based on their responses, key concepts were identified and used to create a mind map on the board focusing on the concepts of "*reality*" and "*imagination*":

The mind map drawn on the board was collaboratively revised with the students, finalized, and then transferred to ChatGPT for visual enhancement. Figure 3 presents the AI-generated version of the mind map.



Figure 3. *AI-generated version of the mind map*

After examining the visual in Figure 3, students were asked to compare the AI-generated version of the mind map with the one they had created themselves. Their responses were recorded.

Listening

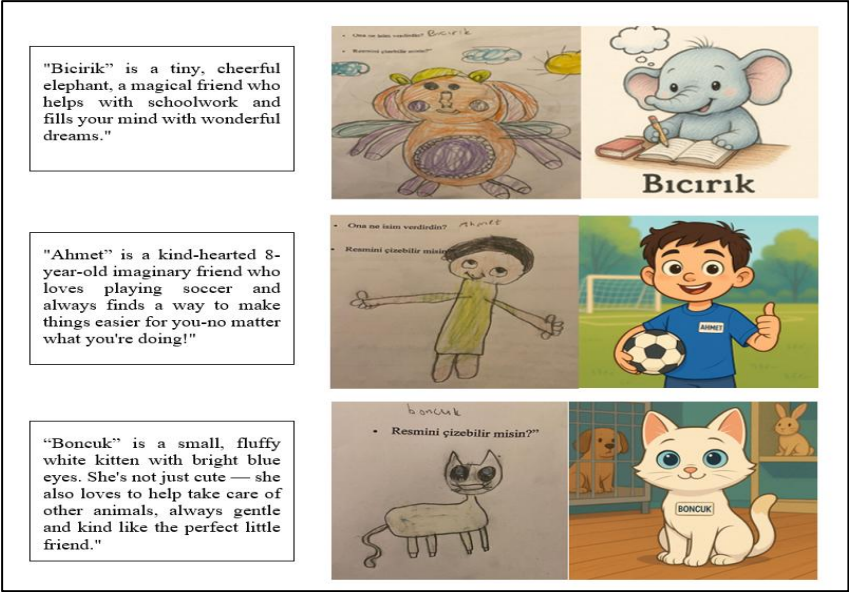
From the mind map produced during the P4C activities, five concepts identified by the students (*imagination, computer effect, normal, intangible*) were selected. Commands incorporating these concepts were entered into an AI tool to generate a story. The created story was then processed through the AI text-to-speech program, Google Speech-to-Text API, and played for the class. Following the listening activity, students answered comprehension questions related to the story.

Writing

In this stage of the study, students were asked to use an “imagination machine” to create an imaginary friend and visualize it. While writing, they were required to provide detailed descriptions of the friend’s appearance, personality, and the ways in which the friend could be helpful. Volunteer students presented and read their work aloud in class. The verbal descriptions of selected students’ imaginary friends were then entered into an AI tool for visualization. Afterwards, the students compared their own drawings with the AI-generated illustrations and discussed the differences. Examples of student work are presented in Figure 4.



Figure 4. Comparison of student products and ai-generated products



Evaluation

Following the implementation of the AI-supported P4C workshops, video recordings, students’ written products, and teacher notes were examined by the researchers to assess students’ listening, speaking, reading, and writing skills. The rubrics developed for the study were completed for each student. The averages obtained from the first implementation are presented in Table 2.

Table 2. Student Scores After the First Implementation

Variable	N	Min.	Max.	M	SD
Listening 1	31	6	19	12,10	3,11
Speaking 1	31	6	15	11,32	2,52
Reading 1	31	5	17	11,97	2,68
Writing 1	31	5	15	11,87	3,20

The mean scores for students’ four core language skills after the first



implementation were relatively close to one another. The average score for listening was ($M = 12.10$, $SD = 3.11$), for speaking ($M = 11.32$, $SD = 2.52$), for reading ($M = 11.97$, $SD = 2.68$), and for writing ($M = 11.87$, $SD = 3.20$). These values indicate that students demonstrated similar performance levels across all language domains at the initial stage.

An excerpt from the teacher's notes regarding the process is as follows:

"We began the P4C activity using an image generated by DALL·E, but there were issues with productivity—participation was insufficient, and responses and ideas were monotonous. More engaging stimuli appropriate to their level should be found."

As evidenced by the teacher's notes and recorded observations, students' levels of engagement varied throughout the process, suggesting that the continuation of the activities would require more effective and stimulating prompts.

