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Oral Health Knowledge, Reading Comprehension, and Behavior Change After Implementing the eBook for Oral Health Literacy© Curriculum with 3rd Graders During COVID-19: Implication for School Health Education

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Abstract

One year after the COVID-19 quarantine, we conducted an eight-week pilot study with third graders ($n = 246$), who took a repeating knowledge, attitude, and behavior pretest and a reading comprehension posttest from the eBook for Oral Health Literacy© curriculum.

Our research questions were: 1) Will the knowledge, attitude, and behaviors of third graders change over time after reading eight chapters of the curriculum? 2) Is there a relationship between the knowledge, attitude, and behavior pretest scores and the reading comprehension and written spelling posttest scores of the oral health literacy curriculum? and 3) Is there a relationship between the class attendance of students and their pretest scores on eight chapters of the eBook for Oral Health Literacy© curriculum?

Mixed-effects logistic regression models were employed. Pretest responses of oral health knowledge, attitudes, and behaviors were the dependent variables, and the eBook chapter numbers ($n=8$) were the independent variables to see if there were changes in students' pretest responses over time. The model accounted for the age and gender of each student as fixed effects; a random effect was used to account for student variability.

First, chapters of the curriculum were significant predictors of knowledge (Chapters 2, 4, 5, 6, 7, & 14/15) and behavior (Chapters 3, 4, 5, 6, 7 & 14/15), but not attitudes. Chapter 5 was a significant predictor of knowledge, attitude, and behavior pretest scores. Second, third graders significantly enhanced their oral health knowledge and behaviors as indicated by their posttest scores for reading comprehension and written spelling. Third, to determine the impact of pretest scores on student attendance during COVID-19, a generalized linear mixed model employed student attendance as the



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dependent variable and student pretest scores as the independent variables. Significant relationships resulted between student attendance and pretest answers on Behavior Question 1 for brushing teeth ($p = 0.004$); on Knowledge Question 2 for having a toothbrush ($p = 0.001$); and on Knowledge Question 8 for having any cavities ($p = 0.020$). Posttest scores for reading comprehension and spelling were significantly associated with student attendance ($p = 0.009$).

A digital curriculum called the eBook for Oral Health Literacy© shows promise in changing oral health knowledge and behaviors among third graders after an eight-week intervention. Limitations include the lack of a control group and lack of curriculum time for health education instruction during COVID-19.

Keywords:

Oral Health Literacy, Oral Health Knowledge, Oral Health Behaviors, Reading Comprehension, Mixed-Effects Logistic Regression Model, Ebook Curriculum, Teeth Brushing, COVID-19

Introduction

Background

Health literacy means “being able to apply basic skills of reading, writing, and numeracy to health-related materials and activities within a health care setting and medical context” (Speros, 2005, p. 635). Within a school context, health literacy has also been defined with a focus on basic literacy skills. For example, functional health literacy, defined as the ability to read, write, and speak about health (Ubbes & Whitesel, 2022), is encompassed in one of the eight curriculum standards released by the National Consensus for School Health Education in the United States. The third curriculum standard outlines performance expectations for preK-12 students to demonstrate health literacy when accessing valid and reliable health information, products, and services (National Consensus for School Health Education, 2022).

Zullig et al (2013) found that middle school students who liked to read and go to libraries and bookstores were also more likely to do preventive health behaviors for oral health. Prior to 2016, only 58 percent of American schools indicated plans to teach oral health to elementary children (CDC, 2019b). With the 2021 release of “Oral Health in America” by the National Institutes of Dental and Craniofacial Research, one section in their report highlighted “Oral Health Across the Lifespan” with a specific focus on children below the age of eleven. Even though the report emphasized that good oral health is vitally important to the overall health and wellbeing of everyone, schools were not explicitly named to do

more in oral health education. However, the Whole School, Whole Community, and Whole Child (WSCC) promotes health and academic success using a ten-component model (Birch et al, 2025) from which oral health initiatives can be advanced. For example, two of the WSCC model components, namely health education and health services, have the potential to support children in academic classrooms and school-based health clinics, respectively, while promoting oral health education and oral health literacy.

Setbacks on child health and oral health emerged during and after the COVID-19 pandemic (Rajmil et al, 2021; Viner et al, 2022). When schools closed from the pandemic in May 2022, psychosocial and emotional strain increased for all school children and their families during the quarantine period (Eigl et al, 2022). Anxiety rates also increased among children (Madigan et al, 2023) due to the necessary increase in screen time during remote schooling (Griffith et al, 2023). Shoshani (2023) found that students with more daily health routines experienced less decline in their subjective well-being and life satisfaction during the pandemic lockdown with lengthy school closures. Physical health routines were also dysregulated during the pandemic. Medical studies showed that inflammatory cytokines contributed to gray matter loss in the brains of people with mild COVID-19 symptoms (Abbasi, 2022). Vascular injuries and the dysregulation of brain neurotransmitters also contributed a wide range of cognitive, emotional, and behavioral burdens (Boldrini et al, 2021).

For decades, tooth pain and dental disease were two of the main reasons that children missed school which affected their academic learning time and school attendance rates (Jackson et al, 2011). Today, post pandemic, school absenteeism has become a national crisis with chronic rates increasing from 11% to 39% (U.S. Department of Education, 2024), and one in four students missing at least 18 days of school a year (Barshay, 2024). Data collected during the pandemic found that children were 16% less likely to have excellent dental health as perceived by their parents, and children were 27% less likely to have a dental visit in the past 12 months (Lyu & Wehby, 2022). Eigl and colleagues (2022) found that 37% of 5483 children and youth reported poorer sleep quality during the pandemic with many of those challenged by difficulty falling asleep and staying asleep. Remarkably, 94% of young people in the study went to bed later in the night, hence demonstrating a dysregulation of health-related routines (Eigl et al., 2022). Dysregulated lifestyle schedules potentially affect many health-related routines like teeth brushing, book sharing, and functional language development (Tamis-LeMonda et al, 2018), including the effects of sleep on oral health and wellbeing (Shah et al, 2024).

Unmet dental needs disproportionately affect children

from low-income households (Ruff et al, 2024), which included a lower number of preventive dental checkups for children during and after the COVID-19 pandemic (Lyu et al, 2022). Three years prior to the coronavirus pandemic, national results from the 2016 School Health Policies and Practices Study (Centers for Disease Control and Prevention, 2019b) reported that only 41.4% of U.S. school districts had a policy requiring children to have an oral health examination before entering kindergarten or first grade. Other national results showed that only 27.7% and 36.5% of U.S. school districts, respectively, had a policy that schools would provide health services to students who had oral health problems or had a policy to provide students with an oral healthcare referral. Unfortunately, oral health continues to be unsupported in school health education. Data show that only 25.2% of school health services staff in the U.S. were provided professional development opportunities to learn about ways to support the oral health of students in school districts, and only 23.6% of U.S. school districts actually provided a healthcare professional to support student oral health care. These data are challenging because there are multiple systemic diseases that begin in the mouth (NIDCR, 2021), and good oral health is a prerequisite to general overall health (USDHC, 2022).

The current study sought to improve the data described above by implementing an oral health literacy curriculum in an elementary school as a pilot program. Based on the vital need for oral health education to be part of an overall general health campaign in the United States (USDHC, 2022), we looked for examples of skill-based school curricula in oral health that could be implemented online with children. Two online curricula were found for oral health. Mesbahi and colleagues (2023) employed a cooperative learning pedagogy by implementing an online dental education curriculum with the goal to improve oral health knowledge and self-care skills of adolescents (ages 10 to 13) from two schools in British Columbia, Canada. Results showed that significant improvements from baseline to follow-up occurred in toothbrushing scores, tooth brushing time, and dietary knowledge related to oral health. These improvements were maintained for six weeks after curriculum implementation. The second skill-based curriculum was the eBook for Oral Health Literacy® for third grade children, which is the subject of the current research. The unique contribution of this childcentric curriculum includes its multimodal digital format (e.g., visual, textual, gestural, lexical, and aural) to use in school classrooms, in dental clinics, and/or at home, owing to its free accessibility via an academic website and/or on digital devices (e.g., iPhone and iPad). Another curriculum benefit for students is the emphasis on language associated with cognitive behavioral skills (e.g., decision making, goal setting, and communicating) as an impetus for developing oral health knowledge, attitudes, and behaviors via

health literacy.

Purpose

Oral health literacy has been defined as "the degree to which individuals have the capacity to obtain, process, and understand basic health information and services needed to make appropriate oral health decisions" (Institute of Medicine, 2013). For the purposes of this study, oral health literacy was reconceptualized developmentally as the ability to read, write, and speak about oral health while interacting with the eBook for Oral Health Literacy® curriculum and its accompanying workbook. For this study, conceptualizations of oral health literacy were based on an understanding of functional health literacy as the ability of students to read, write, and speak about their health (Ubbes & Whitesel, 2022), flanked by the importance of building background knowledge and word knowledge (or subject-based vocabulary) about oral health. In the design of the eBook for Oral Health Literacy® curriculum, oral health was described and explained in the form of behavioral actions (Ubbes et al, 2023) aligned to the Integrated Theory of Behavioral Prediction (Yzer, 2012) with three salient beliefs. Some examples of "behavioral actions for oral health" were characterized as the children's ability to brush their teeth every day and preferably twice a day, their ability to floss their teeth every day, and their ability to have a dental checkup every six months. Health-related language in the form of action verbs (e.g., decision making, goal setting, brushing, flossing) were repeated on each of the ten slides of an eBook chapter. This repetition encouraged the learning of lexical word patterns for health education supported by visual photographs of children demonstrating "behavioral actions for oral health". The third grade students were not explicitly aware of the three salient beliefs that formed the declarative sentences of each chapter, but each storyline consisted of a patterned script for consistency: one self-efficacy belief statement, three health outcome beliefs, three normative beliefs, followed by another self-efficacy belief then a concluding statement and question to the reader. We hypothesized that the eBook for Oral Health Literacy® curriculum would improve third graders' oral health knowledge, attitudes, and behaviors after reading eight chapters of the curriculum over eight weeks. The posttests, located in the eBook for Oral Health Literacy® Workbook, required students to answer a reading comprehension and written spelling assessment after each chapter.

There were three research questions for the study: 1) Will the knowledge, attitude, and behaviors of third graders change over time after reading eight chapters of the eBook for Oral Health Literacy® curriculum? 2) Is there a relationship between the knowledge, attitude, and behavior pretest scores and the reading comprehension and written spelling posttest scores of

the oral health literacy curriculum? and 3) Is there a relationship between the class attendance of students and their pretest scores on eight chapters of the eBook for Oral Health Literacy© curriculum one year after the COVID-19 quarantine?

Method

Subjects

The subjects (N = 246) were boys and girls, aged 8 to 10 years old, who attended an elementary school in southwest Ohio. The school district ranked fifth out of ten schools in their county on state literacy scores (Children's Defense Ohio, 2022). The study took place in the media center classroom of the elementary school, led by a teacher who was certified as a media specialist. Third graders came to their required media class once a week for eight weeks, which included approximately 25 minutes of the oral health literacy intervention during each class. All third graders in the elementary school had the opportunity to participate in the study. Researchers could not get a control school approved by the administration due to the perceived constraints imposed upon the school district by the COVID-19 pandemic.

Procedures

Parental consent was sought and obtained prior to students receiving their own personal curriculum workbooks at school where they participated in the study. Each week, prior to reading one chapter of the eBook for Oral Health Literacy© curriculum, students took a pretest consisting of 12 questions. Completing the pretest constituted student assent to participate in the lesson each time. No student assessments were recorded by the teacher for a grade, so some students opted not to take the pretest at different times.

The pretest remained the same over the eight-week intervention and was categorized into Knowledge (K), Attitude (A), and Behavior (B) questions (See Appendix A for the questions) while chapter topics varied each week. Oral health knowledge was assessed through questions 2, 3, 5, 7, 8; oral health attitudes were assessed through questions 6, 9, 12; and oral health behaviors were assessed through questions 1, 4, 10, 11. A response of "yes" was recorded as a "1" and a response of "no" was recorded as a "0". Questions 8 and 9 were reverse coded with a "yes" recorded as "0" and "no" recorded as "1", because answers represented dental conditions that children should not have for good overall health.

Students were also asked to complete a posttest after reading one chapter per week of the eBook for Oral Health Literacy©. The posttest required students to write a one-word response by recalling the missing word that they had previously read in the eBook

chapter. Students were not provided a word list to complete this task because they had to remember the word in the context of the sentence and spell the word as best as they knew how. Thus, this rebus-type sentence completion helped to measure the reading comprehension of students' learning about their oral health and to measure whether students were able to make inferences from the valid and reliable curriculum information needed for oral health literacy. The fact that students had to spell and write the correct word for each of the posttest sentences for a chapter meant that students were actively practicing their word knowledge of oral health while in the process of completing the posttest as a form of expressive language development. Appendix B contains a sample posttest from one of the eBook chapters.

Instrument

The eBook for Oral Health Literacy© curriculum, previously evaluated and reported elsewhere (Ubbes & Whitesel, 2022; Ubbes & Witter, 2021; Ubbes, et al 2020; Ubbes, Coyle, & Tzoc, 2018), was made available to students and their teacher in the media classroom. The curriculum was implemented by the teacher who used an in-person delivery while accessing the eBook chapters on one main computer connected to the school portal. Even though the eBook curriculum and workbook were available free from an academic website at <https://dlp.lib.miamioh.edu/ebook/index.php> and from a downloadable application on iPhones and iPads from the same location, the school did not opt to build this feature into the elementary curriculum during the school year following the COVID-19 quarantine. Students participated in the study while attending class in the media classroom, and all third grade students in the school (n=246) rotated through the media classroom weekly for a 35 minute class. On the days of curriculum implementation, the eBook chapter story and workbook were completed within the first 20 minutes of the class.

The pretests and posttests for each chapter were bound in sequential order into a colorful eBook for Oral Health Literacy© Workbook and distributed to each third grader. Each week, children took the Pretest (Appendix A) in their workbook before the teacher displayed and read each chapter aloud to assess the oral health knowledge, attitudes, and behaviors of third graders. The Posttest (Appendix B) was given from the workbook after each chapter was read in order to assess the reading comprehension and written spelling of third graders.

The grading of each posttest question was based on two factors: the correctness of the answer and the spelling of the students' written answers. The scores that students received were ranked from 0 to 4. A missing answer was given a "0", a correct answer

with correct written spelling was given a "1"; a correct answer with incorrect written spelling was a "2"; an incorrect answer with correct written spelling was assigned "3"; and an incorrect answer with incorrect written spelling was assigned "4".

Data Analysis

The pretest responses for knowledge, attitudes, and behaviors were analyzed using a type of generalized linear mixed model (GLMM) called a mixed-effects logistic regression model. Logistic regression models are used for studying the relationship between one or more independent variables and a binary dependent variable (Vetter & Schober, 2018). Compared to other models with a binary response variable, logistic regression has the advantage because exponentiated coefficients can be interpreted as odds ratios in health research (Schober & Vetter, 2021). Generalized linear mixed models can be used to incorporate random effects into a logistic regression model, which is useful for modeling subject-level variability in a longitudinal study (Dean & Nielsen, 2007). In this study, the pretest responses (e.g., oral health knowledge, attitudes, and behaviors) were treated as the dependent variables, and the chapter numbers were the independent variable of interest to see if there were changes in the students' pretest responses over time. The models also accounted for the age and gender of each student as fixed effects, and a random effect was used to account for the variability among different students.

The posttest scores were analyzed using a mixed-effects multinomial logistic regression model. Mixed-effects multinomial logistic regression models allow the use of a nominal dependent variable (Hedeker, 2003). In this case, the posttest responses were nominal scores of 0 to 4 based on whether the posttest answers for reading comprehension and written spelling were correct. The nominal posttest responses served as the dependent variable for the posttest models, and the independent variables were question type, chapter number, and student attendance (i.e., measured by how many chapters a student was in attendance during curriculum implementation).

For research question 2, a mixed-effects logistic regression model was used to compare pretest and posttest performance. Comprehension of the previous chapter (e.g., posttest score) was used as the independent variable to predict the pretest knowledge, attitudes, and behaviors for the next chapter. These models were also adjusted for the age and gender of each student.

For research question 3, a mixed-effects logistic regression model was used to determine whether there was a relationship between any of the pretest questions and student attendance. For the posttest

scores, a linear model was used to determine whether there was a relationship between attendance and the percentage of correct answers on the posttest questions.

Results

The first research question was "Did the knowledge, attitude, and behaviors of third graders change over time after reading a chapter of the eBook for Oral Health Literacy© curriculum?" Running the data through the mixed-effects logistic regression model showed that attitude questions (Appendix A) did not have as much of an impact on pretest responses as the knowledge and behavior questions did. The mixed-effects logistic regression model was used to determine whether there was a significant relationship between the eight eBook chapters and the pretest responses categorized by knowledge, attitudes, and behaviors (KAB). For the eight chapters, random errors were used as the predictors, and KAB were used as the response variables. Chapter 1 was considered the reference variable. Chapters 2, 4, 5, 6, 7, and 14/15 were significant predictors for the student responses on pretest knowledge questions, and Chapters 3, 4, 5, 6, 7, and 14/15 were significant predictors for the student responses on pretest behavioral questions. Chapter 5 was the only significant predictor for student responses on the pretest attitude questions. In fact, Chapter 5 (Appendix B) was the only chapter that predicted knowledge, attitude, and behavior pretest scores.

Specifically, the pretest knowledge questions showed a significant improvement from Chapter 1 to the following chapters: Chapter 2 ($p = 0.003$), Chapter 4 ($p = 0.002$), Chapter 5 ($p = 0.004$), Chapter 6 ($p = 0.002$), Chapter 7 ($p = 0.002$), and Chapter 14/15 ($p = 0.009$). The only chapter that was not significantly different from Chapter 1 was Chapter 3 ($p = 0.095$). The only significant change in the pretest attitude questions was between Chapter 1 and Chapter 5 ($p = 0.027$). The pretest behavior questions showed significant improvement from Chapter 1 to the following chapters: Chapter 3 ($p = 0.038$), Chapter 4 ($p = 0.017$), Chapter 5 ($p = 0.006$), Chapter 6 ($p = 0.008$), Chapter 7 ($p = 0.014$), and Chapter 14/15 ($p = 0.005$). There was no significant difference in behavior responses between Chapters 1 and 2 ($p = 0.186$).