2nd Implementation (12.05.2025–16.05.2025)

Following the completion of the first implementation, several adjustments and planning activities were carried out, and the theme for the second implementation was determined as *"Respect for Differences."*

Listening–Speaking

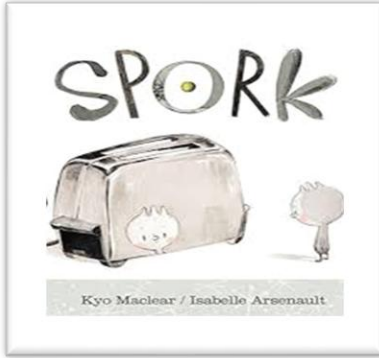
The P4C workshop began with preparatory and warm-up activities. For this purpose, a drama activity was organized based on the theme of respect for differences. Through the drama activity, students identified peers who shared similar characteristics with them as well as those who differed from them. At the conclusion of the activity, the teacher facilitated a summary of the discussion, after which the stimulus stage of the workshop began.

Based on the teacher's notes from the first implementation—which indicated that the visual stimulus used in the P4C workshop was not sufficiently engaging—a literature review was conducted. Findings from previous studies suggesting that picture books extend attention spans and increase interest among younger students informed the decision to use picture books as the stimulus in the subsequent process (Mayer, 2005; Nikolajeva & Scott, 2001). The picture books were selected through consensus among the researchers, taking into consideration criteria such as suitability for the



student profile, thematic relevance, and appropriateness of language and expression. In the initial stage, the picture book titled *Kaşal* was used. An illustration from the book is presented in Figure 5.

Figure 5. *Picture book 1*



Authored by Kyo Maclear and illustrated by Isabelle Arsenault, the book's main character is a kitchen utensil named *Spork*, formed from the combination of a fork and a spoon. Due to its differences, Spork is excluded in the kitchen, but one day these very differences prove useful, leading Spork to accept and embrace its uniqueness (Maclear, 2010). The book, which aligns well with the theme of respect for differences, was read interactively in the classroom. Following the reading, a discussion about the book was held to initiate the thinking process.

Reading

Students were divided into groups, and each group was tasked with producing two philosophical questions related to the book to be asked to an AI tool. Guidance and examples were provided on how to pose and refine questions for the AI. One final, revised question from the students was selected and posed to ChatGPT via the smartboard, and the class reflected on whether the questions qualified as philosophical. Examples of the students' questions and the AI's responses are shown in Figure 6.



Figure 6. Student questions asked to the ai and the corresponding responses

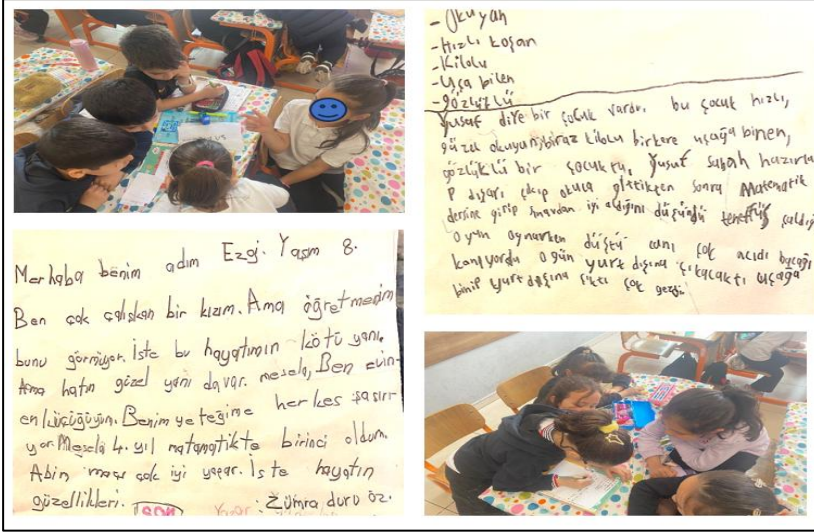
"Students' questions"	ChatGPT responses
1. Dünyada Kaşal gibi hisseden insanlar var mı? "Are there people in the world who feel like 'Kaşal'?"	"Dünyada Kaşal gibi insanlar var mı?" sorusu felsefi mi? Evet, bu felsefi bir sorudur. Çünkü bu soru bize düşündürür, hemen cevabı verilemez.
— İnsanların dış görünüşü neden birbirinden farklıdır? "Why do people's appearances differ?"	"Neden görünüşümüz birbirinden farklıdır?" Bu soru, felsefi de olabilir, bilimsel de — nasıl sorduğuna bağlı.
— Dünyada herkes aynı olsaydı ne olurdu? "What would happen if everyone in the world were the same?"	"Dünyada herkes aynı şeyi yaparsa ne olur?" Bu soru felsefi bir sorudur. Bu soru bize şunu düşündürür: • Herkes aynı mesleği yaparsa? • Herkes aynı yemeği yerse? • Herkes aynı şekilde düşünürse? Bu sorunun tek bir doğru cevabı yoktur. Bu yüzden bu soru felsefi bir sorudur. Çünkü: • İnsanları düşündürür. • "Ne olurdu?" diye hayal kurdurur. • Cevabı herkes için aynı olmayabilir.

According to Figure 6, two of the students' questions were deemed philosophically appropriate by the AI, while one question received the response that it could be considered both philosophical and scientific. The AI's responses were read aloud in the classroom and discussed collectively.

Writing

For the writing activity, groups of five students were formed, and each student was asked to answer the question, "*What makes me different? Am I proud of it?*" in a few sentences. The responses were written on individual sheets of paper, after which each group combined their members' responses. Within the given time frame, students were then instructed to merge the listed characteristics into a single, shared character. The students' writing process and their written products are shown in Figure 7.



Figure 7. *Students' character creation process*

As shown in Figure 7, students first determined the characteristics of the characters they would create based on their own traits (e.g., studious, fast runner, overweight, able to fly, wearing glasses) and then combined these traits to write a story. After each group presented their character, they visualized its features with the help of an AI tool. Examples of the students' descriptions and the generated illustrations are presented in Figure 8.

Figure 8. *Visualization of characters using artificial intelligence*

As shown in the figure, the students' prompts appear at the bottom, while the AI-generated visuals are displayed above. For example, a character described as calm, talkative, intelligent, small, and fast was visualized by the AI as a girl named *Esila*.



Evaluation

Following the second implementation, evaluations were conducted using the assessment rubrics. The resulting scores are presented in Table 3.

Table 3. *Student Scores After the Second Implementation*

Variable	N	Min.	Max.	M	SD
Listening 2	31	6.00	18.00	12.55	2.85
Speaking 2	31	5.00	15.00	11.77	2.55
Reading 2	31	7.00	18.00	12.19	2.61
Writing 2	31	6.00	17.00	12.94	2.90

An examination of the mean scores from the second implementation revealed that the highest average was observed in *Writing 2* ($M = 12.94$, $SD = 2.90$), while the lowest average was in *Speaking 2* ($M = 11.77$, $SD = 2.55$). Similar standard deviation values were recorded across all variables, suggesting a balanced distribution of scores around the mean.

The teacher's notes included the following statement:

"While transferring the characters created by the groups to the AI, there was some congestion due to having a total of six groups. The long waiting time for each group caused impatience. Some students expressed a desire to use it themselves, but this does not seem feasible with only one smartboard available."

Analysis of the rubrics, student statements, and teacher notes indicated that students demonstrated improvement in the second week's implementation compared to the first week. A particularly notable difference was observed in the writing activity. However, it was also determined that using a single smartboard for AI activities with all 31 students created logistical difficulties and concentration challenges. To address this issue, the researchers decided to develop alternative solutions for subsequent implementations.

3rd Implementation (19.05.2025–23.05.2025)

The theme of the third implementation was determined as *"Friends-hip."* As in the previous implementations, the process began with

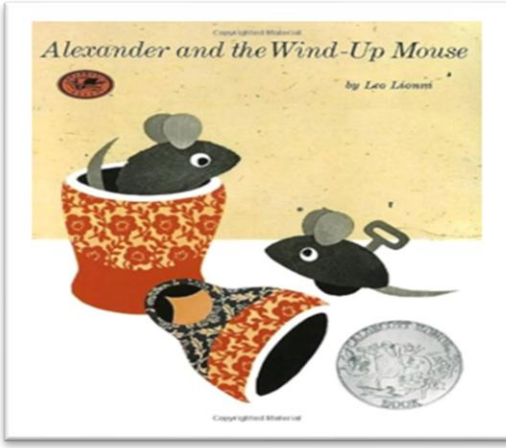


preparatory and warm-up activities, followed by the *community of inquiry* stage.

Listening-Speaking

In the *community of inquiry* stage, the stimulus used was the book *Alexander and the Wind-Up Mouse* (Leo Lionni, 1969), which tells the story of the friendship between a real mouse named Alexander and a mechanical toy mouse named Willy. An illustration from the book is presented in Figure 9.

Figure 9. *Picture book 2*

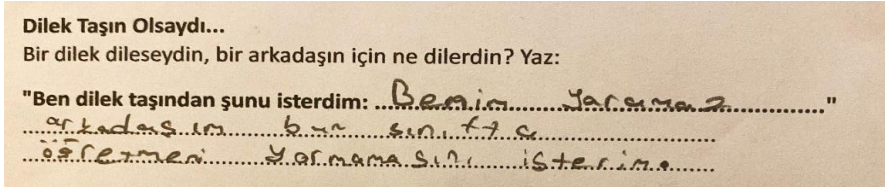


After completing the interactive reading activity, the question “*If you had the purple pebble from the book, what wish would you make for our class?*” was posed to the ChatGPT application. The AI-generated response was then read aloud in the classroom and discussed. The AI’s response was transferred to the Natural Reader application, where the written text was read aloud. To assess students’ listening comprehension, questions about the content of the text—played twice through the AI tool—were asked. Afterwards, a discussion was held on the similarities and differences between the generated visual and their actual classroom.