In Table 1 below, the average pretest responses are shown for knowledge, attitudes, and behaviors in columns 2, 3, and 4, respectively. Favorable responses (e.g., brushing teeth) were coded as 1, while unfavorable responses (e.g., having cavities) were coded as 0. An asterisk indicates a significant difference in the average response for that chapter compared to Chapter 1. As such, Chapter 1 served as the reference variable.

Table 1.

Changes in Knowledge, Attitude, and Behavioral Pretest Responses

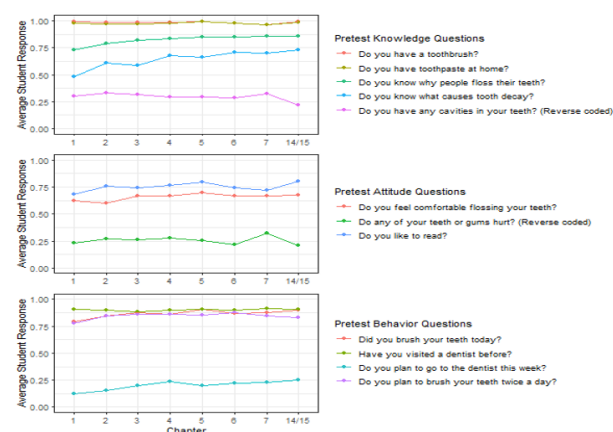
Variable	Knowledge	Attitude	Behavior
Chapter 1	0.700	0.515	0.654
Chapter 2	0.743*	0.542	0.687
Chapter 3	0.745	0.560	0.715*
Chapter 4	0.763*	0.565	0.722*
Chapter 5	0.764*	0.587*	0.729*
Chapter 6	0.765*	0.542	0.730*
Chapter 7	0.778*	0.568	0.733*
Chapter 14/15	0.766*	0.563	0.731*

*p <= 0.05

Figure 1 (below) shows the average student responses for the five pretest knowledge questions, three pretest attitude questions, and four pretest behavior questions over the eight weeks. Baseline measurements on the X axis show the progression of chapters 1 through chapters 14/15 for a total of eight chapters that students read from the eBook for Oral Health Literacy© curriculum. The average student responses showed that most students knew they had a toothbrush and toothpaste at home with only minor changes at the end of the eight weeks. However, many did not know "why people floss their teeth" or "what causes tooth decay" until they had read later chapters of the curriculum. As students progressed from reading eight eBook chapters over eight weeks, their knowledge increased for Pretest Knowledge Question 3 ("Do you know why people floss their teeth?") and Pretest Knowledge Question 4 ("Do you know what causes tooth decay?"). For the posttest answers, there was a significant improvement in the number of correct responses for Chapter 3 compared to Chapter 1 ($p < 0.001$). All subsequent chapters showed significant improvement compared to Chapter 1 ($p < 0.001$), but there was no significant change in correct responses from Chapter 1 to Chapter 2 ($p = 0.739$).

Figure 1.

Pretest Scores



The second research question was "Is there a relationship between the knowledge, attitude, and behavior pretest scores and the reading comprehension and written spelling posttest scores of the oral health literacy curriculum? Data were run through another mixed-effects logistic regression model, or a generalized linear mixed model (GLMM). There was no significant association between the pretest and posttest scores as shown in Tables 2, 3, and 4.

Table 2 (below) shows the results of the GLMM which investigated the relationship between chapters 1, 2, and 3 to determine if there was any relationship among them. In these models, posttest scores were predictors of pretest responses. The Chapter 1 posttest question scores were compared to the Chapter 2 pretest responses, the Chapter 1 posttest question scores were compared to the Chapter 3 pretest responses, and the Chapter 2 posttest scores were compared to Chapter 3 pretest responses. Each of these chapters was not significantly different.

Table 2.

Comparisons Between Chapters 1, 2, and 3

Covariates	Chapter 1 Posttest, Chapter 2 Pretest	Chapter 1 Posttest, Chapter 3 Pretest	Chapter 2 Posttest, Chapter 3 Pretest
Score of 1	0.312	0.904	0.617
Score of 2	0.497	0.943	0.693
Score of 3	0.979	0.884	0.818
Score of 4	0.694	0.961	0.705
Student Age	0.862	0.656	0.748
Gender: Girls	0.898	0.410	0.912

*p <= 0.05

In Table 3 below, the GLMM investigated the relationship between chapters 4, 5, and 6 to determine if there was any relationship among them. In these models, posttest scores are predictors of pretest responses. The Chapter 3 posttest question scores were compared to Chapter 4 pretest responses, the Chapter 4 posttest question scores were compared to Chapter 5 pretest responses, and the Chapter 5 posttest scores were compared to Chapter 6 pretest responses. Each of these chapters was not significantly different.

Table 3.

Comparisons Between Chapters 4, 5, 6

Covariates	Chapter 3 Posttest, Chapter 4 Pretest	Chapter 4 Posttest, Chapter 5 Pretest	Chapter 5 Posttest, Chapter 6 Pretest
Score of 1	0.488	0.312	0.926
Score of 2	0.490	0.497	0.977
Score of 3	0.539	0.979	0.733
Score of 4	0.631	0.694	0.666
Student Age	0.845	0.861	0.347
Gender: Girls	0.305	0.898	0.520

* $p \leq 0.05$

In Table 4 below, the GLMM investigated the relationship between chapters 7, 14, and 15 to determine if there was any relationship among them. In these models, posttest scores are predictors of pretest responses. The Chapter 6 posttest question scores were compared to Chapter 7 pretest responses, the Chapter 7 posttest question scores were compared to Chapter 14 pretest responses, and the Chapter 7 posttest scores were compared to Chapter 15 pretest responses. Each of these chapters was not significantly different. (Note: Chapters 8, 9, 10, 11, 12, and 13 were not included in this study due to the time constraints imposed by the COVID-19 pandemic).

Table 4.
Comparisons Between Chapters 7, 14, and 15

Covariates	Chapter 6 Posttest, Chapter 7 Pretest	Chapter 7 Posttest, Chapter 14 Pretest	Chapter 7 Posttest, Chapter 15 Pretest
Score of 1	0.823	0.998	0.569
Score of 2	0.800	0.911	0.490
Score of 3	0.902	0.952	0.959
Score of 4	0.793	0.313	0.882
Student Age	0.766	N/A	0.118
Gender: Girls	0.663	N/A	N/A

* $p \leq 0.05$, N/A: Not Applicable

The third research question was "Is there a relationship between the class attendance of students and their pretest scores on eight chapters of the eBook for Oral Health Literacy® curriculum?" To determine the impact of pretest scores on student attendance, a GLMM was constructed using student attendance as the dependent variable and student pretest scores as the independent variables. Results showed that there was a significant relationship between the students' school attendance and their pretest answers on Behavior Question 1 ($p = 0.004$) for brushing teeth today, Knowledge Question 2 ($p = 0.001$) for having a toothbrush, and Knowledge Question 8 ($p = 0.020$) for having any cavities. Figure 2A below shows the distribution of students in attendance from a low 48% presence for chapter 7 and a high of 88% presence for chapter 1. Class attendance was high for the first six chapters, but attendance was lower than 50% for the last two chapters. Figure 2B below shows a

histogram with a distribution of absences during the curriculum implementation. Most students had two or fewer absences with a median of 2 absences, but 35 of the 248 students (14%) were absent for four of the eight chapters. Only 14% of students ($n = 35$) had perfect attendance, and no students are listed with 8 absences because they would not have been included in the study.

Figure 2.
Attendance for Each Chapter and Distribution of Absences

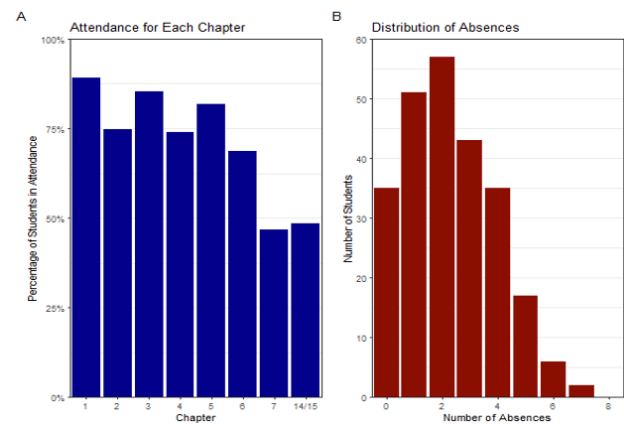


Figure 3 (below) shows that posttest comprehension scores were significantly associated with attendance ($p = 0.009$). Attendance records were used to calculate the ratio of the absences that students had compared to the number of times they were supposed to attend classes during the study period. This created an attendance variable called presence.

Figure 3.
Attendance vs. Posttest

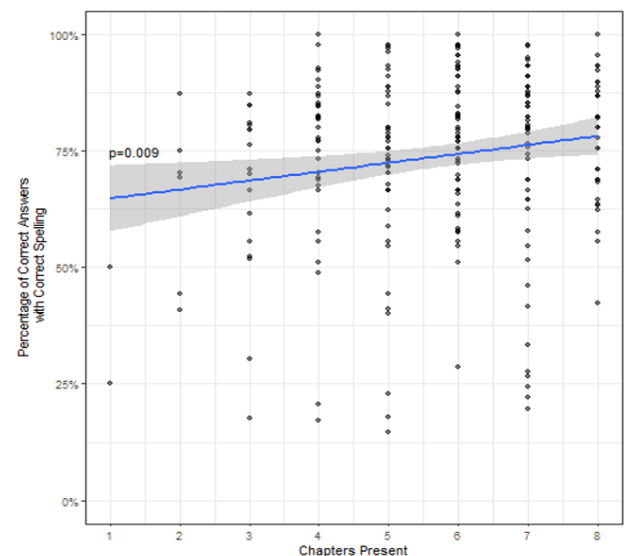


Figure 4 (below) shows the frequency and distribution of students by age, followed by Figure 5 showing the frequency and distribution of pretest questions by

student scores. Both were normally distributed.

Figure 4.

Frequency and Distribution of Students by Age

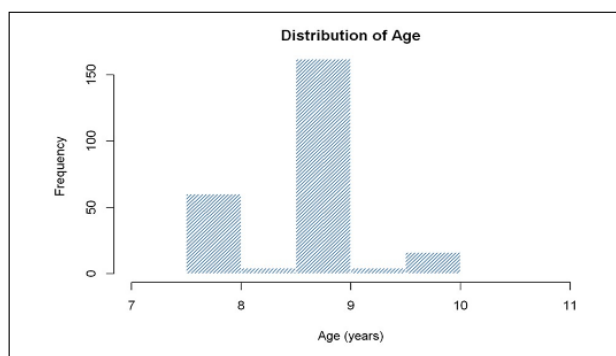
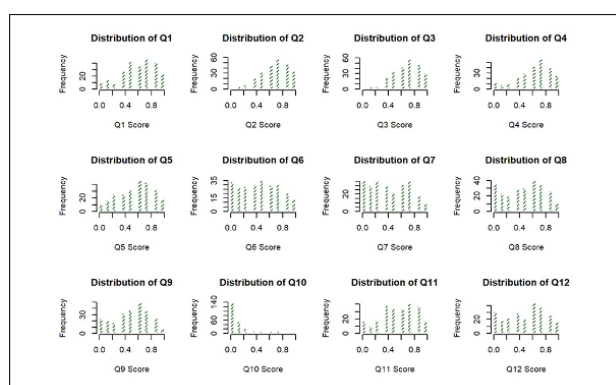


Figure 5.

Frequency and Distribution of Pretest Questions by Student Scores (n =234)



Discussion

According to the CDC (2019a), a short-term curriculum, “delivered for a few hours at one grade level, is generally insufficient to support the adoption and maintenance of healthy behaviors”. However, Brown and colleagues (2007) found that a single-lesson tobacco prevention curriculum was useful in changing the knowledge and smoking intentions of students exposed to their program. As such, we wanted to test the capabilities of an oral health literacy curriculum that was taught only one day per week over eight weeks for a total curriculum time of two hours. Third graders significantly enhanced their oral health knowledge and behaviors as measured by reading comprehension scores and written spelling scores. Results indicated a significant relationship between student attendance and their pretest answers on Behavior Question 1 for brushing teeth ($p=0.004$); Knowledge Question 2 for having a toothbrush ($p=0.001$); and Knowledge Question 8 for having any cavities ($p=0.020$). In addition, posttest reading comprehension and written spelling scores were significantly associated with attendance ($p =$

0.009).

Despite the fact that our study did not have a control school during the COVID-19 pandemic, these are important findings because knowledge and behaviors about oral health can influence the daily oral health practices of the children. Six of the eight chapters of the eBook for Oral Health Literacy® curriculum significantly predicted student responses for oral health knowledge and oral health behavior on the pretests. This was not the case for oral health attitudes because only chapter 5 showed significant results. However, Chapter 5 was able to predict knowledge, attitude, and behavioral changes of the students from the pretests to the posttests. More specifically, the knowledge and behaviors of third grade students changed over time after reading seven of the eight chapters of the eBook curriculum at the rate of one chapter per week. This is notable, because students took only one minute to read (and/or read along silently with the digital narrator) the 10 pages of the chapter, and then students took on average ten minutes to write and spell the missing words in the comprehension posttest for that chapter. In the current study, the reading of each chapter out loud for one minute by the eBook narrator helped the third graders to listen, view, and interpret the visual, textual, and gestural content. A multimodal experience of listening, viewing, and thinking about the visual and textual content can boost learning (Forzani & Ly, 2022). Results showed that students were able to complete the written comprehension questions after each chapter with favorable results thus demonstrating that they retained their learning about oral health during the course of the curriculum implementation. As expected, students with poorer school attendance did not fare as well.

The posttest comprehension questions in the accompanying eBook for Oral Health Literacy® Workbook aimed to assess third graders on their functional health content knowledge and functional health literacy skills (e.g., reading and writing about health) as aligned with curriculum standards 1 and 3 respectively of the National Health Education Standards (National Consensus for School Health Education, 2022). Hale et al (2007) found that students in fourth grade were better able to answer comprehension questions after oral reading than after reading silently. Thus, future studies with the eBook for Oral Health Literacy® should explore the role of interactive health literacy whereby the oral conversations that children have with their literacy influencers (e.g., peers, professionals, and parents) can be quantified in dosage minutes when interacting with the eBook narratives. Other reading comprehension research with the curriculum might investigate four

different conditions comparing children: 1) reading silently; 2) reading out loud in tandem with the narrator's voice; 3) reading out loud without the narrator's voice; and 4) reading out loud while being supported by a literacy influencer who is present with the child in real time discussing and interacting with the digital content.

In the current study, only two hours were needed for implementing eight chapters of the eBook for Oral Health Literacy® at the rate of one chapter per week for eight weeks. Health education instruction remains woefully inadequate for certain health topics based on data showing a low percentage of districts with school policies indicating what health topics will be taught (CDC, 2019b). Studies have also shown that most students in public schools often receive only a middle school or high school health class for a total one-year health curriculum when adolescents are often more curious and anxious about their health with Canadian guidelines even more progressive than the U.S. (Robinson, et al, 2019). Whereas more progressive schools would support the teaching of health education regardless of low priorities made by educational decision makers (Dabravolskaj et al., 2020; Herlitz et al, 2020; Tancred, 2018), the recent coronavirus pandemic revealed that school classes that were conducted online lacked educational resources, namely digital resources, in all subject areas (Gopika & Rekha, 2023). In the U.S., comprehensive and categorical health curricula are available for school districts to adopt (Herbert & Lohrmann, 2011), but fewer digital health curricula are available for students online.

There are two national documents that supported the design of the eBook curriculum. The first document that supported the design of the eBook curriculum was the Characteristics of an Effective Health Education Curriculum (CDC, 2019a). The CDC document suggests that one of the 13 characteristics of an effective health education curriculum should focus on clear health goals and behavioral outcomes. The eBook curriculum focuses on clear health goals and behavioral outcomes using a narrative of action verbs such as decision making, goal setting, and interpersonal communication skills to improve oral health behaviors (e.g., brushing, flossing, rinsing), including the importance of setting a goal to have a dental checkup every six months. A second guideline for an effective health curriculum (CDC, 2019a) includes opportunities to reinforce health-related skills and positive health behaviors. As such, the eBook curriculum is designed with health-related skills that reinforce how children can make daily decisions for healthy teeth, set nutrition and hygiene goals for healthy teeth, and visit and interact with a dentist during a dental checkup every six months. A third guideline for an effective health curriculum (CDC,

2019a) should provide functional health knowledge that is basic, accurate, and directly contributes to health-promoting decisions and behaviors. As such, the eBook curriculum uses visual, textual, and gestural narratives to communicate valid and reliable oral health information through lexical scripts that demonstrate social-behavioral role models for children. Whereas the CDC curriculum guidelines (2019a) indicate that "A curriculum that provides information for the sole purpose of improving knowledge of factual information will not change behavior", the eBook uses a theoretical framework to establish the reasons for doing oral health hygiene behaviors and not just reading about it. The narrative scripts of the first three slides in each eBook chapter promote health outcome beliefs; the middle three slides promote social normative beliefs; and three additional slides promote self efficacy beliefs. These three types of salient beliefs (Bandura, 1986) were included in the narrative scripts to help children to improve their functional health knowledge and oral health behaviors. The current study sought to determine if the curriculum actually improved their functional health knowledge and oral health behaviors.

The second document that supported the design of the eBook curriculum was the National Health Education Standards which serves as a model for curriculum, instruction, and assessment in preK-12 schools (National Consensus for School Health Education, 2022). Teachers of preK-12 health education are encouraged to support students to meet performance expectations that are aligned to eight National Health Education Standards. Even though performance expectations are not specifically found for oral health in the standards, oral health skills can be introduced and taught as topics within health promotion, disease prevention, health behaviors, health literacy, and nutrition - as the eBook design has indicated. The National Consensus for School Health Education (2022) states that students should be able to demonstrate observable health and safety practices and demonstrate health literacy, interpersonal communication skills, decision making skills, and goal setting skills. The national standards also expect students "to demonstrate health literacy by accessing valid and reliable health information, products, and services to enhance health" and "comprehend functional health knowledge to enhance health". Hence, the eBook for Oral Health Literacy® has met these two standards since knowledge and behaviors have improved with second and third graders in this study.

Future research should further investigate the effects of teaching vocabulary about health behavior (also known as word knowledge), and then quantifying how these skills can prime children's intentions to brush teeth, floss teeth, eat healthy food, and go to

a dental checkup every six months. Future research should also investigate whether one or more cognitive skills has a priming effect on those same specific oral health behaviors.