Writing

For the writing activity, students were asked the question, “*If you had a wishing stone and could make one wish for a friend, what would it be?*” and were instructed to write their responses. The response of student S21 is shown in Figure 10.



Figure 10. *Example of a student's writing*

In the figure, the student expressed the following thought: *"I would wish for my mischievous friends in this class not to tire out my teacher."* Examples of other students' responses are as follows:

"I would wish for S8 to get a high score on the exam because his mother gets angry when he scores low."

"I would wish for S14 (a friend who transferred to another school this year) to return here. We were very happy as a group of three friends."

"I would wish for S27 (a friend hospitalized) to recover quickly and return to the class."

Writing-Reading

At this stage of the implementation, students were divided into groups of five and asked to write a text in response to the question, *"If you were to describe friendship with a picture, how would you do it?"* Within the allotted time, each group collaboratively produced a written text. The group spokesperson read the text aloud, after which the entire class was asked to visualize the setting described. While students created their drawings, commands were entered into the AI tool to generate a visual representation of the text. In the final stage, the class discussed whether the AI or their peers had interpreted the writing more effectively.

Students in the second group expressed the concept of friendship as follows:

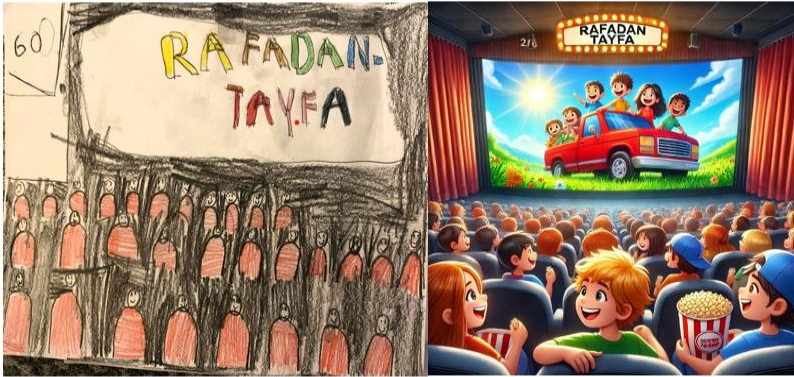
"When we all went to the cinema together with our classmates, we had so much fun. It was one of the best memories that reminded us of our friendship. We took a bus trip, queued for popcorn, sat wherever we wanted, and waited for the 'Rafadan



Tayfa' movie to start. Even though it was dark, we laughed a lot, and the movie was great."

An example of the drawing related to the second group's text and the AI-generated visualization of that text is presented in Figure 11.

Figure 11. Student drawing and ai-generated product



Finally, the students discussed and reflected on the extent to which the drawings conveyed the concept of *friendship* and how effectively the command given to the AI was executed. The following guiding questions were used in the discussion:

- How do the facial expressions of the audience differ between the two images? In which one do they appear happier?
- In what ways are the seats and the audience in the two theaters similar, and in what ways are they different?
- In your opinion, what is the difference in "soul" between a drawing made by a person and one made by a machine? Which appears more "genuine"? Why?
- In the AI drawing, everything is very neat and colorful. Do you think something perfect is more valuable, or something created through effort? Why?

Through these questions, students not only enhanced their observation skills but also engaged in critical thinking about the differences between technological products and handmade creations.

Evaluation

The scores obtained from the assessment rubrics following the third implementation are presented in Table 4.

Table 4. *Student Scores After the Third Implementation*

Variable	N	Min.	Max.	M	SD
Listening 3	31	8.00	19.00	12.93	2.75
Speaking 3	31	7.00	15.00	12.22	2.20
Reading 3	31	8.00	18.00	12.41	2.41
Writing 3	31	6.00	17.00	13.03	2.75

An examination of the mean scores from the third implementation revealed that the highest average was in writing ($M = 13.03$, $SD = 2.75$), while the lowest was in speaking ($M = 12.22$, $SD = 2.20$). Similar standard deviation values were observed across all variables. Analysis of the data indicated that, in the third implementation, students demonstrated improvement in both thinking skills and language skills.

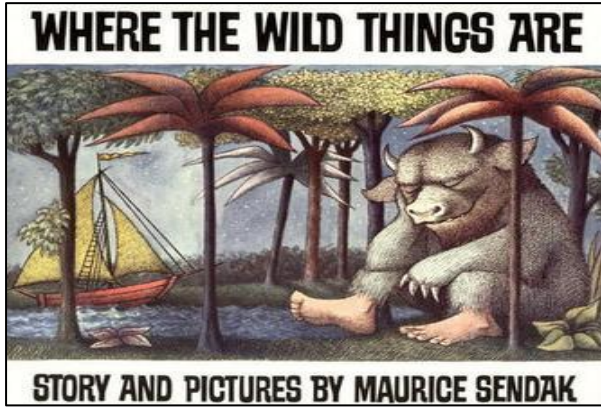
4th Implementation (26.05.2025–30.05.2025)

The theme of the fourth implementation was determined as “*Family Love*.”

Speaking

In line with the family theme, Maurice Sendak’s *Where the Wild Things Are* (1963) was used. The book tells the story of the main character, Max, who chooses to return home after becoming the king of the “wild things,” exploring the balance between the desire for independence and the need for secure attachment, and emphasizing the uniqueness of family love. An illustration from the book is presented in Figure 12.



Figure 12. *Picture book 3*

After completing the interactive reading activity, the process moved on to the inquiry stage. The questions are presented in Figure 13.

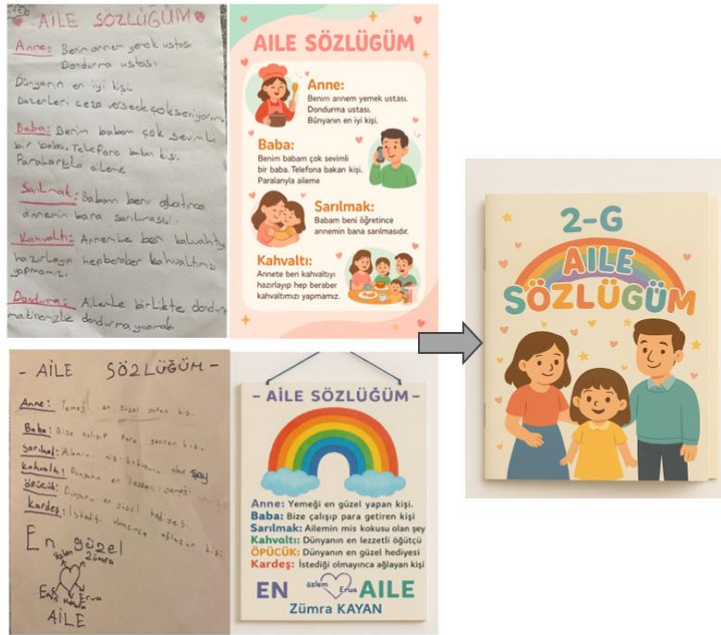
Figure 13. *Questions*

- Why did Max choose to return home?
- Max's mother had left his food still warm. What do you think this means?
- When our family gets angry at us, do they still love us?
- Does family love continue even when we make mistakes?
- Do you think being a family is just living in the same house?
- What does it mean to be a family?
- Max was the king of the "wild things," yet he still wanted to return home. Why?
- Why does our family sometimes protect us by setting boundaries?

Writing-Reading

The aim of the writing activity was to create a *family dictionary* together with the students. For this purpose, students explained predetermined concepts based on the personal meanings these concepts held for them. In the classroom, each student read their own original definition aloud. Afterwards, the students' dictionary entries were illustrated by their families at home, compiled, and printed as a booklet titled "*2/G Class Family Dictionary*." Figure 14 presents examples of students' work and the completed booklet.



Figure 14. Family dictionary activity

Upon examining the figure, one student defined the concept of *mother* as “the person who cooks the most delicious meals” and the concept of *bugging* as “my mother’s sweet scent.” Another student described the concept of *sibling* as “the person who cries when they don’t get what they want.”

Listening

At this stage of the implementation, students were asked to identify and write down a sentence frequently used by their mother or father. Examples from students included:

“Clean your room immediately.”

“If you don’t eat your meal, you won’t grow taller.”

“If you finish your homework, you can play with your tablet.”

“You are my everything.”

Some of the students’ sentences were entered into an AI-supported



text-to-speech application called *Microsoft Azure Neural TTS*, which read the sentences with various emotions. Students listened to different versions of the same sentence—such as sad, excited, happy, and angry. After each version, they verbally expressed what they felt and thought. The process was recorded on video.

Evaluation

Following the fourth implementation, the data collected through the research instruments were analyzed. The results are presented in Table 5.