Limitations

A major limitation of this study was the use of a convenience sample without a control group, thereby limiting the generalizability of the findings. The fact that we were able to conduct any research with support from the school district was remarkable due to the complications of the global coronavirus pandemic. Even though the curriculum implementation was supported by external funding, the school's central administration postponed and significantly reduced the project one semester due to new time commitments of school nurses having to vaccinate children at school per guidelines by the federal government. In spring 2023, the decision was made to suspend the curriculum implementation in the new school-based health clinic. This was disappointing because we envisioned school nurses and/or a dentist doing dental exams during the curriculum intervention based on research by Wehby (2022) showing that children who had a comprehensive oral exam had higher reading and math scores ($p < .05$). Instead, the eBook for Oral Health Literacy© curriculum was implemented in the computer classroom by a media specialist who taught all of the third graders in the school once a week. The fact that the curriculum could be implemented digitally facilitated this decision by the school principal. Due to added stresses of the coronavirus pandemic on student attendance and teacher stresses, the school district did not agree to a control group that was available from another elementary school in the district or support the goals of the grant implementation at other grade levels. A systematic review by Kim and Kim (2024) found that school-based oral health education for children across 20 studies included implementation by schoolteachers, dental or health professionals, and researchers. More research is needed to quantify the minimal curriculum time needed to effect more change in oral health behaviors, including attitudinal changes, when children are exposed to eight or more of the chapters in the curriculum. In the future, we anticipate positive results again when the pandemic does not play a significant role in student attendance rates and/or influence the limited curriculum time for health education. The eBook chapters should be implemented with students in other grades and or with students who also gain a second exposure to certain eBook chapters at home paired with actual toothbrushing. The addition of toothbrushing in tandem with the curriculum implementation at school seems like an important goal for measuring curriculum effects based on work by Ardekani et al (2022) who used a randomized controlled study and distributed

toothbrushes and fluoride-containing toothpaste on the first day of an oral health literacy intervention with high school girls. Additional research by Babaei et al (2023) have included supervised toothbrushing for schoolchildren during a one-day workshop with parents resulting in less caries and better oral hygiene compared to controls after one year of implementation. However, both studies did not use an educational intervention that was implemented over time like the current study. This is a strength because each chapter provides developmentally appropriate health information with an emphasis on cognitive behavioral skills (e.g., communication, goal setting, and decision making). Teachers and parents could choose to facilitate student learning from the eBook for Oral Health Literacy© curriculum via the digital app, which will make the curriculum more self directed and possibly more motivating for students to read more chapters and even repeat certain chapters that they like. Locomotor skills that use manipulatives or object-control skills (Chen et al., 2024) and 'sensorimotor, affective, oral and cognitive activity' that is explored and repeated as play (Neumann, 1971, p. 11) have great potential with theory-based educational interventions for oral health literacy with children.

The second limitation of the study was that students responded to the pretest and posttest assessments using self-report. Verification of accuracy could not be obtained for whether students had actual cavities and/or had actually visited their dentist as self-reported on the pretests each week. However, since children took the same pretest each week for eight weeks, we were able to observe the reported trends of individual student responses by using statistics to control for this effect. Due to the associations between attendance and student responses, there is likely to be some confounding issue due to the variable student attendance. One of the assumptions of our statistical analysis is that the student answers were missing at random. Therefore, the random effects in the GLMMs should have helped to mitigate this issue.

A third limitation of the study was the limited engagement between the researchers and the elementary principal who determined the implementation "place" for the curriculum intervention and research without our communications with or access to classroom teachers. Once the decision was made to implement the grant-funded project into one media specialist's classroom instead of two other locations, the oral health literacy curriculum was shared with third graders at the rate of 20 minutes per week. This time interval included five to eight minutes for third graders to answer the pretest questions, one to two minutes for the skill-based chapter to be read aloud, then 8 to 10 minutes for students to answer five questions for reading comprehension. The study is limited by the eBook having an insignificant reach

and impact on classroom teachers, parents, and nurses who could have influenced additional oral health messages for encouraging children to read, write, and speak about their oral health at school and at home. An ideal implementation of the curriculum would be with classroom teachers who instruct elementary students on different disciplinary literacies (Ortlieb et al, 2024) and with nurses who manage the school-based health clinic which had just opened in the school district.

A fourth limitation included the fact that the media specialist perceived the pretest and posttest assessments from the oral health literacy workbook as learning opportunities rather than a research project. There was no way to discern if children were able to actually read the words of the curriculum because the school did not allow researchers to enter the classroom to proctor the pretest and/or posttest each week due to the public health restraints of the coronavirus pandemic. The oral health literacy workbook proved to be useful because we could observe and see the actual handwriting of the third graders who varied widely in this ability. This part of the workbook meant that each student had personal engagement with the curriculum, because students had to think of the answer from memory then form the spelling of each word letter by letter in order to write it. This required a more sophisticated learning process for third graders and highlighted the basic literacy skills needed for mastery of health literacy. Follow-up research on handwriting, inventive spelling, and functional health literacy is warranted so we can further clarify the student grade level(s) for implementation of the oral health literacy curriculum.

Conclusion

We conducted a pilot study with elementary school children who took a repeated written pretest prior to reading one chapter weekly from the eBook for Oral Health Literacy© curriculum over eight weeks. Students also completed a reading comprehension test after reading each chapter. Students had to recall and write answers to the fill-in-the-blank questions with accurate spelling to mirror exact sentences from the eBook chapters. The theory-based scripts emphasized action verbs to promote decision making skills and goal setting skills for oral health behaviors. Each eBook chapter highlighted a brief visual-textual-gestural narrative for several oral health behaviors (e.g., brushing, flossing, rinsing, dental checkups). Since oral hygiene behaviors are essential for disease prevention and quality of life, we assessed the changes in third graders' knowledge, attitudes, and behaviors toward their oral health.

Securing educational time for the implementation of an oral health literacy curriculum at school mattered because oral health has been tied to general health

and the prevention of many systemic diseases. The reason this study is important is because third graders enhanced their oral health knowledge and oral health behaviors through reading the eBook for Oral Health Literacy© curriculum during a brief intervention of only two hours over eight weeks. During the COVID-19 pandemic which caused school closures and further reduction of health education curriculum time, our multimodal digital curriculum was useful in identifying behavioral patterns among students who had attended school more often. Students with better attendance were also those who had brushed their teeth that morning, had a toothbrush, and had fewer cavities. Posttest findings from their reading comprehension scores and their written spelling scores suggested that third graders paid attention and retained oral health knowledge and oral health vocabulary after reading the skill-based eBook chapters.

A key outcome of this oral health literacy study was the fact that only a small commitment of instructional time resulted in significant changes in oral health knowledge and oral health behavior among third grade students. By placing the curriculum implementation into the media classroom when schools reopened after the COVID-19 quarantine period, the digital nature of the oral health literacy chapters found a new home. The oral health literacy workbook gave students access to valid and reliable information on oral health hygiene and oral health behaviors. Our project also offered a free iPhone and iPad app for use in the school classroom and in their newly opened school-based health clinics but there was little evidence that decision makers were eager to further the use of the curriculum in that way to support the oral health knowledge, oral health literacy, and oral health behaviors of children.

Future research should use an experimental research design to do a curriculum intervention across multiple classrooms, multiple grades, and multiple schools, including an intervention in school-based health clinics. The utility of using instructional time for health education in a regular classroom versus a media classroom should be further explored as a potential way for students to increase access to valid and reliable print and electronic materials for health literacy skill development. Student use of the eBook for Oral Health Literacy© mobile application is another way to promote oral health knowledge and oral health behaviors while building health literacy skills at school and at home. By extending the current project to home when students are actually practicing their oral health behaviors of teeth brushing, flossing, and rinsing, the digital app could reinforce the importance of building healthy habits through daily self-care routines. Reading or listening to a health literacy story before, during, or after their self-care routines for oral

health literacy will enable children to practice the functional health knowledge and beliefs that they need for a long and healthy life – even during a global pandemic.

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Declaration of Interest Statement

Authors declare no conflict of interest.

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Appendix A: Pretest Questions for Oral Health Knowledge, Attitudes, and Behavior (KAB)

Note: Items 2, 3, 5, 7, and 8 are pretest knowledge questions; Items 6, 9, and 12 are pretest attitude questions; and Items 1, 4, 10, and 11 are pretest behavior questions.

1. Did you brush your teeth today?
2. Do you have a toothbrush?
3. Do you have toothpaste at home?
4. Have you visited a dentist before?
5. Do you know why people floss their teeth?
6. Do you feel comfortable flossing your teeth?
7. Do you know what causes tooth decay?
8. Do you have any cavities (holes) in your teeth?
9. Do any of your teeth or gums hurt?
10. Do you plan to go to the dentist this week?
11. Do you plan to brush your teeth twice a day?
12. Do you like to read?

Appendix B: Posttest Questions of Reading Comprehension and Spelling (Sample Chapter)**Chapter 5 eBook for Oral Health Literacy© Post Assessment**

Directions: Write the word on the blank line that you remember from reading the Chapter 5 story about setting food goals for healthy teeth.

1. I set a goal to visit and talk with my _____ every 6 months, so I can keep a healthy smile.
2. I set a goal to eat fibrous fresh foods, because _____ helps to remove plaque and sugar from my teeth.
3. I set a goal to buy floss and _____ when buying food at the grocery store with my Mom.
4. I set a goal to eat healthy foods that have fiber, because fiber helps to _____ plaque and sugar from my teeth.
5. I set a goal to buy a new toothbrush and floss when buying food at the _____ store with my Mom.
6. I set a goal to clean my teeth after our evening snack by watching how my Mom _____ her teeth.

Answer Key: 1. dentist 2. fiber 3. toothpaste 4. remove 5. grocery 6. brushes

Appendix C: Theoretical Framework for Chapters of the eBook for Oral Health Literacy©

Chapter 1 Script: Setting Dental Hygiene Goals for Healthy Teeth

<https://dlp.lib.miamioh.edu/ebook/01/>

Self Efficacy: I believe that I can set a goal to practice good oral health and dental hygiene.

Health Outcome Beliefs: I set a goal to buy toothpaste with fluoride, which helps strengthen my tooth enamel. I set a goal to brush my teeth every morning and night to keep my teeth strong and healthy. I set a goal to floss my teeth, because flossing helps to get rid of leftover foods that hide between my teeth and gums.

Social Normative Beliefs: I set a goal to buy floss and toothpaste with my Mom when shopping for food at the grocery store. I set a goal to visit my dentist every 6 months, so I can keep a healthy smile and practice good dental hygiene. I set a goal to help my little sister brush her teeth every night after her snack, so we can practice good oral health.

Self Efficacy: I believe that I can improve the oral health of my teeth and gums by setting dental hygiene goals each day.

Interactive Health Literacy: I set a goal for dental hygiene and oral health. How about you? Will you set a goal too for healthy teeth and gums?

Summary = 186 Words with 11 Sentences

Chapter 2 Script: Making Decisions to Have Fun with my Oral Health

<https://dlp.lib.miamioh.edu/ebook/02/>

Self Efficacy: I believe that I can prevent infections in my teeth by deciding to practice my daily dental routine.

Health Outcome Beliefs: I decide to brush my teeth in the morning and before bedtime, so I can prevent cavities in my teeth. I decide to brush my teeth, tongue, and gums with a small amount of toothpaste, so that my mouth will be really clean. I decide to brush to a song for 2 minutes, so I can have fun while cleaning my teeth, tongue, and gums!

Social Normative Beliefs: I decide to brush my teeth right after I eat cereal with my brother, so we can get rid of sugar that damages our teeth. I decide to show off my teeth by smiling, because I want my parents to see that I can take charge of my own oral health. I decide to be a role model to my sister, so I can show her how well I take care of my teeth every single day!

Self Efficacy: I believe that I can make daily decisions to brush my teeth and rinse them with water, so that cavities do not form in my mouth.

Interactive Health Literacy: I've made the fun decision to clean my teeth, tongue, and gums. How about you? Will you decide to have fun with your oral health too?

Summary = 212 Words with 11 Sentences

Chapter 3 Script: Taking Action and Making Decisions to Have Healthy Teeth

<https://dlp.lib.miamioh.edu/ebook/03/>

Self Efficacy: I believe that I can take action and make decisions to improve the health of my teeth.

Health Outcome Beliefs: I take action by brushing my teeth, gums, and tongue every morning and night, so I can have a refreshing smile. I take action by eating fruits and vegetables because they make my teeth and gums stronger. I take action by flossing my teeth, so I can get rid of leftover foods that will cause plaque buildup and cavities between my teeth.

Social Normative Beliefs: I take action by buying floss, toothpaste, and mouthwash while grocery shopping with my Mom. I take action by cooking calcium-rich foods with my family at dinner time, so our teeth and bones will be stronger. I take action by helping my little brother brush his teeth every night, so we can both have healthy teeth without cavities.

Self Efficacy: I believe that I can improve the health of my teeth by taking action and making decisions especially when I start to lose my baby teeth.

Interactive Health Literacy: I take action and make decisions every day for healthy teeth. How about you? Will you take action and make healthy decisions too?

Summary = 186 Words with 11 Sentences

Chapter 4 Script: Setting Goals for Going to the Dentist

<https://dlp.lib.miamioh.edu/ebook/04/>

Self Efficacy: I believe that I can be ready to go to the dentist for a check-up on my mouth, teeth, and gums.

Health Outcome Beliefs: I set a goal to get a toothbrush from my dentist when I need one, so I can brush my teeth. I set a goal to brush my teeth every night with my Mom, so I can have a fresh breath and clean teeth. I set a goal to visit my dentist 2 times a year, so I know I do not have any holes in my teeth (cavities).

Social Normative Beliefs: I set a goal to open my mouth wide, so my dentist can see and count my 20 teeth. I set a goal with my friends to learn the right way to brush on the front and the back of each tooth. I set a goal to show my dentist my bright smile during my 6-month check-up.

Self Efficacy: I believe that I can set a goal to have a healthy mouth, teeth, and gums at my 6-month check-up.

Interactive Health Literacy: How about you? Can you set a goal to have a healthy check-up at your dentist too?

Summary = 184 Words with 10 Sentences

Chapter 5 Script: Setting Food Goals for Healthy Teeth

<https://dlp.lib.miamioh.edu/ebook/05/>

Self Efficacy: I believe that I can improve the health of my teeth by setting fresh food goals every day.

Health Outcome Beliefs: I set a goal to eat fibrous fresh foods, because fiber helps to remove plaque and sugar from my teeth. I set a goal to also brush my teeth after eating fresh food for snacks and meals. I set a goal to eat yogurt, which has calcium, because calcium helps my teeth to grow strong.

Social Normative Beliefs: I set a goal to visit and talk with my dentist every 6 months, so I can keep a healthy smile. I set a goal to buy floss and toothpaste when buying food at the grocery store with my Mom. I set a goal to clean my teeth after our evening snack by watching how my Mom brushes her teeth.

Self Efficacy: I believe that I can improve the health of my teeth by setting fresh food goals every day.

Interactive Health Literacy: I set a goal to improve the health of my teeth by eating healthy meals. How about you? Will you set a food goal for healthy teeth too?

Summary = 160 Words with 11 Sentences

Chapter 6 Script: Decisions to Keep My Teeth Healthy and Strong

<https://dlp.lib.miamioh.edu/ebook/06/>

Self Efficacy: I believe that I can make healthy food decisions for my teeth.

Health Outcome Beliefs: I decide to keep my teeth healthy by eating vegetables like broccoli, because broccoli

contains calcium for my teeth. I decide to keep my teeth healthy by eating fresh fruits with milk at lunch.

Social Normative Beliefs: I decide to keep my teeth healthy by eating apples with my friends at school instead of candy. I decide to keep my teeth healthy by drinking milk as a delicious snack at home with my brother. I decide to eat fresh foods and drink nutritious beverages with my family to keep my teeth healthy.

Self Efficacy: I believe that I can make decisions to drink more water instead of sugary sodas, because water can rinse and clean my teeth and gums.

Interactive Health Literacy: I've made the decision to keep my teeth healthy and strong! How about you? Have you made the decision too?

Summary = 146 Words with 10 Sentences

Chapter 7 Script: Deciding to Improve My Dental Health by Drinking More Water

<https://dlp.lib.miamioh.edu/ebook/07/>

Self Efficacy: I believe that I can improve my dental health by making the decision to drink more water.

Health Outcome Beliefs: I decide to drink water every day, because most water from the faucet has fluoride in it to prevent cavities. I decide to drink water every day, because it keeps my mouth clean by washing away cavity-causing bacteria in my mouth. I decide to drink water every day, because water fights against dry mouth and uses my saliva to fight against tooth decay.

Social Normative Beliefs: I decide to drink water after meals with my family, because water washes away leftover food particles that could be in our mouths. I decide to help my brother drink more water, because water freshens his dry throat and improves his mood. I decide to drink water throughout the day with my friend, because water prevents against dry mouth that can lead to cavities in our teeth.

Self Efficacy: I believe that I can improve my dental health by deciding to drink more water.

Interactive Health Literacy: I made the decision to drink more water throughout the day for better oral health. How about you? Will you decide to drink more water too?

Summary = 188 Words with 11 Sentences

Chapter 14 Script: Setting Goals for Going to the Dentist (Boys)

<https://dlp.lib.miamioh.edu/ebook/14/>

Self Efficacy: I believe that I can be ready to go to the dentist for a check-up on my mouth, teeth, and gums.

Health Outcome Beliefs: I set a goal to get a toothbrush from my dentist when I need one, so I can brush my teeth. I set a goal to brush my teeth every night with my Mom, so I have a fresh breath and clean teeth. I set a goal to visit my dentist 2 times a year, so I know I do not have any holes in my teeth (cavities).

Social Normative Beliefs: I set a goal to open my mouth wide, so my dentist can see and count my 20 teeth. I set a goal with my friends to learn the right way to brush on the front and back of each tooth. I set a goal to show my dentist my bright smile during my 6 month check-up.

Self Efficacy: I believe that I can have a good check-up at my dentist, so I can have healthy teeth and gums.

Interactive Health Literacy: How about you? Can you set a goal to have a healthy check up at your dentist too?

Summary = 166 Words with 10 Sentences

Chapter 15 Script: Setting Goals for Going to the Dentist (Girls)

<https://dlp.lib.miamioh.edu/ebook/15/>

Self Efficacy: I believe that I can be ready to go to the dentist for a check-up on my mouth, teeth, and gums.

Health Outcome Beliefs: I set a goal to get a toothbrush from my dentist when I need one, so I can brush my teeth. I set a goal to brush my teeth every night, so I have a fresh breath and clean teeth before bed.