Table 5. Student Scores After the Fourth Implementation

Variable	N	Min.	Max.	M	SD
Listening 4	31	8.00	19.00	12.58	2.91
Speaking 4	31	8.00	18.00	12.74	2.39
Reading 4	31	8.00	18.00	12.58	2.43
Writing 4	31	7.00	18.00	12.19	2.61

The analysis revealed that the average scores for the four core language skills were relatively close to one another. The highest mean score was recorded in *Speaking* ($M = 12.74$, $SD = 2.39$), indicating that participants performed slightly better in oral expression compared to the other skills. The lowest mean score was observed in *Writing* ($M = 12.19$, $SD = 2.61$), suggesting that students experienced comparatively greater difficulty in written production.

Given that progress in writing skills lagged behind the other skills, the researchers reviewed the process and, in accordance with the steps of action research, decided to design one more activity specifically targeting writing.

At this stage, students were asked to create a slogan that described their family. To guide this process, they were first prompted with the question: “Which word best describes my family?” (e.g., trust, joy, togetherness). Based on the word they selected, they then formulated their slogans. For example, student S17, who chose the word “laughter,” produced the slogan “We laugh together, we cry together!”



Once all students had created their slogans, they were instructed—aligned with the theme of the activity—to collaborate with their families in using an AI tool. Together with their families, they used the DALL·E application to create a visual representation of their slogan. Students then presented their AI-generated visual alongside a written text they had prepared. Figure 15 shows the visual created by student S11 in collaboration with their family.

Figure 15. *AI-generated product with a family theme*



In the figure, the student based their work on the concept of “*fun*” and created the slogan “*Having fun is our thing,*” visualizing a joyful memory shared with their family. The teacher’s notes on the process included the following statement:

“In previous implementations, it was impossible to have each student use the AI tool individually on a single smartboard, so I had to make selections. This lowered the motivation of the students who were not chosen. In this week’s activity, in line with the family theme, I involved the parents. The products prepared at school were transformed into visuals at home with their families. I also received positive feedback from parents, noting that it was a different and enjoyable experience.”

As reflected in the teacher’s note, involving families in this stage of the implementation was well-received by both students and parents.

5th Implementation (02.06.2025–05.06.2025)

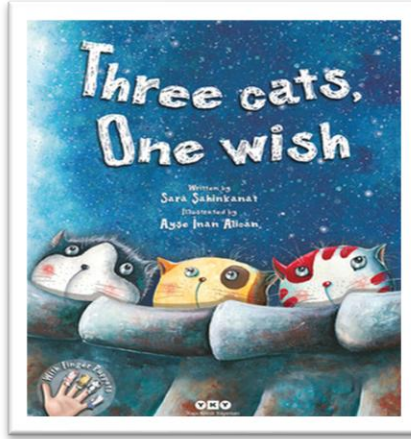
The theme of the final implementation was determined as “*Helping Others.*”



Speaking

In alignment with the theme of helping others, the picture book *Üç Kedi Bir Dilek (Three Cats and a Wish)*, written by Şahinkanat (2014), was selected. The book focuses on the friendship of three cats—Piti, Pati, and Pus—and conveys to children the importance of making an effort for the happiness of others and the value of selflessness. An illustration from the book is presented in Figure 16.

Figure 16. *Picture Book 4*



The implementation process began with P4C activities in which the picture book was used as a stimulus. After completing the interactive reading, the session moved to the *community of inquiry* stage. The questions for the community of inquiry are presented in Figure 17.

Figure 17. *Questions for the community of inquiry*

- Can you make a wish for a friend?
- Have you ever given up something for a friend?
- Why is it important to try to fulfill someone's wish without them knowing?
- How might the person helping feel? How might the person receiving help feel?
- Why do you think helping others is important?
- When do you think a friend becomes a "good friend"?
- What are the best aspects of helping each other?

The thinking and speaking activity—facilitated by the teacher without providing direct guidance—was completed, and a mind map was



created based on the students' responses. As in the previous implementations, the mind map was entered into an AI tool, visualized, and discussed.

Writing-Reading

At this stage, students were asked the question, "Have you ever helped someone before, or has someone ever helped you?" and instructed to write about such an experience. Within the allotted time, students completed the writing activity. Afterwards, some of the students' stories were entered into an AI tool to be visualized. A visual from this process is presented in Figure 18.

Figure 18. Helping-themed writing-reading activity



In the first visual in Figure 18, student S9's memory was illustrated—recounting how, after getting lost at the market while shopping with their



mother, they were helped by the police and reunited with their family. The second visual depicts student S20's memory of giving some of their allowance to a beggar they encountered while walking along the street. While some of the stories were visualized at school and narrated aloud by the respective students, others were visualized at home and presented in class the following day. A "Helping Board" was created in the classroom, where AI-supported student writing products were displayed.

Listening

At this stage of the implementation, each student was asked to make a wish and write it down in a paragraph, including the reasons for their wish. The teacher then reminded the class of the listening rules and asked them to focus all their attention on their peers. Each student took turns reading their wish aloud once. Afterwards, according to a list prepared in advance by the teacher, each student recalled the wish of a designated peer and imagined that they possessed a magical power to help fulfill it. To make these assistance proposals more concrete, the AI tool was used to visualize the suggestions. Figure 19 presents examples of visualizations of the students' assistance proposals.

Figure 19. *Helping-themed visuals*



In the first visual in Figure 19, student S1 expressed a strong passion for football and a desire to one day become a world-famous football player. Listening to this, student S15 proposed the following assistance:



“I am the most famous football manager in England, and if you are this talented, I can introduce you to the best football players in the world so you can learn from them how to succeed.”

In the second visual in Figure 19, student S12 shared that although they love animals, their family does not allow them to keep pets at home, and thus they wished to have many animals. To help fulfill this wish, student S3 imagined the following:

“If your family doesn’t let you keep animals at home, I would build you and your family a house on the edge of a large forest. That way, you could visit the forest every day, take care of many animals, and even train wild ones.”

After reviewing the visuals and suggestions, both the students who received and those who offered help shared their feelings orally with the class.

Evaluation

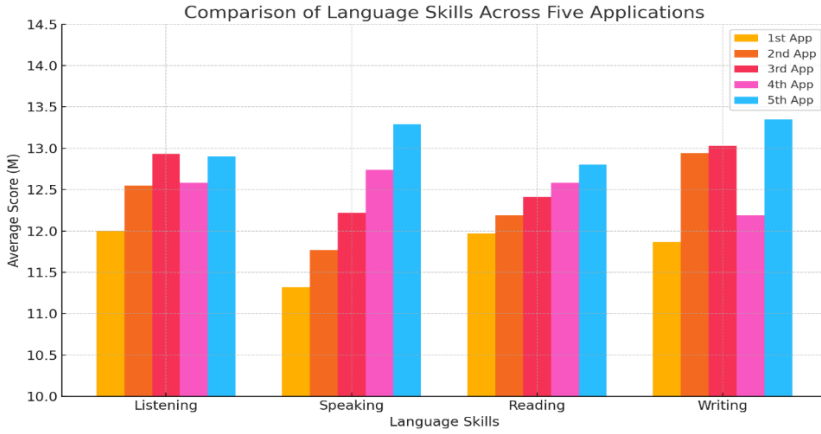
Following the fifth implementation, scores were calculated based on the data obtained from the research instruments. The analyses for the fifth implementation are presented in Table 6.

Table 6. *Student Scores After the Fifth Implementation*

Variable	N	Min.	Max.	M	SD
Listening 5	31	8.00	18.00	12.90	2.58
Speaking 5	31	9.00	18.00	13.29	2.11
Reading 5	31	9.00	18.00	12.80	2.02
Writing 5	31	9.00	17.00	13.35	1.99

After the completion of the implementation process, all data were re-examined, and the progression of students from the first to the final implementation in the five-week process of developing language skills through AI-supported P4C activities is presented in Figure 20.



Figure 20. *Language skills development chart*

According to Figure 20, a steady improvement over time is evident when comparing the first and final implementations, with the most notable progress observed in writing and reading skills.

- Speaking skills showed consistent growth from the first to the fifth implementation (11.32 → 13.29).
- Writing skills exhibited the greatest increase among all skills (11.87 → 13.35).
- Listening skills peaked in the third implementation, followed by slight fluctuations.
- Reading skills demonstrated a slower yet steady upward trend compared to the other skills.

The data indicate that the implementations contributed positively to students' language development. In particular, the recorded gains in productive skills—speaking and writing—highlight the effectiveness of providing students with AI-supported, hands-on activities. Positive improvements were also observed in listening and reading skills, although these were relatively more limited in scope.

Discussion

The findings of this study indicate that AI-supported P4C activities produced notable improvements in primary school students' language skills, particularly in speaking and writing. This finding aligns with existing literature, which points to the potential of the P4C approach in language



education. Indeed, Lipman (2023) emphasizes that the P4C method not only develops students' thinking skills but also contributes to the improvement of fundamental language skills. Alt's (2019) study found philosophical discussions with young children support language development, particularly by enhancing their ability to use more complex linguistic structures and conjunctions during discussions. This corresponds with the current action research, in which students demonstrated a richer vocabulary and improved expressive abilities as a result of participating in P4C sessions.