Social Normative Beliefs: I set a goal with my friends to learn the right way to brush on the front and back of each tooth. I set a goal to visit my dentist 2 times a year, so I know I do not have any holes in my teeth (cavities). I set a goal to show my dentist my bright smile during my 6 month check-up. I set a goal to open my mouth wide, so my dentist can see and count my 20 teeth.

Self Efficacy: I believe that I can have a good check-up at my dentist, so I can have healthy teeth and gums.

Interactive Health Literacy: How about you? Can you set goals for going to the dentist too?

Summary = 166 Words with 10 Sentences

Investigation of the Relationship Between Primary School Teachers' Attitudes and Self-Efficacy Towards Using Creative Drama Method*

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Abstract

This study aimed to examine primary school teachers' attitudes and self-efficacy towards using creative drama method in terms of certain variables. Relational screening model was used in the research and the sample was determined through convenient sampling. The study was conducted in the spring semester of the 2022-2023 academic year with the participation of 105 volunteer primary school teachers, 54 female and 51 male, working in primary schools affiliated to the Ministry of National Education in Artvin, Türkiye and its districts. In the study, personal information form, "Attitude Scale towards Creative Drama Course" and "Self-Efficacy Perception Scale for Using Creative Drama Method" were applied as data collection tools. The data were analyzed statistically by using SPSS 29.0 statistical package program. The descriptive analysis results on the level of primary school teachers' self-efficacy towards using creative drama method and their attitudes towards creative drama method revealed that primary school teachers' self-efficacy towards using creative drama method was high, while their attitudes towards creative drama method were at a medium level. Furthermore, there was a statistically weak and positive relationship between primary school teachers' self-efficacy towards using creative drama method and their attitudes towards creative drama.

Keywords:

Creative Drama, Self-Efficacy, Attitude, Primary School Teacher

Introduction

According to San (1996), drama, which derives from the Greek word "dran" meaning "to do, to make, to apply", is a method of expressing a situation, concept or thought by acting out a situation, concept or thought based on individuals' own experiences. Drama is an improvisational activity in which individuals use their creativity (San, 1991). When it started to be used in education, its theoretical foundations were laid, and the term "creative drama" emerged when Winifred Ward (1930) added improvisation (Sağlam, 1997). A process that enables participants to think and learn from imaginary situations" (Heathcote, 1984, p.



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94). In this process, individuals have the opportunity to have various experiences by acting out real life scenarios (Heathcote & Bolton, 1995). Finlay-Johnson is known as the first person to apply this method in the classroom (Tuluk, 2004). According to Üstündağ (1994), creative drama is a method developed with games in the educational process and is also used as a tool in art education (Aral et al., 2003). Creative drama is an interactive learning process based on individuals' staging their thoughts, experiences or experiences with techniques such as improvisation and role-playing (Baldwin&John2012; Erciyes, 2008). This method differs from product-oriented theater in that it is based on improvisation without adhering to a specific scenario; thus, the process and the original expressions of the participants are at the forefront. As a result, creative drama contributes to participants' social and individual development by allowing them to express their ideas freely (Freeman et al., 2003; Gray & Piggot, 2018). Creative drama offers an effective learning method by supporting critical thinking and problem solving skills (Köksal Akyol, 2003). It helps to concretize abstract concepts and increases the permanence of learning (San 1996; Şentürk 1996; Üstündağ 1996). Through the role-playing technique, children learn to empathize and participate in learning by actively using their bodies (Üstündağ, 1996). Dewey's (1921) "learning by playing" philosophy, which emphasizes the value of active participation in learning, aligns closely with the core principles of creative drama. His approach allows students to express themselves through interactive and experiential methods, making it highly relevant to creative drama practise. Considering that creative drama requires active participation and initiative, the concept of self-efficacy becomes crucial. Research shows that individuals with high self-efficacy beliefs have greater motivation and put in more effort to succeed (Epçaçan & Demirel, 2011) which justifies the study's focus on teachers' self efficacy. Bekéniová (2012) believes that creative drama activities can effectively develop at least five basic competencies in children; lifelong learning, social communication, problem solving, social and personal competencies, and the ability to perceive, understand and express cultural elements. Primary school teachers' use of creative drama method can support students' skills such as self-expression, empathy and creative thinking. In this context, creative drama can be considered an effective method for developing essential teaching skills in both pre-service and in-service teachers. While in-service teachers benefit from creative drama by enhancing their classroom practices and student interactions, pre-service teachers can use it as a powerful tool to build foundational pedagogical competencies. Compared to other art forms, drama is recognized as one of the teaching methods most closely aligned with the educational process, due to its emphasis on experiential learning and student engagement (Lessinger, 1979). Therefore, examining

both groups provides a more comprehensive understanding of creative drama's potential in teacher education. However, there are not enough studies on primary school teachers' attitudes and self-efficacy towards creative drama method. Therefore, this study was designed to address the conceptual gap in literature by examining both in-service and pre-service teachers' self-efficacy beliefs and attitudes towards the creative drama method, aiming to clarify its role in teacher development and instructional practice.

Theoretical Framework

Creative drama is a pedagogical method rooted in theatrical techniques such as improvisation, role-playing, and storytelling, adapted for educational settings without the aim of performance (Akoğuz & Akoğuz, 2019). It is grounded in constructivist learning theories, particularly Dewey's (1921) emphasis on experiential learning and Heathcote's application of real-life contexts in drama education (San, 1991, as cited in Tuluk, 2004). Through engagement in dramatic scenarios, learners develop communication, problem-solving, empathy, and critical thinking skills (Kara & Çam, 2007; O'Toole, 1992). Techniques such as Hot Chair and Consciousness Corridor support analytical and decision-making abilities (Adigüzel, 2013), especially benefiting introverted or socially hesitant students by offering a safe, expressive space.

Within this framework, attitude and self-efficacy are key psychological constructs that influence the successful implementation of creative drama. Attitude, defined as a learned predisposition to respond positively or negatively toward a concept or practice (İnceoğlu, 2010; Kağıtçıbaşı, 1999), significantly impacts teaching effectiveness and student outcomes (Kara, 2010). Similarly, Bandura's (1977) theory of self-efficacy describes individuals' belief in their capacity to perform behaviors that influence outcomes. In educational contexts, teachers with high self-efficacy are more confident, motivated, and effective in adopting student-centered approaches like creative drama (Dembo & Gibson, 1984; Tschannen-Moran & Hoy, 2001). Notably, self-efficacy also contributes to shaping positive attitudes and sustained engagement (Schunk & Pajares, 2002).

Research suggests a reciprocal relationship between self-efficacy and attitudes (Pajares, 1996), both of which are essential for the integration of innovative teaching strategies. However, few studies have examined these variables together in the context of creative drama use among primary school teachers, especially in regions where the method is underutilized (Dellal Akpınar & Kara, 2010; Yıldırım, 2008).

Purpose and Importance of the Study

This study aims to explore the relationship between primary school teachers' self-efficacy beliefs and their attitudes toward the use of creative drama in primary schools in a province in Türkiye. It also investigates how these variables vary based on demographic factors such as gender and years of professional experience. Understanding this relationship is essential for promoting the effective use of creative drama in line with constructivist and student-centered educational goals (Güler, 2015; Üstündağ, 1994).

Creative drama is recognized as a method that enhances student participation, creativity, and emotional expression. However, previous studies indicate that many teachers do not sufficiently understand this method and do not apply it as effectively as intended (Dellal Akpınar & Kara, 2010; Yıldırım, 2008). Teachers' high self-efficacy has been associated with the successful implementation of innovative methods such as creative drama (Dembo & Gibson, 1984), while their attitudes have a direct impact on both their instructional practices and students' engagement (Elkatmış & Toptaş, 2015).

By examining both constructs together, this study seeks to provide insights into how teachers' confidence in their abilities and their predispositions toward creative drama influence its use in the classroom. The findings are expected to inform teacher education programs and contribute to strategies for enhancing teachers' professional competencies in using creative drama effectively (Şahin, Karadağ, & Tuncer, 2019). Ultimately, identifying these relationships will support efforts to align classroom practice with pedagogical approaches that prioritize student agency, empathy, and creativity.

Method

The current study employs a quantitative approach. In the study, the relational survey model, one of the general survey models of quantitative research methods, was used. The model that researchers use to investigate whether there is a relationship between variables is the relational survey model by Creswell (2018). The correlational survey model is a quantitative research model that tries to determine whether there is a certain correlational relationship between more than one variable and to predict the relationship between variables statistically (Karasar, 2010). The correlational survey design is appropriate for examining the statistical relationship between variables and predicting the possible results and tries to show what kind of a change it is (Karasar, 2010). The model of the research is a relational survey model because it examines the attitudes of primary school teachers in Artvin province towards self-efficacy and creative drama in terms of some demographic

variables. The study population of this research consists of primary school teachers working in primary schools affiliated with the Ministry of National Education in Artvin province and its districts in the spring semester of the 2022-2023 academic year. A total of 105 primary school teachers, 54 female and 51 male, participated in the study. Convenient sampling method was preferred in terms of easy accessibility and applicability. According to Büyüköztürk (2012), due to the limitations in terms of time, money and accessibility, the sample of the study was determined with the "convenience sampling method", which is the method in which easily accessible and easily applicable samples are preferred. Primary school teachers, who voluntarily participated in the study and were working in primary schools affiliated to the Ministry of National Education in Artvin province and its districts, constituted the sample.

Research Questions

This study aims to examine the relationship between primary school teachers' self-efficacy regarding the use of the creative drama method and their attitudes toward this method. To guide the research process, the following main research question and sub-questions were formulated:

Main Research Question:

- What is the relationship between primary school teachers' self-efficacy in using the creative drama method and their attitudes toward this method?

Sub-Questions:

1. What are the demographic characteristics of the teachers who participated in the study?
2. What are primary school teachers' attitudes toward the creative drama method?
3. What are primary school teachers' self-efficacy perceptions regarding the implementation of the creative drama method?
4. Do factors such as years of professional experience, age, gender, or having received creative drama training during undergraduate education or in-service training affect primary school teachers' attitudes toward the creative drama method?
5. Do the classroom teachers' years of profession, gender, receiving creative drama education at university and after university significantly affect their self-efficacy to use creative drama method?

Participants

A total of 105 primary school teachers participated in the study. The participants' demographic and professional characteristics, including age, gender,

and years of experience, were analyzed. The majority of the participants held a bachelor's degree, and 55.2% had taken a creative drama course during their undergraduate studies. Additionally, teachers' participation in post-graduate and in-service training programs was examined.

Table1.

Demographic Characteristics of the Participants

Variable	n	%
Age		
23-30	4	3.8
30-40	41	39.0
40-50	29	27.6
50 and above	31	29.5
Gender		
Female	54	51.4
Male	51	48.6
Graduated School		
Bachelor's	101	96.2
Master's degree / PhD	4	3.8
Years of Profession		
0-10	15	14.3
10-20	43	41.0
20-30	41	39.0
30 and above	6	5.7
Status of Receiving Creative Drama Education in Undergraduate Education		
Yes	58	55.2
No	47	44.8
Status of Taking Creative Drama After Undergraduate Degree		
Yes	37	35.2
No	68	64.8
Where the Creative Drama Education Was Received After Undergraduate Education		
National Education In-Service Training	25	23.8
I did not receive creative drama education	66	62.9
Special Course	14	13.3

Data Analysis

The data obtained through the data collection tools (personal information form, PDDYTÖ, PFLPFLAS) were statistically analyzed using the SPSS 29.0 statistical package program. Kolmogorov-Smirnov test was applied to test the normality of distributions. In the analysis, it was seen that the data did not conform to the normal distribution because the values were $p < 0.05$, while $p > 0.05$ was required. Based on these results, nonparametric tests (Mann Whitney -U, Kruskal Wallis) were analyzed. In addition, frequencies and percentages of demographic variables were calculated with descriptive statistics, and correlation analyses were performed to determine the relationship between teachers' "Attitude and Self-efficacy".

The results of the Kolmogorov Smirnov test for normality are presented in Table 2.

Table 2.

Kolmogorov Smirnov Test Results

Variable	Statistics	df	p value
Self-efficacy	.110	105	0.003
Attitude	.164	105	<001

Data Collection Procedures

The research process started with the approval of the scales submitted to Recep Tayyip Erdoğan University Graduate Education Institute, followed by a literature review. The necessary permissions were obtained for the Self-Efficacy Perception Scale for Using Creative Drama Method and the Attitude Scale for Creative Drama Course. Official permission was obtained in April 2023 and the research could be conducted in the designated schools. The scales were distributed over the internet and participants were asked to fill them in. Teachers were informed about the effects of the scales and their consent was obtained.

Scales

In the study, "Personal Information Form", "Self-Efficacy Perception Scale for Using Creative Drama Method" (SFLPTS) and "Attitude Scale Towards Creative Drama Course" (ATCAS) were used as data collection tools. The Personal Information Form was designed to collect teachers' demographic information such as age, gender and years of profession. The NCCAS was developed by Can and Cantürk Günhan (2009) to measure teachers' self-efficacy perceptions towards using creative drama method and is a 47-item, 5-point Likert-type scale with a high reliability coefficient (Cronbach's alpha 0.96). The RDSS prepared by Adigüzel (2006) was developed to measure the attitudes of pre-service teachers in faculties of education towards "Drama in Preschool" and "Drama in Primary Education" courses; the reliability coefficient of this 50-item, 5-point Likert-type scale was determined as 0.90, and its validity was supported by expert opinions and factor analysis. The scale was validated with a total of 550 students from the departments of classroom teaching and preschool teaching participated in this study.

Findings

This section presents the findings based on the research questions. First, the data obtained from the scales were examined for normality. The

p-values for creative drama self-efficacy and attitude data were 0.003 and 0.001, respectively, indicating that the data did not follow a normal distribution. Therefore, nonparametric tests (Mann-Whitney U and Kruskal-Wallis) were used. Frequencies and percentages of demographic variables were also calculated, and correlation analyses were conducted to examine the relationship between teachers' self-efficacy and attitudes toward using the creative drama method. Findings Related to the Research Question.

The correlation results of the main research question, "Is there a relationship between teachers' attitudes toward the creative drama method and their self-efficacy in using the creative drama method?" are presented in Table 3.

Table 3.
Relationship between Self-Efficacy and Attitude

		Self-efficacy	Attitude
Self-efficacy	Correlation	1.000	.181*
	Coefficient		.033
	Sig (1-tailed)		105
	N	105	105
Attitude	Correlation	.181*	1.000
	Coefficient	.033	
	Sig (1-tailed)	105	
	N	105	105

Table 3 presents the statistical analysis of the correlation between self-efficacy and attitude. The correlation coefficient is 0.181, which indicates that there is a positive relationship between self-efficacy and attitude; that is, as self-efficacy increases, attitude tends to increase. The "Sig (1-tailed)" value is 0.033, and since this value is less than 0.05, the relationship is considered to be statistically significant. As a result, there is a weak but positive relationship between self-efficacy and attitude ($r = 0.181$).

Findings Related to the First Sub-Problem

The results related to the question "What are the demographic characteristics of the teachers who participated in the study?" are presented below.

105 classroom teachers participated in the study. The age distribution of the participants is as follows: 3.8% were 23-30 years old, 39% were 30-40 years old, 27.6% were 40-50 years old and 29.5% were 50 years old and above. The highest participation is in the 30-40 age group. 96.2% of the participants have a bachelor's degree, 3.8% have a master's degree or doctorate. In terms of gender distribution, 51.4% were female and 48.6% were male. In terms of years of experience, 14.3% have 0-10 years of experience, 41% have 10-20 years of experience, 39% have 20-30 years of experience and 5.7% have 30 years or more of experience. Most

participation came from teachers with 10-20 years of experience. 55.2% of the teachers took a creative drama course in their undergraduate education, 44.8% did not. The rate of those who received creative drama education after undergraduate education was 35.2%, while the rate of those who did not was 64.8%. In addition, 23.8% of the teachers participated in in-service courses affiliated with national education and 13.3% participated in private courses.

Findings and Comments Related to the Second Sub-Problem

The results related to the question "What are primary school teachers' attitudes toward the creative drama method?" are presented in Table 4.

Table 4.
Descriptive Analysis Results of Primary School Teachers' Attitudes Toward the Creative Drama Method

	n	Mean	Standart Deviation	Minimum	Maksimum
Attitude	105	3.24	.62	1	4.70

When the descriptive analysis results showing the level of primary school teachers' attitudes toward the creative drama method were examined, the minimum score of teachers' attitudes was 1, corresponding to "strongly disagree," and the maximum score was 4.70, approaching "strongly agree." In addition, the mean score of teachers' attitudes toward the creative drama method was found to be 3.24.

Findings Related to the Third Sub-Problem

The results related to the question "What are primary school teachers' self-efficacy perceptions regarding the implementation of the creative drama method?" are given in Table 5.

Table 5.
Self-Efficacy of Classroom Teachers' Implementation of Creative Drama Method

	n	Average	Standard Deviation	Min. Value	Max. Value
Self-efficacy	105	3.855	.49454	1.81	5

When the descriptive analysis results showing the level of classroom teachers' attitudes towards creative drama method in Table 5 are examined; the mean value of teachers' self-efficacy is close to the level of very agree with 3,85. While the minimum value of teachers' self-efficacy is close to the level of slightly agree with the value of 1,81, the maximum value is at the level of 5 fully agree.

Findings Related to the Fourth Sub-Problem

The findings related to the question "Do factors such as years of professional experience, age, gender,

or having received creative drama training during undergraduate education or in-service training affect primary school teachers' attitudes toward the creative drama method?" are presented below. Whether the teachers' attitudes toward creative drama method differ according to their years of professional experience is presented in Table 6.

Table 6.

Attitude According to Years of Occupation

	Profession Year	N	Rank Mean	df	H(Test Statistic)	p
Attitude	0-10	15	53.10	33	0.00	.993
	10-20	43	53.98			
	20-30	41	52.09			
	30 and above	6	52.00			
	Total	105				

It was seen that there was no significant difference between the years of profession and teachers' attitudes towards creative drama method ($p > 0.05$). However, when we look at the averages, it was determined that the attitudes of teachers with 10-20 years of teaching experience were higher than the others, while the attitudes of teachers with 30 years and over were lower than the others.

Whether teachers' attitudes toward the creative drama method differ according to gender is presented in Table 7."

Table7.

Attitude in terms of Gender

	Gender	N	Rank average	df	U (Test Statistic)	p
Attitude	Female	54	55.96	1	1.218	.305
	Male	51	49.86			
	Total	105				

No significant difference was found between teachers' attitudes towards creative drama method and teachers' self-efficacy towards using creative drama method and their gender ($p > 0.05$). However, when the averages are examined, the perception of self-efficacy towards using creative drama method is higher in males, while the attitude towards creative drama method is higher in females.

Whether teachers' attitudes toward the creative drama method differ according to their status of having taken a creative drama course at university is presented in Table 8.

Table 8.

Attitude According to the Status of Taking Creative Drama Course at University

	Taking a Creative Drama Course at University	N	Average	df	U (Test Statistic)	p
Attitude	Yes	58	52.47 53.65	1	1.393	.844
	No.	47				
	Total	105				

There was no significant difference between the teachers' attitudes towards creative drama method and whether or not they took creative drama course at the university ($p > 0.05$). However, when the averages were examined, it was found that the attitude towards creative drama method was higher in teachers who did not take creative drama course at the university.

Whether teachers' attitudes toward the creative drama method differ according to their status of having taken a creative drama course after university is shown in Table 9.

Table 9.

Attitude According to Receiving Creative Drama Education After University

	Taking Creative Drama Course After University	N	Rank Mean	df	U (Test Statistic)	p
	Yes	37	52.95	1	1.259	.989
	No	68	53.03			

There was no significant difference between teachers' attitudes towards the creative drama method and whether or not they took creative drama courses after university ($p > 0.05$). However, when we look at the averages; it was seen that the attitudes of the teachers towards the creative drama method were higher in the teachers who did not take creative drama course after the university.

Whether teachers' attitudes toward the creative drama method differ according to the place where creative drama training was received is given in Table 10.

Table 10.

Attitude According to the Place of Creative Drama Training

	Place of Creative Drama Training	N	Rank Mean	df	U (Test Statistic)	p
	National Education In-Service Training	25	21.14	1	146.5	.409
	Special Course	14	17.96			
Total		39				

There was no significant difference between teachers' attitudes towards creative drama method and the place where teachers received creative drama training ($p > 0.05$). However, when we look at

the averages, the attitude towards creative drama method was higher in teachers who received in-service training affiliated to national education.

Findings Related to the Fifth Sub-Problem

Do the classroom teachers' years of profession, gender, receiving creative drama education at university and after university significantly affect their self-efficacy to use creative drama method? Findings related to the question are given.

Whether teachers' self-efficacy toward using the creative drama method differs according to their professional years is given in Table 11.

Table 11.
Self-efficacy by Year of Occupation

	Profession Year	N	Rank Mean	ddf	H (Statistic Test)	p
Self-efficacy	0-10	15	51.67			.866
	10-20	43	55.41			
	20-30	41	52.11			
	30 and above	6	45.17	33	0.70	
	Total	105				

It was observed that there was no significant difference between the years of professional experience and teachers' self-efficacy for applying the creative drama method ($p > 0.05$). However, when we look at the averages, the self-efficacy of teachers with professional experience between 10-20 years seems to be higher than the others. Teachers with 30 or more years of professional experience have lower perception of self-efficacy for using creative drama method than others.

Whether classroom teachers' self-efficacy for using the creative drama method differs according to gender is given in Table 12.

Table 12.
Self-Efficacy in terms of Gender

	Gender	N	Rank average	df	U(Test Statistic)	p
Self-efficacy	Female	54	51.68	1	1.448	.647
	Male	51	54.40			
	Total	105				

No significant difference was found between teachers' attitudes towards creative drama method and teachers' self-efficacy towards using creative drama method and their gender ($p > 0.05$). However, when the averages were analyzed, self-efficacy perception towards using creative drama method was found to be higher in males.

Whether teachers' self-efficacy toward using the creative drama method differs according to their status of taking creative drama courses at university is given in Table 13.

Table 13.
Self-efficacy According to Taking Creative Drama Course at University

	Taking a Creative Drama Course at University	N	Average	p
Self-efficacy	Yes	58	53.28	.918
	No.	47	52.66	
	Total	105		

There was no significant difference between teachers' self-efficacy to use creative drama method and whether or not they had creative drama education at university ($p > 0.05$). However, it was determined that the average score of self-efficacy perception towards using creative drama method was higher in those who took creative drama course at the university.

Whether teachers' self-efficacy toward using the creative drama method differs according to their status of receiving creative drama education after university is given in Table 14.

Table 14.
Self-efficacy According to Receiving Creative Drama Education After University

	Taking a Creative Drama Course After University	N	Average	df	U (Test Statistic)	P
Self-efficacy	Yes	37	47.18	1	1.473	.148
	No.	68	56.17			
	Total	105				

There was no significant difference between teachers' self-efficacy to use creative drama method and whether or not they received creative drama training after university ($p > 0.05$). However, when we look at the averages; it was seen that teachers' self-efficacy perceptions towards using creative drama method were higher in teachers who did not take creative drama course after university.

Whether teachers' self-efficacy for using the creative drama method differs according to the place of creative drama training is given in Table 15.

Table 15.
Self-Efficacy According to the Place of Creative Drama Training

	According to the Place of Creative Drama Education	N	Average	df	U (Test Statistic)	P
Self-efficacy	National Education In-Service Training	25	19.5	1	187.5	.718
	Special Course	14	20.89			
	Total	39				

There was no significant difference between teachers' self-efficacy to use creative drama method and the place where teachers received creative drama training ($p > 0.05$). However, when we look at the averages, it was determined that the perception of self-efficacy for using the creative drama method was higher in teachers who took private courses.

Overall findings of the study indicate a weak but significant positive correlation between primary school teachers' self-efficacy in using the creative drama method and their attitudes toward the method. This suggests that teachers with higher self-efficacy tend to hold more positive attitudes toward creative drama. Overall, teachers demonstrated positive attitudes and relatively high levels of self-efficacy in implementing the method. Demographic variables (such as years of professional experience, gender, and having received creative drama training during or after undergraduate education) did not have a significant effect on teachers' attitudes or self-efficacy; however, descriptive statistics revealed some minor trends. For instance, teachers with 10–20 years of experience showed slightly higher scores in both attitudes and self-efficacy, male teachers reported higher self-efficacy perceptions, while female teachers exhibited slightly more positive attitudes. These findings highlight the importance of enhancing teachers' self-efficacy to strengthen their attitudes and to promote the effective implementation of the creative drama method in classroom settings.

Discussion

This study examined the relationship between primary school teachers' self-efficacy beliefs regarding the use of the creative drama method and their attitudes toward this method. A statistically significant but weak positive correlation was found ($r = 0.181$, $p < .05$), indicating that while higher self-efficacy tends to align with more positive attitudes, other influencing variables may be present.

Although demographic variables did not yield statistically significant differences, descriptive statistics revealed several trends that are worth exploring. Teachers with 10–20 years of experience demonstrated the highest levels of both self-efficacy and attitude, suggesting that mid-career educators may be more open to innovative pedagogical approaches (Table 6 and Table 11). This finding is consistent with Üstündağ (1996) and Schunk (1985), who noted that teachers' professional experience can impact openness to adopting new teaching strategies.

In contrast, teachers with more than 30 years of experience reported lower mean scores in both self-efficacy and attitude, a trend which might reflect entrenched teaching habits or lack of institutional encouragement for late-career development.

These findings echo concerns raised by Freeman et al. (2010), who highlighted how administrative and contextual barriers often hinder veteran teachers from adopting active learning techniques.

Regarding gender, no statistically significant differences emerged, yet descriptive data indicated that male teachers had higher self-efficacy, whereas female teachers held more favorable attitudes (Table 7 and Table 12). This supports the earlier findings of Akbaş and Çelikkaleli (2006), who posited that gender may subtly shape how teachers perceive their instructional capabilities and emotional alignment with methods like drama.

Interestingly, teachers who received creative drama training either during pre-service education or through in-service programs showed higher self-efficacy levels (Table 13 and Table 14). However, they did not consistently demonstrate more positive attitudes (Table 8 and Table 9). In some cases, teachers without formal training reported slightly higher attitude scores. This counter-intuitive result may stem from trained teachers' heightened awareness of the method's practical challenges, resulting in more cautious evaluations. Melville and Farran (2021) reported a similar paradox: increased exposure to drama education deepened teachers' critical perspectives, even while boosting their self-efficacy.

Overall, the findings align with the literature emphasizing that professional development should address both skill-building and emotional engagement with pedagogical tools (Baldwin, 2012; Cohen, 2015). The weak correlation between attitude and self-efficacy further suggests that enhancing one without the other may limit effective implementation. Therefore, teacher education programs should holistically target both cognitive and affective domains. Additionally, school-based factors such as administrative support, curriculum flexibility, and peer collaboration need to be addressed to translate favorable perceptions into consistent classroom practice.

Recommendations

Based on findings of this study, several recommendations can be made to improve both teachers' self-efficacy and attitudes toward the creative drama method. Since the result revealed a weak but statistically significant relationship between these two dimensions and highlighted certain demographic trends, the following suggestions aim to provide practical strategies for teacher education programs, in-service training, and future research.

1. Enhance in-service training with reflective components: While teachers who received creative drama training demonstrated higher self-efficacy (Table 13), this did not consistently correspond with more

favorable attitudes (Table 8). Therefore, in-service programs should go beyond technical instruction and include activities that promote emotional and pedagogical engagement with the method (Cohen, 2015; Baldwin, 2016).

2. Leverage mid-career teachers as peer mentors: Teachers with 10–20 years of experience showed the highest mean scores for both attitude and self-efficacy (Tables 6 and 11). These teachers can be positioned as peer mentors or facilitators in professional learning communities to promote the effective use of creative drama.
3. Develop targeted support for late-career teachers: Those with over 30 years of experience had the lowest mean scores in both dimensions. Training programs designed for this group should address potential resistance and highlight the practical advantages of creative drama through real-life classroom scenarios (Üstündağ, 1996).
4. Address gender-specific needs in training design: Descriptive findings indicate a divergence: male teachers scored higher in self-efficacy (Table 12), while female teachers had more positive attitudes (Table 7). Gender-sensitive approaches in teacher development may help support both cognitive and affective dimensions more effectively (Akbaş & Çelikkaleli, 2006).
5. Revise creative drama courses in pre-service teacher education: The finding that teachers without undergraduate drama training had slightly higher attitude scores (Table 8) suggests that current course structures may need improvement. Integrating more hands-on and classroom-oriented practices could better balance theory and application (Delihassanoğlu, 2021).
6. Use validated scales to monitor professional growth: The scales used in this study (Can & Cantürk-Günhan, 2009; Adıgüzel, 2006) effectively measured changes in self-efficacy and attitude. Educational institutions should integrate such tools into teacher development programs to monitor progress over time.
7. Conduct mixed-method studies to explore contextual barriers: Since this research was limited to one region and relied solely on quantitative methods, future studies should incorporate qualitative data to investigate barriers such as institutional support, time constraints, and curriculum pressures (Fleming, 2014; Freeman et al., 2010).

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Differentiated Instruction in Practice: Primary Teachers' Views on the Century of Türkiye Education Model

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Abstract

The aim of this study is to evaluate the differentiated instruction approach implemented at the first-grade level within the scope of the Century of Türkiye Education Model (CTEM), based on the perspectives of primary school teachers. The study examines the classroom reflections of the support and enrichment dimension structured under the CTEM. Designed as a case study, one of the qualitative research designs, the study involved 10 primary school teachers, who had at least one student with special educational needs (SEN) in their classroom, and were working in public schools during the 2024-2025 academic year. The data were collected through semi-structured interviews and analyzed using the descriptive analysis method. The findings were presented within the framework of the following themes: content structure, instructional practices, assessment and evaluation processes, and support and enrichment practices. The teachers stated that they generally viewed the simplification of the content positively; however, they also emphasized that the new arrangements in Turkish, Life Sciences, and Mathematics curricula led to some challenges in students' learning processes. Activity-based approaches were generally supported by the teachers; however, challenges related to the implementation process—such as crowded classrooms and lack of materials—were also highlighted. Although the diversity of assessment and evaluation practices increased, teachers pointed out certain limitations regarding time management and ease of implementation. While the theoretical framework for support and enrichment practices appeared to be strong, there were deficiencies in implementation support and availability of materials. In conclusion, although the differentiated instruction framework within the CTEM offers an inclusive theoretical structure, the conditions for practical implementation indicate a need for further improvement. In order to support the implementation of the model, it may be beneficial to provide guidance on differentiated content and offer material support in addition to teacher training.

Keywords:

Century of Türkiye Education Model, Inclusion, Differentiation, Support, Enrichment, Students With Special Educational Needs.



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Introduction

Educational curricula are periodically revised or updated in accordance with the changing needs of society and developments in science and technology. The main purpose of these revisions is to enable individuals to acquire the knowledge, skills, and attitudes required by the contemporary era (Ornstein & Hunkins, 2018). In Türkiye, based on a similar rationale, the Century of Türkiye Education Model (CTEM) has been developed. This model adopts an approach that focuses not only on students' academic achievement but also on their multidimensional development through values, skills, and competencies (Ministry of National Education [MoNE], 2023).

In recent years, curriculum design has increasingly focused on addressing individual differences. Programs designed by taking into account students' developmental characteristics, learning pace, interests, and socio-cultural backgrounds aim to make the learning process more meaningful and accessible (Ornstein & Hunkins, 2018; Tomlinson, 2017). In this context, students with special educational needs (SEN) constitute one of the groups with additional needs in educational settings (Florian & Beaton, 2018). The presence of students who differ from their peers in terms of developmental, cognitive, physical, or sensory characteristics necessitates the development of curricula based on inclusive principles (UNESCO, 2024; Mueller, 2021). Therefore, every program that centers individual differences should also ensure the active participation of students with SEN in learning environments.

The active involvement of students with SEN in the learning process should not be limited to out-of-class support practices. To ensure their direct and continuous participation, it is essential to implement differentiated instruction within classroom practices (Florian & Beaton, 2018; Kupers et al., 2023). In previous curricula in Türkiye, educational support for students with SEN was typically provided individually and outside the classroom (MoNE, 2018). However, the CTEM reconsiders this process and marks a significant step toward establishing a theoretical foundation for differentiated instruction. With this model, greater emphasis has been placed on a holistic teaching approach to encourage active participation among students with diverse needs (MoNE, 2023). Accordingly, for inclusive practices to be carried out effectively, it is important that differentiated instruction is implemented systematically and with proper planning (Kupers et al., 2023).

Differentiated instruction refers to the planning and implementation of the teaching process based on students' individual characteristics, interests, readiness levels, and learning styles (Florian & Beaton, 2018). Within

the scope of the CTEM, this concept is approached as an adaptive and responsive teaching method tailored to individual differences (MoNE, 2023). The classroom application of this understanding yields positive results for both students with SEN and their teachers. For students, differentiated instruction enhances academic achievement, strengthens their sense of self-efficacy, and supports learning motivation. Studies also indicate that it helps teachers develop individualized, student-centered classroom activities (Kupers et al., 2023; Musalmina et al., 2024; Strogilos, 2018). The CTEM emphasizes differentiated instruction as a core component of classroom practices through two primary dimensions: "enrichment" and "support" (MoNE, 2023). In doing so, it aims to ensure the active involvement of students with various developmental characteristics, including those with SEN, in the learning process.

Support Dimension

The support dimension primarily intends to ensure the effective participation of students with SEN—particularly those with learning difficulties, intellectual disabilities, attention deficit and hyperactivity disorder (ADHD), autism spectrum disorder, and hearing or visual impairments—in educational processes. In this context, the support dimension of the CTEM is structured around four core dimensions: content, process, product, and learning environment sub-dimension. Each sub-dimension aims to support the direct and holistic participation of students with various disabilities in classroom learning processes (MoNE, 2023).

The content sub-dimension emphasizes adapting and diversifying instructional materials according to students' developmental levels and individual needs. Within this scope, priority is given to the use of diverse digital and visual materials such as audiobooks, subtitled videos, visual cues, and symbols (MoNE, 2023). Considering the challenges students with SEN may face in making sense of the content, these materials support their comprehension and promote active engagement in learning (Strogilos, 2018; Meyer, Rose, & Gordon, 2014; Tomlinson, 2017). The process sub-dimension involves adaptable instructional practices planned in alignment with students' characteristics and learning needs. Suggested strategies include individualized goals, gamification, and peer-interaction-based methods (MoNE, 2023, 2025). This approach particularly supports the learning and participation of students with SEN (Bhat, 2023; Kupers et al., 2023). The product sub-dimension reflects an assessment approach that enables students to demonstrate their knowledge and skills in multiple ways while developing awareness of their own learning. Accordingly, it is recommended that assessment tools and techniques be diversified

through projects, presentations, portfolios, posters, and digital products (MoNE, 2023). This sub-dimension aims to provide an environment in which students with SEN can express themselves in ways that match their individual characteristics (Bhat, 2023; Florian & Beaton, 2018; Strogilos, 2018). Completing the framework, the learning environment sub-dimension focuses on addressing students' diverse needs. It promotes physical accessibility through tools such as screen readers, special keyboards, and ergonomic classroom furniture, while reducing distractions to support focus and learning (Meyer, Rose, & Gordon, 2014; MoNE, 2023; Tomlinson, 2017). These adjustments help ensure the active, independent, and continuous participation of students with SEN, thereby enhancing the quality of inclusive education (Bhat, 2023; Strogilos, 2018).

In this context, the support dimension in the CTEM offers a holistic and systematic framework to increase the participation of students with SEN in classroom learning. Structured around four core sub-dimensions takes into account students' individual traits and requirements. Through the diversification of instructional materials, the adaptability of instruction, the variety of assessment approaches, and accessible physical arrangements, the support dimension aims to strengthen both academic development and students' social participation and motivation (Florian & Black-Hawkins, 2011; Tomlinson, 2017).

Enrichment Dimension

The enrichment dimension aims to enhance the engagement of gifted students in learning experiences that foster their individual potential and support the development of academic and higher-order thinking skills. The CTEM incorporates activities related to creative thinking, problem-solving, and project-based learning. Similar to the support dimension, the enrichment dimension is also structured around content, process, product, and learning environment sub-dimensions (MoNE, 2023).