Moreover, students were observed to gain confidence in expressing their thoughts verbally. Similarly, Balcı and Eryılmaz (2024) report that P4C activities foster positive emotions such as curiosity, excitement, and empathy in students, thereby improving effective speaking skills and collaborative abilities, as well as helping to reduce speaking anxiety. The reduction in students' speaking anxiety and their increased willingness to express themselves can be attributed to the non-judgmental, open-ended discussion environment characteristic of P4C. In the literature, the safe discussion setting provided by P4C is frequently highlighted as an important factor in developing speaking skills, as it allows students to express themselves freely, thereby reducing speech-related anxiety (Kankam & Boateng, 2017; Yurtbakan, 2023).

Another noteworthy finding was the significant improvement in writing skills. Students became more willing to participate in creative writing activities and, compared to earlier sessions, produced more detailed and well-organized texts. AI-supported visual and interactive stimuli were found to facilitate idea generation and reduce "blank page anxiety" (Johnsrud, 2024). Another result of the study was that ChatGPT-based feedback and visualizations enriched students' written expression. This finding is consistent with literature indicating that AI tools can improve language skills by providing personalized feedback in language education (Yang et al., 2024).

On the other hand, improvements in reading and listening skills were more limited compared to productive skills. While reading comprehension showed slower but steady progress, listening skills exhibited some fluctuations. This suggests that the influence of P4C activities on receptive language skills may be more indirect and gradual. Similarly, a study conducted



by Özcan et al. (2023) reported that P4C-based Turkish lessons improve reading and listening skills, but these improvements are less pronounced than in productive skills.

Another key result of this study is that AI-supported P4C applications had a substantial positive effect on students' higher-order thinking skills. The findings show that students developed skills such as critical thinking, creative thinking, inquiry, and problem-solving. In the literature, it is often emphasized that the primary aim of P4C is to teach students how to think and to foster deeper, independent, and creative thinking habits (Lipman, 2023). A systematic review by Trickey and Topping (2004) on P4C revealed that this approach leads to broad improvements in students' cognitive abilities.

There are also noteworthy points to discuss regarding the effect of AI support on thinking skills. In this study, AI tools were integrated into students' thinking processes; for example, visualizing mind maps with AI enabled students to see abstract concepts in a concrete form. Such technology-supported approaches may encourage deeper thinking when students engage in critical analysis or explore conceptual connections. The literature also contains evidence that educational technologies, when used appropriately, can support higher-order thinking.

Limitations

Despite the promising findings, this study has some limitations that should be acknowledged. First, the study was conducted as a qualitative action research, which inherently involves small-scale, context-specific samples (Mills, 2018). Accordingly, the sample size was limited to 31 second-grade students from a single public primary school in Ankara, which may restrict the generalizability of the results to other populations or contexts. Second, the duration of the intervention was relatively short, spanning only five weeks. While significant improvements in language and thinking skills were observed, longer-term implementations could provide more robust evidence of sustained effects and allow for deeper exploration of AI-supported P4C practices. Future research should consider larger sample sizes and extended implementation periods to strengthen the reliability and external validity of the findings.



Ethical Approval

Ethical approval for this study was obtained from the Harran University Social and Human Sciences Ethics Committee, with the decision dated 16.04.2025 and numbered 2025/140.

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Öz: Bu çalışma, yapay zekâ destekli Çocuklar için Felsefe (P4C) etkinliklerinin ilkokul ikinci sınıf öğrencilerinin dil ve düşünme becerileri üzerindeki etkilerini incelemektedir. P4C atölyeleri, dinleme, konuşma, okuma ve yazma becerilerinin yanı sıra eleştirel ve yaratıcı düşünme, sorgulama ve problem çözme gibi üst düzey düşünme becerilerini geliştirmek amacıyla yapay zekâ araçlarını entegre edecek şekilde tasarlanmıştır. Eylem araştırması deseninin kullanıldığı çalışmaya 31 öğrenci katılmış; veriler dereceli puanlama anahtarı, öğrenci ürünleri, öğretmen günlükleri ve sesli-görüntülü kayıtlar aracılığıyla toplanmıştır. Beş haftalık süreçte öğrencilerin özellikle üretken dil becerilerinde (konuşma ve yazma) belirgin gelişim, okuma ve dinlemede ise ölçülebilir ilerleme kaydedilmiştir. Etkinlikler ayrıca öğrencilerin düşünme becerilerini geliştirerek fikirlerini ifade etme özgüvenini, kelime dağarcığının zenginliğini ve felsefi sorgulamalara katılımını artırmıştır. Bunun yanı sıra, yapay zekâ destekli P4C, öğrencilerin dikkat, motivasyon ve derse katılım düzeylerini yükseltmiştir. Gelecek araştırmalarda, yapay zekâ entegrasyonunun farklı sınıf düzeylerinde dil ve düşünme becerilerine etkisinin incelenmesi önerilmektedir.

Anahtar Kelimeler: P4C, yapay zekâ, dil becerileri, düşünme becerileri.