The content sub-dimension promotes the use of advanced and enriched materials that allow students to go beyond their current levels of knowledge and skill (Akyol, Çakıroğlu, & Kuruyer, 2017; Kurnaz, 2025). Within this scope, the CTEM features interdisciplinary themes, open-ended questions, advanced resources, and texts that foster high-level cognitive processes (MoNE, 2023). These instructional elements aim to develop gifted students' skills in analysis, synthesis, and evaluation (Kaya, Mertol, Turhan, Araz, & Uçar, 2022; Lo & Feng, 2020). In addition, the process sub-dimension focuses on learning that is discovery-based, student-led, and grounded in productive tasks (Tomlinson, 2017). In the CTEM, practices such as problem-based learning, project development, independent research, and learning-centered activities are emphasized (MoNE, 2023). These processes aim to support students

in becoming active leaders and designers of their own learning experiences (Antonio & Prudente, 2024; Lo & Feng, 2020). Moreover, the product sub-dimension is structured to allow students to create original, high-level outputs based on their individual interests, strengths, and learning processes. Through differentiated outcomes, students demonstrate mastery not only of academic content but also of creativity, autonomy, and critical thinking, reflecting their engagement in enriched learning processes (MoNE, 2023). Finally, the learning environment sub-dimension encourages enriched learning corners, research areas, project studios, and flexible, tech-supported spaces tailored to students' interests and levels (MoNE, 2023). These environments enhance students' independence, productivity, and motivation to learn (Firman & Sandiarsa, 2024; Kariippanon, Cliff, Lancaster, Okely, & Parrish, 2019).

CTEM presents a comprehensive framework designed to meet the needs of both gifted students and those with SEN through differentiated and individualized teaching strategies (MoNE, 2023). However, the successful implementation of this framework depends not only on the articulation of its principles but also on their systematic application in educational contexts (Kupers et al., 2023; Meyer, Rose, & Gordon, 2014;). Challenges such as crowded classrooms, limited resources, and time constraints in Turkish schools can make it more difficult for teachers to apply these practices effectively (Deveci & Aykaç, 2019; Yaman, 2010). As a result, gifted students may be unable to fully utilize their potential, and students with SEN may not receive adequate support (Kupers et al., 2023).

Research suggests that teachers tend to organize instruction around the overall level of the class, which may result in limited responsiveness to individual differences (Reis & Renzulli, 2010; Tomlinson, 2017). Therefore, it is essential that teachers not only understand the general principles of a new curriculum but also develop the knowledge and skills to address the unique characteristics and needs of students with SEN (Florian, 2014; Hanini Anne & Mohd Rashid, 2024). Implementation success depends heavily on a teacher's ability to plan, adapt, and execute instructional strategies effectively (Kupers et al., 2023). While expanding in-service training is a key step, it is important that the content of such training addresses classroom challenges and student diversity (Özdemir, 2021). The flexible structures proposed by the CTEM aim to establish a responsive instructional approach that addresses the deep learning needs of gifted students and the accessibility and support needs of students with SEN. However, the effectiveness of this structure is closely linked to teacher competencies, physical environments, and implementation support. Although there are studies examining teacher perspectives in general (Duyul et al., 2025), particularly in relation

to curriculum implementation (Yurdakal, 2024) and values education (Taşkın, 2025) within the CTEM, there is still a lack of research focusing on special education and inclusive education contexts. This gap highlights the originality and contribution of the present study in addressing these underexplored dimensions.

Accordingly, there is a need for studies that explore teachers' experiences with differentiation practices during the early years of CTEM implementation. Particularly at the first-grade level—in which instructional adaptations are critical—examining teachers' classroom experiences with the CTEM can help reveal how the model is reflected in classroom practices and highlight its strengths and areas for improvement. This study aims to examine primary school teachers' views on the support and enrichment modules of the CTEM's differentiation approach.

In this context, the study aims to answer the following research questions:

1. What are first-grade teachers' general views on the CTEM?
2. What are first-grade teachers' views on the differentiation module of the CTEM?
 - a) What are their views on the support dimension?
 - b) What are their views on the enrichment dimension?

Method

Research Design

This study was conducted as a case study, one of the qualitative research designs. A case study is a qualitative method that allows for the in-depth exploration of a bounded system within a specific context (Creswell, 2013; Yin, 2014). In this regard, the study focused on a particular situation, namely the classroom reflections of the differentiated instruction approach structured in the first-grade curriculum of CTEM, with special attention to the support and enrichment dimensions from teachers' perspectives.

Participants

The participants of this study were teachers working in public schools across various provinces of Türkiye during the 2024-2025 academic year, and each of them had at least one student with SEN in their classroom. Participants were selected using criterion sampling (Creswell, 2013). Accordingly, the inclusion criteria required teachers to be teaching at the first-grade level and to be working with students who have diverse learning needs. First-grade teachers were specifically chosen because the CTEM was introduced exclusively at this level in primary schools during the

2024-2025 academic year. Participation in the study was voluntary, and the data collection process began after both verbal and written informed consent were obtained in accordance with ethical guidelines.

Table 1
Participant Demographics

Teacher Code	Years of Experience	Special Education Training Received*	Number of SEN Students	Type of Need
T1	19	1	2	Intellectual disability and speech disorder (1); Autism spectrum disorder (1)
T2	21	3	3	Giftedness (1); Language and speech disorder (2)
T3	19	1-2	2	Learning disability (1); Mild intellectual disability (1)
T4	25	3	3	Learning disability (1); Severe intellectual disability (1); ADHD (1)
T5	4	3	1	Mild intellectual disability (1)
T6	27	1	3	Autism spectrum disorder (1); Autism spectrum disorder and learning disability (1); Cerebral palsy (1)
T7	27	4	8	Giftedness (8)
T8	25	1-2	2	Mild intellectual disability (1); Mild intellectual disability and language-speech disorder (1)
T9	19	3	4	Cerebral palsy and severe intellectual disability (1); Hearing impairment (1); Autism spectrum disorder (1); ADHD (1)
T10	26	3	2	Language and speech disorder (1); Mild intellectual disability (1)

* 1 = In-service training, 2 = Courses, 3 = Undergraduate, 4 = Does not remember.
Note. ADHD = Attention Deficit and Hyperactivity Disorder; SEN = Special Educational Needs.

As shown in Table 1, a total of ten teachers participated in the study. In the classrooms of these teachers, students with SEN—including language and speech disorders, hearing impairments, intellectual disabilities, autism spectrum disorder, and giftedness—were enrolled. The teachers' professional experience ranged from 4 to 27 years. In addition, all teachers participated in a three-day in-service training program prior to the implementation of CTEM.

Data Collection

To align with the purpose of the study, a semi-structured interview form was employed. The form was designed to capture teachers' experiences

related to the classroom reflections of differentiated instruction principles outlined within CTEM. The interview questions were developed based on relevant literature and official CTEM guideline documents. Content validity was ensured through expert review. Prior to the main data collection, a pilot study was conducted to evaluate the clarity and practicality of the interview form. Based on the feedback obtained, necessary revisions were made, and the form was finalized. For example, the interview form included questions such as: "How many students are there in your classroom, and what are the diagnoses of your inclusion students, what are your opinions about the CTEM, and what challenges have you experienced in implementing differentiated instruction, and what are your suggestions for addressing them?"

Data was collected between February and April 2025. Interviews were conducted online with each teacher individually, and audio recordings were obtained with participants' consent. Each session lasted approximately 25 to 55 minutes. Before the interviews, participants were informed about the aim of the study, assured that the data would be used solely for scientific purposes, and their verbal and written consent was obtained.

Data Analysis

Qualitative data analysis often involves an inductive approach in which themes and subthemes are derived directly from the data rather than imposed a priori, ensuring that findings remain closely tied to participants' perspectives (Creswell & Poth, 2018; Thomas, 2006). To enhance the trustworthiness of the analysis, multiple researchers are recommended for coding, followed by procedures to reach consensus (Elo et al., 2014; Nowell et al., 2017). In line with these principles, the audio recordings in this study were

transcribed verbatim and analyzed using descriptive analysis. The data was processed with MAXQDA software. Three researchers independently coded the data and subsequently reached agreement on the themes and subthemes through comparative analysis.

Trustworthiness

To ensure the credibility of the study, several strategies were adopted to enhance trustworthiness during data collection and analysis. The inclusion of participants from different provinces, with varying professional backgrounds and classroom profiles, contributed to contextual diversity and strengthened the transferability of the findings. The interview form was shaped through expert consultation and revised based on feedback to ensure content validity. During analysis, interview data were transcribed and independently coded by three researchers. Codes were compared and reconciled through consensus to minimize interpretative bias and enhance data reliability. All participants joined voluntarily, were briefed about the study, and provided informed consent. Furthermore, the data were anonymized in accordance with Türkiye's Personal Data Protection Law No. 6698, ensuring confidentiality and full compliance with ethical standards. These procedures collectively supported the trustworthiness and ethical rigor of the research process.

Findings

This study presents the findings obtained from teachers' opinions regarding the differentiated instruction approach within the scope of CTEM. The themes and subthemes that emerged from the analysis are organized under four dimensions. The main codes frequently mentioned by the participants are summarized in Table 2.

Tablo 2
Themes, Sub-Themes, and Key Codes Emerging from the Data

Mean Team	Sub-themes	Codes
Content Framework	Turkish Course	Simplification of learning outcomes, reduced content load, difficult texts, above-level topics, challenges with sound groups
	Life Studies Course	Balanced content, simplified content
	Mathematics Course	Rapid topic transitions, improper sequencing (subtraction before addition mastery), abstract "mental addition" too early
Teaching-Learning Practices	Activity Design	Diversity of activities, increased student engagement
	Technology Integration	Use of EBA, limited scope of digital content, need for alternative platforms
	Physical Environment	Infrastructure problems, crowded classrooms
Assessment and Evaluation	Diversified Assessment	Performance tasks, observation-based evaluations
	Implementation Challenges	Observation scales time-consuming; difficulty in crowded classrooms; challenges in skill- and process-based assessments
Support and Enrichment	Support for SEN	Limited materials/activities for SEN; limited QR code activities; need for tailored books and resources; crowded classrooms prevent one-on-one support.
	Enrichment for Gifted	Limited in-class enrichment, "waiting period" for gifted students, reliance on support rooms instead of in-class differentiation

As summarized in Table 2, this study identified four overarching themes—content framework, teaching-learning practices, assessment and evaluation, and support-enrichment. Their corresponding sub-themes and representative codes are elaborated in the following sections.

Content Framework

Within the scope of the study, participants expressed their opinions particularly on the arrangement of course contents and its alignment with the instructional needs of first-grade learners.

Turkish Course: The teachers indicated that there was a simplification in the content of the Turkish course compared to the previous curriculum. This simplification was particularly associated with the reduction in the number of learning outcomes. For example, T8 considered this a positive development, stating: “There are practices that I really liked. I mean, primarily the reduction in learning outcomes. I think this is how it should be”. Similarly, T5 referred to the timely completion of the coursebook by saying: “Likewise, we finished the Turkish coursebook and entered the mid-term break. The texts there were just sufficient in my opinion.” This indicates that the participant found the reduced content load beneficial for students.

Despite the simplification in the number of outcomes and texts in the Turkish coursebook, participants pointed out limitations in the appropriateness of the content to the grade level.) They particularly emphasized that some of the texts in the Turkish coursebook were relatively demanding for students at this grade level. T5 expressed this situation as follows: “Students had difficulty while doing it; there were parts they couldn’t make sense of in their minds.” T1 noted that the sentence and word structures and length of the texts made comprehension difficult for students, stating: “The texts are very long—some even span three pages. A first-grade child just learned to read. Expecting them to read three pages, understand, and complete the activities is too much. I found this very heavy for a child.” Other participants (T6, T8, and T9) agreed that the topics, length, and sentence and word structures of the texts were beyond the students’ comprehension levels. They also emphasized that the content was above the cognitive level of the students. T6’s statement: “They included a space text in Turkish. I mean, to develop the child’s imagination, yes—but it was heavy again, heavy for a first-grader.” serves as an example.

Participants who provided opinions on the literacy arrangements within CTEM highlighted that these arrangements posed certain challenges to the process of learning to read and write. Teachers primarily criticized the changes in the sound groups. The new curriculum requires transitioning to sentence

construction after completing two sound groups. Some teachers criticized this practice for causing difficulties in meaning construction. T9, for example, stated that the sound groups used in previous years facilitated meaningful sentence construction: “In the previous year, it was ‘e-l-a-k-i-n’. We could derive many more words and make them concrete. For instance, ‘Ela lale el ele.’ It was concrete—holding hands is something significant in a child’s daily life.” T2 emphasized that the necessity of learning many words simultaneously led to difficulties in both reading-writing and comprehension.

Participants T3, T5, and T9 drew attention to the writing directions of certain letters in the program, stating that these writing directions made learning difficult. This problem was especially noticeable with letters such as ‘a, n, t, i, l’. T3 noted that the writing directions were not compatible with natural hand movements. T9 illustrated this by saying: “The writing direction of the letter ‘a’—you start it like a ‘c’. It just doesn’t work. I even tried it myself that way—it doesn’t flow.”

Participants also reported that students had notable difficulties in forming syllables and words from sounds. One of the main reasons cited was the removal of the colored syllabication practice used in the previous program. T2 explained: “Previously, we used to give syllables in color. This year, it was removed. Our students who are lagging behind had difficulty reading words, especially long ones written in the same color and font.” Similarly, T3 remarked that this change made word recognition harder: “Last year it was colored. (This year) the children started reading ‘Emel’ as ‘Em-el’. If it were colored, they would read it as ‘E-mel’.” The same teacher illustrated that this made it difficult to reach the meaning of the word: “Then they couldn’t comprehend ‘Emel’ or ‘book’ for two hours. If I said ‘kitap’, you’d understand. But if I said ‘kit-ap’, they struggled.”

Life Studies Course: Teachers expressed varied views regarding the Life Studies course. Participants T3 and T8 stated that there was simplification in the content of the life studies course compared to previous programs. T3 stated: “We did not encounter any essential problems in the Life Studies course. There’s nothing particularly negative that comes to mind. Similarly, T8 emphasized the content was more balanced in terms of information density: “The Life Studies coursebook is better—there is not too much information overload.” However, T4 noted that due to the demographic structure of their school, particularly Syrian students had difficulty understanding the coursebook content. This was attributed to both the students’ language proficiency and the level of the coursebook topics: “The Life Studies coursebook is nice, but some of the topics in the book are far above the level of my students.” T5 expressed that students from refugee backgrounds faced challenges in understanding the material due

to language barriers, stating: "I mean, especially considering they are Syrian, they don't understand much." Participants noted that, despite the simplified content in the Life Studies course, differences among students may have influenced how comfortably some of them interacted with the material.

Mathematics Course: Teachers participating in the study expressed that the arrangements made it harder to understand the topics and operations in the first-grade Mathematics curriculum. T2 remarked that topic transitions in Mathematics were rapid and sometimes unclear, stating: "In first-grade Mathematics, it feels messy and inconsistent. Topic changes occur without clear transitions." T2 clarified that this made it difficult for students to grasp topics in depth: "Before rhythmic counting ends, it moves to subtraction, before subtraction is understood, to equality, before that's understood, to finding the missing number in addition, and then back to subtraction." T4 noted that the transition to subtraction, before students had fully internalized addition, may have made it harder for students to understand the new content. T1 stated that the topics were not sequenced appropriately for students' levels: "We are teaching basic addition—that's necessary. But in both addition and subtraction, there's a topic called mental addition. We've been dealing with it for the last two weeks. It requires doing several operations at once, abstract thinking—and our students are still in the concrete operational stage. It definitely needs rearrangement." Participants evaluated the simplification of mathematics content and suggested a need to reconsider how topics are sequenced and connected.

Teaching-Learning Practices

Participants addressed teaching-learning practices from the perspectives of content-related aspects, technology-supported methods, and physical classroom conditions. In this context, participants primarily stated that the activities included in the coursebooks were varied and supported student participation. For example, T4 highlighted the diversity by saying: "There are enriched, differentiated activities," while T1 stated: "There are more sensory games and group activities in this one." Both T1 and T4 noted that the activities promoted student engagement. Additionally, all participants agreed on the variety of activities in the Turkish coursebook. T2 described this variety as follows: "There are plenty of exercises in the Turkish coursebook, which is great. There are puzzles like finding the word in the dictionary, which comes first, which comes later. Then there are creative tasks like making predictions, completing the story yourself."

Teachers considered the Life Studies practices supportive of student engagement, highlighting their activity-based design. T5 described this course as: "Life Studies is supported with a lot of activities. Like

project homework, games. At the end of each topic there is an activity or a matching task—cut and paste especially was very enjoyable." Similarly, it was stated that the activities in the Mathematics coursebook were also varied. T6 noted this by saying: "They especially added more activities in the Mathematics book. It's enriched and well-balanced. The activities present the topic through different perspectives, which helps students better understand the content."

In the study, participants stated that they made use of activities offered via the Educational Informatics Network (EBA) and considered them helpful. However, the need for different educational portals and applications was also highlighted. This need was associated with the narrow scope and brief duration of some content. For instance, T8 stated: "I do have students use the activities provided there (on EBA). But some of them progress slowly. I mean, their durations are very short. So we couldn't use it very effectively." Participants emphasized that different technology-based applications could offer more variety. As an example, T5 said: "You know, there are various extra tools on different platforms... (provided examples of portals and applications). There are useful activities there."

Participants pointed out that limitations in the physical environment affected the application of teaching-learning practices. In this regard, challenges related to physical classroom conditions, alongside technology-based practices, emerged as noteworthy findings. Most participants stated that they experienced infrastructure problems regarding the use of technological tools in the classroom. The most commonly mentioned issues were smart board usage and internet access. In this regard, T1 shared their difficulties as follows: "We rely heavily on the internet, but we can't always access it. Or the smart board doesn't always turn on—it crashes, something happens. Time passes and you can't open it."

Another notable finding was that the large number of students in classrooms hindered the implementation of instructional activities. Most participants stated that especially in activity-based courses, crowded classroom made time management and individualized attention difficult. T1 shared this challenge as: "In crowded classrooms, it may not be understood. There may not be enough time to complete the activities." T5 also mentioned similar challenges and illustrated this particularly with writing activities: "It's difficult to carry out activities with forty-five students. For example, when correcting writing or doing dictation in first grade... trying to attend to all of them in one class period is not enough."

Assessment and Evaluation Process

Participants' views on the assessment and evaluation process structured under CTEM varied. In this respect,

participants viewed the diversification of assessment practices as a helpful adjustment. The process was not limited to exams; it was also diversified through open-ended questions, performance tasks, and observation-based evaluations. For example, T7 noted that the learning process is as important as the outcome, stating: "Just testing isn't enough to see what the child knows; sometimes you need to look at what they did throughout the process to understand how they learned." Participants emphasized that this practice contributed to a more holistic evaluation of student learning.

However, they also mentioned various difficulties encountered in implementing this process effectively. The analysis revealed that the structure of the assessment-evaluation process created some challenges within the instructional process. T1 pointed out that the observation-based rating scales implemented in the new program were time-consuming, which, in turn, made it harder to revisit some parts of the content during instruction: "In this model, we just mark our observations on the scales. Then we provide feedback to parents. In the classroom, since there isn't enough time, sometimes we can revisit the topic, sometimes we can't. It's not very efficient". Another teacher, who also mentioned having similar difficulties, associated these issues with the crowded classroom setting. This teacher described the difficulty of implementing individual evaluations in crowded classrooms as: "You apply it individually for each student, evaluate them separately, and file it for each one. Now, in classes of forty to forty-five students, it's unfortunately not really possible."

Participants T1, T2, and T3 stated that the time-consuming nature of the process also made it difficult to identify students' instructional needs. They also noted that skill- and process-based evaluation methods did not always adequately capture students' learning progress. T3 reflected on this situation by saying: "In this (new program), things seem to take longer. We're doing process- and skill-based assessments. But as a teacher, it's not always clear whether the student has understood the concept". Alongside their views on the assessment-evaluation process in general, participants T2 and T4 commented specifically on the instruction of reading and writing. These teachers shared that the pace of assessment occasionally affected the overall learning process during reading and writing instruction. T2 described this situation as follows: "In the first semester, we were introducing two or three sounds per week. Later, it shifted to one sound per day. Providing assessment and evaluation for each sound daily became quite challenging. It also resulted in considerable use of paper and placed additional demands on time". Based on these findings, it can be concluded that while teachers viewed the assessment and evaluation practices as having

multiple dimensions, they encountered challenges such as limited time and crowded classrooms, which may have made it more difficult to align assessment practices smoothly with instruction.

Support and Enrichment in the Differentiated Instruction Process

Findings obtained within the scope of differentiation in the study are presented below under the dimensions of support and enrichment.

Support: The findings from this study suggest that implementing differentiated practices presented certain challenges due to the current classroom environment. All teachers stated that they could not fully implement differentiated support practices addressing the individual needs of students with SEN in their classrooms. One possible contributing factor may have been the growing diversity of student learning needs, which might have made it more difficult to implement differentiated instruction effectively in the classroom. For example, T1 had two students in the classroom diagnosed with mild autism and intellectual disability. Accordingly, T1 expressed difficulty in effectively using differentiated practices: "We definitely cannot implement these with inclusion students. Because the child needs one-on-one attention." Similarly, T3 and T4 also shared that it is not always easy to implement differentiation suggestions in typical classroom environments.)

Participants noted that content appropriate to the individual levels of students is relatively limited. In this context, T3 highlighted the inadequacy of practices for students with learning difficulties and mild intellectual disabilities: "The activities in the government-issued books can be challenging for some students. Each student has a different learning profile—one may learn, but forget a week later. There is a need for activities more specifically designed to address their needs."

In this study, participants agreed that the lack of instructional materials limits support practices. For instance, T9 stated that the activities accessible via QR codes in the books did not sufficiently address the needs of students with SEN: "Among the QR code activities in the books, there's one—maybe—designed for these children, maybe not. I search and find activities on the internet myself." T3 focused on the absence of specially prepared materials or activity books for students diagnosed with reading difficulties, saying: "I would've wanted to have an activity book. A book could be prepared specifically for these students in cooperation with the GRC."

Enrichment: In this study, two out of the ten teachers interviewed had gifted students in their classrooms. Therefore, findings on the enrichment dimension are

based on the views of these two teachers (T2 and T7). According to their opinions, differentiated practices were not fully integrated into the classroom teaching process.

T2 stated that a student in their class began first grade already able to read, but that no enrichment aligned with this student's developmental pace was provided. Instead, the student experienced "a waiting period", which T2 described as: "I haven't been able to do any enrichment for my gifted student so far." One of the reasons for this situation could be the intense and fast-paced nature of the first semester curriculum, which leaves little opportunity for individualized instruction. The teacher's remark: "First grade is really intense—it goes by in a rush. We're teaching letters, then their writing, then comprehension activities, and so on," reflects a daily routine that is intense, fast, and challenging.

Another participant, T7, noted that there were eight students in the class who had been formally identified as gifted, and added that these students receive four hours of enriched instruction (resource room) per week at school. Therefore, T7 noted that there seemed to be no need for additional in-class differentiation, explaining that these students were already provided with advanced support in a separate educational setting: "I have eight students (diagnosed). They participate in enriched instruction. They're supported at a higher level, engaging in different learning experiences." This indicates that, since these students are already supported through alternative content and activities within the school setting, differentiated practices are not fully implemented in the classroom.

Although the study focused on the differentiated instruction dimension of CTEM, an additional finding was obtained during data collection. This finding relates to the fact that many teachers noted that the trainings could be more practice-oriented and detailed. Participants pointed to the background and experience of the trainers as a key factor contributing to this view. For example, T10 explained this situation as follows: "The instructor at the seminar was less knowledgeable than us—just read from the slides and moved on." Similarly, T8 stated: "The instructor didn't know much either; she was just a lady who had taken a few days of training." and "It's nothing beyond what we already do with individualized education plans," indicates that the teacher interpreted differentiated instruction as being limited to individualized education plans (IEPs).

Discussion and Conclusion

In this study, the opinions of teachers regarding the "differentiated instruction" approach implemented at the first-grade level within the CTEM were examined. Semi-structured interviews were conducted with

primary school teachers working in different provinces in public schools affiliated with the Ministry of National Education. Through these interviews, teachers' experiences with differentiated instruction practices and their views on the overall structure of the model were examined. The findings were organized under four main themes: content framework, teaching-learning practices, assessment and evaluation, and support and enrichment within differentiated instruction.

Content Framework

This study revealed that the content arrangements within the CTEM framework were seen as beneficial in certain respects, but challenges also emerged during their implementation. According to the findings, teachers generally viewed the simplification of learning outcomes in course content as a helpful adjustment. The teachers stated that the simplification of learning outcomes supported both a more manageable planning process and improved student understanding. This situation may contribute to a more systematic and level-appropriate instructional process. The first-grade level, in particular, is a critical period in which students are in the developmental stage of academic skills. In other words, at this level, students are developing foundational skills in reading, comprehension, conceptual understanding, and basic operations (Başar, 2019; Pianta & Kraft-Sayre, 2003; Whitmore & Meyer, 2020). Moreover, content simplification may facilitate the learning process not only for typically developing students but also for students with SEN. Although no direct statements on this issue were made by teachers in this study, the literature emphasizes the importance of taking individual differences into account while planning content (Deunk et al., 2018).

However, the findings of this study indicate that teachers had some reservations about the changes made to the course content. One of the highlighted difficulties was the process of learning to read and write, beginning with the changed sound groups and continuing through the stages of combining sounds into syllables, words, and sentences. Participants stated that students struggled in key areas such as constructing meaningful words and sentences from sounds, reading and comprehension, and correct letter writing. At this point, it should be noted that literacy is not only a technical skill but also a process based on constructing meaning (Whitmore & Meyer, 2020). Teachers also shared opinions regarding the language level, concepts, and length of the texts included in the Turkish coursebooks. For example, T1 and T8 emphasized that these features may have made it more challenging for students to engage with or understand the texts. This points to a need for the reorganization of texts. Indeed, the literature stresses

that understandable sentence structures, repeated words across different sections, and content that can be linked to students' background knowledge and experiences support literacy development (National Reading Panel, 2000; Paris & Hamilton, 2009; Wijekumar et al., 2023).

Teachers' opinions on the content of the Mathematics course, pointing to fast-paced conceptual transitions and the improper sequencing of operational steps. In this context, the views of T2 and T4 suggested that introducing subtraction before students had a solid understanding of addition may have made it harder for them to build meaningful comprehension. Early transitions between operations at the first-grade level may obstruct in-depth learning of relevant concepts (Kilpatrick, Swafford & Findell, 2001). Accordingly, it can be said that Mathematics content should be designed in a way that allows one operation to be understood and applied before transitioning to the next. These findings suggest that beyond simplifying the number of outcomes, presenting concepts, topics, and skills in accordance with students' developmental levels and aligning them with the instructional process is crucial.

At this point, factors such as the length of texts, the abstractness of certain topics, or the fast-paced conceptual transitions in Mathematics can be considered potential challenges not only for typically developing students but especially for those with special educational needs (SEN). In particular, the fact that some texts exceed students' comprehension levels or that certain activities require abstract reasoning at an early stage may create additional barriers for SEN students. These students often require more concrete, gradual, and scaffolded instruction (Delafontaine et al., 2024; Hornby, 2011).

Teaching-Learning Practices

In this study, the opinions regarding teaching-learning practices within the scope of CTEM included both positive aspects and encountered limitations. Participants particularly noted that the activities in the coursebooks that support the development and reinforcement of academic skills had become more diverse. Especially for primary school students, a variety of activities helps make learning more concrete, meaningful, and memorable (Silveira-Zaldivar & Curtis, 2019; Tomlinson, 2017). This diversity also aligns with the principles of Universal Design for Learning (UDL). According to this approach, the learning process should be adapted to individual differences, and the use of multiple learning pathways and strategies should be supported for the acquisition of knowledge and skills (CAST, 2018). In this respect, it can be concluded that CTEM considers individual differences in the design of learning activities, thereby supporting more inclusive instructional practices.

Although teachers viewed the diversity of activities in the coursebooks positively, they also reported experiencing limitations in access to technology-based applications. For example, while the use of the EBA education portal was recommended, its content was sometimes limited or either too simple or too complex for the students' level. This finding is consistent with the literature that suggests technology-based applications should be designed considering students' varying levels and needs (CAST, 2018; Rose & Meyer, 2002). In this context, not only should easy technical access to content be ensured, but the content itself should be designed to be adaptable to the diverse needs of students. Additionally, the success of teaching-learning practices should be understood to be related to crowded classroom, teacher competence, and classroom environment characteristics (Florian, 2019; Topal & Özsoy, 2025). In this study, some teachers stated that crowded classrooms limited the implementation of teaching-learning practices. This may act as a barrier to ensuring the active participation of every student in the learning process within the framework of differentiated instruction. Similarly, the literature indicates that crowded classrooms may reduce the effectiveness of implementation and make it more challenging for students with SEN to benefit fully from learning opportunities (Florian, 2019; Avramidis & Norwich, 2002).

As a result, while teachers appreciated the diversity of the teaching-learning practices recommended by CTEM, constraints in physical infrastructure and crowded classroom settings made it challenging to implement these practices effectively. Therefore, it is important that both the content and the learning environments where the content will be delivered are structured in accordance with students' developmental levels and learning needs. Moreover, it is essential to support teachers so that they can manage this process effectively.

Building on these findings, concerns such as class size, technological limitations, and content-student alignment may become more critical barriers in the learning processes of SEN students. The literature shows that these students require more individualized support, visual-concrete materials, and additional time (Delafontaine et al., 2024; Florian, 2019). In this regard, it is important that the diversity offered by CTEM can effectively reach SEN students through appropriately structured learning environments and by providing sufficient support for teachers.

Assessment and Evaluation Process

The findings of this study revealed that teachers' opinions regarding the assessment and evaluation practices within the CTEM framework varied. Some participants highlighted the value of using a variety of assessment tools. They also emphasized that the

assessment process should address not only learning outcomes but also the learning process itself. For example, T7 expressed this opinion as follows: "Just testing isn't enough to determine what the child knows; sometimes it is necessary to examine what they did throughout the process to understand how they learned.". This view indicates that the new program focuses not only on "what has been learned" but also on "how learning takes place". This perspective is consistent with the literature (Heritage, 2010), which suggests that process-oriented assessment helps educators observe the learning process. Studies emphasizing the importance of focusing not only on the outcome but also on the developmental process of learning can be found in this context (Karaman, 2021; Zhang et al., 2022).

On the other hand, some teachers in this study shared that they encountered a number of challenges in implementing assessment and evaluation practices. The most frequently mentioned difficulties were related to time management and crowded classrooms. In this context, T1 noted that observation-based rating scales limited instructional time and made it more difficult to revisit topics; T2 and T3 stated that the intensity of the process made it harder to identify instructional needs. Participants most often referred to challenges involving time management and the crowded classroom settings. In line with the findings, it can be concluded that the diversity of assessment practices is only meaningful when matched with appropriate implementation conditions. Heritage (2010) emphasizes that in order for assessment processes to guide instruction, they should be structured in a planned and systematic manner. Effective in-class assessment and evaluation are only possible when teachers can plan the process in a timely and meaningful way (Brookhart, 2011). Accordingly, the views expressed in this study are consistent with the literature. Participants especially drew attention to the fact that observation-based assessments are time-consuming and that the scope of individual assessments in crowded classrooms may not be sufficient to effectively support the identification of instructional needs.

At this point, the differentiation dimension of the assessment and evaluation process becomes an important topic of discussion. In this study, teachers did not directly address assessment and evaluation practices related to students with SEN. At the same time, the literature consistently emphasizes the importance of organizing assessment and evaluation processes in ways that take individual differences into account (Brookhart, 2017; Florian & Spratt, 2013). For students with SEN, there is a need for assessment and evaluation methods that do not focus solely on outcomes but also assess strengths and individual progress (Florian & Spratt, 2013). It can be recommended that these

assessment and evaluation methods include both standardized tools and informal techniques. Such an approach may also offer teachers the opportunity to plan and implement the instructional process according to students' diverse needs.

Support and Enrichment in the Differentiated Instruction Process

In this study, the differentiated instruction approach of CTEM at the first-grade level was investigated within the context of support and enrichment. The analysis of teachers' views regarding students with SEN and gifted students presents findings related to the classroom implementation of the model.

The research findings indicate that while teachers are aware of support practices, they experience difficulties in implementation. Teachers referred particularly to the lack of materials and activities addressing the individual needs of students with SEN, crowded classrooms, and time constraints that make one-on-one interaction more challenging. Indeed, T1's statement, "We definitely cannot implement these with inclusion students. Because the child needs one-on-one attention." draws attention to this challenge. This situation also suggests that the successful implementation of differentiated instruction is not only dependent on the planning process but also on the existence of appropriate conditions for practice. The literature similarly emphasizes that for differentiated practices to be effectively implemented, factors such as the physical environment, the diversity and availability of materials, and teacher workload are important to consider (Gaitas & Alves Martins, 2017; Tomlinson, 2014). In this way, both the opportunity to implement differentiated practices and the development of learning environments aligned with students' individual needs can be supported (Tomlinson, 2014).

Additionally, teachers pointed out that the printed and QR code materials did not offer enough examples to address diverse student needs. This suggests that the requirements for digital content go beyond mere technological access. It draws attention to the relevance of content in terms of suitability and adaptability to different needs. Researchers focusing on this issue also emphasize the importance of materials that are prepared or adaptable according to the individual learning differences of students with SEN (e.g., Hall, Meyer & Rose, 2012; Ok & Kim, 2017). Such materials can enable students to actively participate in the learning process, make sense of and consolidate the intended knowledge and skills at their own pace (Bural & Öztürk, 2024; Hall, Meyer & Rose, 2012; Pozas, Letzel, Lindner & Schwab, 2021).

The findings regarding enrichment practices in this study offer meaningful insights into another important

aspect of differentiated instruction. For example, T2's statement about experiencing "a waiting period" for their gifted student reveals that enrichment practices were not adequately integrated into the instructional process. This highlights that differentiation should also involve the creation of learning environments that support gifted students. The fact that T7's gifted students were provided with instruction in a support room as part of a project underlines the importance of school-based support rooms. However, this support may also prevent integration into classroom instruction. The literature emphasizes that enrichment should be planned as an instructional practice in conjunction with in-class interaction, rather than solely as an out-of-class or supplementary activity (Tomlinson, 2014).

As is known, CTEM began implementation in grades 1, 5, and 9 starting from the 2024–2025 academic year. Accordingly, in-service training programs were organized for teachers teaching at these grade levels during the fall semester. Although this study focused on the differentiated instruction dimension of CTEM, an additional finding was obtained during data collection. This finding indicated that many teachers considered the training to lack sufficient depth and practical relevance. The findings of this study show that teachers mostly found the in-service training they received to be limited. Participants' critiques, particularly regarding the knowledge level of the trainers, the lack of practice-oriented content, and the mismatch between training and real classroom situations are noteworthy. This situation suggests that in-service training may be more effective when it combines content delivery with practical examples. The literature also considers the quality of teacher training as a significant factor (Avalos, 2011; Darling-Hammond, Hyler & Gardner, 2017).

In conclusion, the differentiated instruction model presented by CTEM has the potential to offer an inclusive and learner-centered educational approach. However, the effective implementation of this potential in practice will depend on a range of supportive elements, including teacher training, material development, classroom-based support, and the improvement of infrastructure. Educational policies that take these multidimensional needs into account are more likely to support the model's effectiveness.

Recommendations

Based on the findings of this study, several directions for future research and educational practice are recommended to enhance the effectiveness of the CTEM's differentiated instruction model. Future studies should extend beyond the first-grade level to include 2nd, 3rd, and 4th grades in order to explore potential differences in CTEM implementation across grade levels. Since CTEM is currently limited to the first-

grade level, the present study provides only an initial evaluation. As the model is progressively implemented in higher grades, further research will be necessary to examine its broader effects and applicability. Longitudinal studies examining the impact of CTEM's support and enrichment dimensions on students' academic, social, and emotional development would provide valuable insights into long-term effectiveness. Additionally, action research investigating how teachers apply differentiation strategies - such as classroom material design, flexible grouping, and individualization - may offer practical guidance to strengthen the model. It may also be valuable to consider students' perspectives by conducting studies that explore how they engage with the support structures provided by CTEM. Comparative research across regional, socioeconomic, and urban-rural contexts would further inform educational policies by identifying implementation challenges and contextual needs.

From a practical standpoint, it would be beneficial to strengthen teacher preparation programs by placing greater emphasis on differentiation, individualization, and inclusive education for gifted students and those with SEN. Moreover, CTEM's support and enrichment modules should be adapted to each school's student profile through "micro differentiation plans," developed collaboratively by teachers and monitored by school leadership.

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Trends in the Research of Children and Play

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Abstract

The concept of play has long been recognized as a fundamental aspect of child development because it promotes learning and cognitive development, and is useful for social skills and motivation. Thus, it has attracted the attention of researchers in many scientific fields such as maths, physical education, artificial intelligence and rehabilitation. Due to the importance of the relationship between children and play in various fields, it is essential to examine published works on this subject. This study aims to reveal the current status and trends of the research on children and play through the Web of Science database in 2023 by descriptive survey model. 165 articles in the field of "Children and Play" were examined in depth. Content analysis technique and "Children and Play Research Publication Classification Form" developed by the researchers in a semi-structured manner were used for evaluating the data. The studies were classified under the themes of "Digital Games, Physical Games, Card Games, Traditional Games, Board Games and Mind Games" with four different types: descriptive study, experimental (applied) study, evaluation study and others. The studies included thirteen different methods and ten different data collection methods were used. It can be concluded that the studies conducted on "Children and Play" in 2023 were generally about digital games, and the relationship between play and health, behaviour, socialization and learning was the main theme.

Keywords:

Play, Content Analysis, Game, Game-Based Learning

Introduction

Educators face the challenge of integrating essential academic standards into developmentally appropriate learning experiences (Taylor & Boyer, 2020). One of the main goals is to improve children's learning behaviour through enjoyable and active participation (Behnamnia et al., 2020). The only element that enables children to learn with pleasure is learning through games (Game-Based Learning (GBL) (Câmara Olim et al., 2024; Dalton & Devitt, 2016; Wang et al., 2023). Children always have a natural tendency to play, so game-based learning creates a way for them to gain knowledge while playing (Tang et al., 2023). They also like to play because they feel that games are fun and exciting, and games force them to solve problems (Dalton & Devitt, 2016).



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The concept of play has long been recognized as a fundamental aspect of child development and has attracted the attention of children in different socio-cultural contexts (Smidt, 2013). Play is a complex phenomenon that promotes learning, cognitive development and social skills, and involves activities spontaneous, intrinsically motivated and pursued for one's own sake (Smidt, 2013). According to Petrovska et al., (2013), game is the meaning of a child's life. It is a refuge from fears, battlefields, successes and failures. Game contributes to children's mental, emotional, social and moral development by meeting their biological and psychological needs. Pellegrini and Smith (2005) emphasize that game allows children to actively explore and make sense of their environment, use objects and symbols to create imaginary worlds where they can experiment, take risks and develop problem-solving skills. It can also be defined as a tool that is pleasing and entertaining, has a positive value for the player, develops spontaneously, and is based on the player's free choice and is voluntary (Altun, 2021). In addition, games are a powerful tool for education because children acquire knowledge, enrich their experiences, and develop skills and habits (Petrovska et al., 2013; Vatamaniuk et al., 2024).

The concept of games has turned to digital games instead of traditional games (especially physical games) in the rapidly developing digital age, and improving young children's learning abilities with information technology has become a goal of childhood education (Wang et al., 2023). It is reported that digital game-based teaching with competition and reward elements is more effective than traditional teaching methods (Kim et al., 2023). It is a fact that the use of digital games has become widespread. However, overexposure to digital games is becoming increasingly concerning, especially in children diagnosed with attention deficit hyperactivity disorder (Blasco-Fontecilla et al., 2023). The fact that game addiction has serious negative effects on the lives of children and adolescents (Kaya & Pazarıcı, 2023) shows that children's games should be emphasized more. Nowadays, game is quite diversified compared to the traditional game concept. These games are applied in many areas from mathematics (Tang et al., 2023) to physical education (Nery et al., 2023), from artificial intelligence (Wagan et al., 2023) to video games (Blasco-Fontecilla et al., 2023), from virtual reality (Li et al., 2023) to rehabilitation purposes (Ren et al., 2023), and even language learning (Meriläinen & Piispanen, 2022). The games used in these areas vary in content from numerical data to visual content, from puzzles to physical activity games, and from social skills to personality traits.

It is observed in the literature review that the subject of "Children and Play" is a focus of great interest. This field is of great importance in terms of understanding

the importance of game that contributes to children's development and developing effective strategies that will enrich children's educational processes (Dalton & Devitt, 2016; Wang et al., 2023). Research shows that children learn more effectively through play and that game-based learning increases their motivation and interest (Kim et al., 2023; Wang et al., 2023). The concept of "Children and Play" is not limited to educational environments. Game is a part of children's lives (Tang et al., 2023) and exists in various social and cultural contexts. For example, game provides interactive family time and opportunities for children to express themselves (Allen et al., 2023), develop social skills, and establish closer relationships (Cerezo et al., 2023). In addition, game offers the opportunity to interact with other components of society and develop solidarity and cooperation skills (Chaarani et al., 2022). It enables the child to develop in a healthy social way by making essential contributions to becoming a participating individual (Altun, 2021). Therefore, it is worth examining the concept of game in every field and investigating integrated applications. US officials report that game-based learning with the help of artificial intelligence-supported augmented intelligence techniques in schools to improve children's neurological development, intellectual perception and special learning abilities, and it is recommended to be integrated into curricula (Wagan et al., 2023). Kim et al., (2023) suggested the use of digital game-based training to improve children's language skills. The use of games for rehabilitation purposes is also recommended in the literature (Ferron et al., 2023).

As mentioned before, it can be observed that the studies carried out in the field of "Children and Play" are concentrated on digital games. Educators and researchers say that the Digital-GBL concept and digital games should be examined in the best possible way and integrated into many fields (Blasco-Fontecilla et al., 2023; Kim et al., 2023). Another variable where games are used in education (e.g., physical education lessons) and other fields (e.g., rehabilitation) is physical activity (Nery et al., 2023). Physical activity and game are powerful tools that provide early childhood students with an environment where they can engage in physical activity while having fun. Considering that 80% of children are not physically active enough (WHO, 2022), physical activity through games helps children develop motor skills in a motivated way, increase their mobility and acquire healthy living habits (Mercado Baez et al., 2024a). Therefore, physical activity and play are seen as powerful tools that offer children fun and educational experience. Traditional game is another field of play that supports students' learning, being physically active or socializing (Junaedah et al., 2020). Maintaining and supporting traditional games can help children strengthen their attachment to cultural heritage and the past. These games also prevent children from over-dependence on technology and

allow them to interact in natural environments and develop their social skills (UNESCO, 2019). Card and mind games contribute to children's cognitive, social and personality skills, and they are among the most frequently encountered types of games in research conducted in the field of games. These games help children develop thinking skills, strengthen problem-solving abilities, and support creative thinking skills (Rosyati et al., 2020; Scalise et al., 2020).

As can be understood, it is seen that the studies on the concepts of "Children and Play" have been carried out in many areas and have strong effects. Synthesizing knowledge in the field of "Children and Play" and guiding future studies is an important issue. In addition, it is essential that the studies on the concepts of "Children and Play" are constantly updated and researched in different areas. However, despite the universal recognition of the importance of play, the underlying mechanisms and specific benefits of play experiences remain topics of ongoing research in psychology, education, and early childhood studies. Therefore, this study aims to examine the research conducted on the concept of "Children and Play" in 2023 and indexed in Social Sciences Citation Index (SSCI -Web of Science) from a critical perspective, and to explore its various aspects, theoretical frameworks and effects on children's development and well-being.

Method

Research Model

Descriptive survey model was used for this research. Descriptive research tries to describe events, objects, entities, institutions, groups and various areas. In this way, it is possible to understand and group them, and the relationships between them are determined (Kaptan, 1998). 325 research articles on the Web of Science in 2023, identified in searches made with the keywords "Children and Play", were examined in detail within the scope of this research. In the first stage of the screening, 325 articles were scanned, but 160 of these articles were excluded because they were not based on research processes (studies on adolescents, studies in which sample situations were not clearly stated, and studies based on literature, etc.). The 165 articles were selected among those that could contain important information about children and play.

Data Collection Tools and Process

The abundance of studies in the literature may bring about some problems. In addition to the results overlapping with each other, they may also produce contradictory results. It becomes difficult for researchers to access all the studies on a subject, and there are uncertainties in understanding the findings or matching them with the content (Göktaş et al., 2012). Content or meta-analysis results based on

studies conducted on the subject under investigation provide significant convenience to researchers. An important emphasis is placed on content analysis studies, which have recently attracted the attention of many researchers in educational sciences (Çalık, Ünal, Coştu, & Karataş, 2008; Gökçek et al., 2013; Göktaş et al., 2012; Kılıç-Çakmak et al., 2013), to show the general picture. In addition, Çalık and Sözbilir (2014) stated that those who research any subject can use their time better and will not have to deal with workloads such as review and analysis. It was tried to reveal the trends of the articles published in Web of Science in 2023 on the subject of "Children and Play" and the suggestions to be presented for new studies based on this, by making content analysis.

The "Publication Classification Form" used by Göktaş et al. (2012) and developed by Sözbilir, Kutu and Yaşar (2012) was revised and used for the results obtained by content analysis. This same form was also used by Kılıç-Çakmak et al. (2013) and Selçuk et al. (2014). The "Children and Play Research Publication Classification Form", developed by the researchers in a semi-structured manner, consists of seven categories: the title of the article, the type of the article, the subject of the article, the method of the article, the data collection tools used in the article, and the suggestions featured in the articles. These dimensions were structured based on data determined during the examination of the articles. As a result, four different subcategories related to the type of the article, five different categories related to the subject of the article, thirteen different categories in the method of the article, and ten different subcategories in the category of data collection tools used in the article were determined. Ten randomly selected articles from 325 articles on the subject of Children and Play determined in the first stage were classified together. In these classifications, the researchers' working method was confirmed by reaching a consensus on the codes and explanations formed in the themes determined as digital games, physical games, traditional games, mind games and card games. Then, the researchers randomly selected five articles and classified them independently. These articles were discussed, and disagreements were resolved to increase reliability.

Data Analysis

The content analysis technique was used in this study to evaluate the data. Randomly selected articles published in Web of Science with the subject "Children and Play" in 2023 were classified and analysed under five basic categories. The purpose of content analysis is to reach concepts and relationships that can explain the data. The data summarized and interpreted in the descriptive analysis are subjected to a deeper process in content analysis, and concepts and themes that cannot be noticed with the descriptive approach

can be discovered as a result of this analysis. The basic process of content analysis is to bring together similar data within the framework of concepts and themes and organize and interpret them in a way that the reader can understand (Yıldırım and Şimşek, 2006). Falkingham and Reeves (1998) also stated that content analysis is a new method used to evaluate publication masses. In the process of analysing and interpreting the classified articles on the subject of Children and Play, attention was paid to the stages of naming, category development, ensuring validity and reliability, calculating frequencies and interpretation. During the naming and category development phase of the content analysis, each of articles was carefully examined and classified under categories such as discipline, subject, method, data collection tools, sample and data analysis methods. Care was taken to analyse the evaluated articles based on the consensus of the researchers to ensure validity and reliability. Finally, the frequency and percentages of repetition of the analysed articles based on the determined categories were calculated, and an attempt was made to interpret them based on this information. The articles were analysed in terms of the article's discipline area, subject, method, data collection tools, sample and data analysis methods. During these processes, the researchers made a general evaluation of the article. Firstly, data was entered for the general information and the title of the article. Then, the subject and method of the article were determined, and the type of data collection tool used in the article and the methods used when analysing the data were determined. In the articles examined, especially when determining the subject of the article, attention was paid to the adaptation process matching the literature and new studies for the trends of the research on "Children and Play", which is the main point of the study, and in this process, the subjects of the 165 studies were examined in five different categories. After the matching coding processes based on categories, attention was paid to the consensus of the researchers in the articles.

Findings

The studies examined in this study were classified under the themes of "Digital Games, Physical Games, Card Games, Traditional Games, Board Games and Mind Games". The theme with the most studies was gathered under the theme of "Digital Game" and was analysed under a total of seventy main codes under the sub-themes of "Game and Learning, Play and Socialization, Play and Behaviour and Play and Health". In the study, the dimension with the least themes and codes was the "Card Games". Since coding was not done at a level that could be divided into subcategories under this theme, analyses were made without dividing it into subthemes. A study containing six codes on the theme of "Card Games"

was analysed. Analyses for each theme, including sub-themes, are given below.

Table 1.
Themes and sub-themes

Theme	Sub-theme	f	%
Digital Game	Game-Based Learning	89	36.18
	Play and Behaviour	63	26.61
	Play and Health	51	20.73
	Play and Attention	43	17.48
Physical Game	Game-Based Learning	5	19.23
	Play and Socialization	15	57.23
	Play and Motor Movement	6	23.08
Traditional Game	Mathematics	1	12.5
	Academic Success	1	12.5
	Physical Education	1	12.5
	Pleasure	1	12.5
	Cognitive Development	1	12.5
	Entertainment	1	12.5
	Strategy	1	12.5
	Parents	1	12.5
Mind Game	Mathematics	2	15.38
	Cognitive Thinking	2	15.38
	Competition	1	7.69
	Cooperation	1	7.69
	Pleasure	1	7.69
	Anxiety	1	7.69
	Academic Success	1	7.69
	Social Cognition	1	7.69
	Strategy	1	7.69
	Mental Health	1	7.69
	Memory	1	7.69
Card Game	Socio-Economic Awareness	1	16.67
	Decision Making	1	16.67
	Sustainability	1	16.67
	Eco-friendly	1	16.67
	Physical Activity	1	16.67
	Transportation to School	1	16.67

The main category in which most studies were thematized based on common codes was the "Digital Game", as seen in Table 1. The study, which included seventy codes under this theme, was analysed by dividing it into four sub-themes. Most studies were included in the "Game-based Learning" sub-theme. After the "Digital Games" theme, the theme with the most coding was the "Physical Game" theme, followed by the "Mind Games" and "Card Games" themes, respectively.

Table 2 shows the studies conducted in the field of "Children and Play", research on the sub-theme of "Game-based Learning" under the theme of "Digital Games". According to the table, it is noticed that the subject of "social skills" has the highest frequency, and "reading-writing" and "mathematics" skills are among the most intensively studied subjects in the context of digital game-based learning. On the other hand, it can be said that the fields of "learning transfer", "artificial intelligence" and "multiple perception" have lower frequencies.

Table 2.*Game-based learning sub-dimension and codes of digital game theme*

Theme	Sub-dimensions	Codes	f	%
Digital Game	Game-based Learning	Social Skill	15	17.05
		Reading-Writing	10	11.36
		Mathematics	9	10.23
		Cognitive Ability	8	9.09
		Motor Skill	8	9.09
		Emotional Skill	7	7.95
		Academic Performance	7	7.95
		Language Learning	6	6.82
		Creativity	6	6.82
		Speaking Skills	6	6.82
		Learning Transfer	3	3.41
		Artificial Intelligence	2	2.27
		Multiple Perception	1	1.14

Table 3.*Play and behaviour sub-dimension and codes of digital game theme*

Theme	Sub-dimensions	Codes	f	%
Digital Game	Play and Behaviour	Parents	15	12.82
		Aggression	7	8.97
		Morality	5	6.41
		Abuse	3	3.85
		Murder	3	3.85
		Dilemma	3	3.85
		Cooperation	2	2.56
		Pro-social	2	2.56
		internalization	2	2.56
		exclusion	1	1.28
		Social Norm	1	1.28
		Child Marriage	1	1.28
		Culture	1	1.28
		Social Fragility	1	1.28
		Sharing Behaviour	1	1.28
		Social Anxiety	1	1.28
		Gambling	1	1.28
		Racism	1	1.28
		Empathy	1	1.28
		Self-sufficiency	1	1.28
		Social Relationship	1	1.28
		Sadness	1	1.28
		Anger	1	1.28
		Disdain	1	1.28
		Competition	1	1.28
		Attitude	1	1.28
		Self Esteem	1	1.28
		Generosity	1	1.28
		Decision Making	1	1.28
		Behavioural Response	1	1.28
		Empathy	1	1.28
		Narcissism	1	1.28
		Externalization	1	1.28
		Self-Regulation	1	1.28

The most studied topic of the “Play and Behaviour” sub-theme under the “Digital Game” theme is “parents” (see Table 3). “Aggression” and “morality” are the other most studied topics.

Table 4.

Play and health sub-dimension and codes of digital game theme

Theme	Sub-dimensions	Codes	f	%
Digital game	Play and Health	Rehabilitation	10	19.61
		Mental Health	8	15.69
		Physical activity	7	13.73
		Covid-19	5	9.80
		Stress	4	7.84
		Well-being	4	7.84
		Hyperactivity	3	5.88
		Anxiety	3	5.88
		Depression	2	3.92
		Obesity	2	3.92
		Agility	1	1.96
		Balance	1	1.96
		Chronic Disorder	1	1.96
		Obsessive Compulsive	1	1.96
		Cardiovascular Health	1	1.96
		Phobia Treatment	1	1.96
		Insomnia	1	1.96
		Negative Emotions	1	1.96

Another dimension under the “Digital Game” theme is the “Play and Health” sub-theme (see Table 4). While the most studied subject under this theme is “rehabilitation”, “mental health” and “physical activity” subjects are also among the most studied subjects.

Table 5.

Play and attention sub-dimension and codes of digital game theme

Theme	Sub-dimensions	Codes	f	%
Digital Game	Play and Attention	Digital Addiction	23	53.49
		Attention deficit	7	16.28
		Gaming Disorder	7	16.28
		Screen Time	5	11.63
		Reaction time	1	2.33

Table 5 shows the codes and frequencies of the “Play and Attention” sub-theme of the “Digital Game” theme. According to the table, it can be seen that there are many studies conducted in the field of “digital addiction”. The codes “attention deficit” and “gaming disorder” are repeated at the same level in the studies. The “Reaction time” code is the least frequent area of this sub-theme.

Table 6.

Game-based learning sub-dimension and codes of physical play theme

Theme	Sub-dimensions	Codes	f	%
Physical game	Game-based Learning	Cognitive Ability	2	40
		Emotional Skill	1	20
		Sports Teaching	1	20
		Learning Ability	1	20

Another main theme that emerges when the studies are examined is “Physical Game”. Table 6 shows the codes of the “Game-based Learning” sub-theme. The topic of “cognitive skill” has the highest frequency. On the other hand, “emotional skills”, “sports teaching” and “learning skills” were repeated at the same level.

Table 7.

Play and socialization sub-dimension and codes of physical game theme

Theme	Sub-dimensions	Codes	f	%
Physical game	Play and Socialization	Social Harmony	4	25
		Competition	2	12.5
		Exclusion	1	6.25
		Self-sufficiency	1	6.25
		Coalescence	1	6.25
		Prejudice	1	6.25
		Social Anxiety	1	6.25
		Entertainment	1	6.25
		Cooperation	1	6.25
		Depression	1	6.25
		Life quality	1	6.25

Another sub-dimension of the “Physical Game” theme is the “Play and Socialization” sub-theme (see Table 7). The code with the highest frequency in this theme is “social harmony”, while the code “Competition” is another code with the highest frequency.

Table 8.

Play and motor movement sub-dimension and codes of physical game theme

Theme	Sub-dimensions	Codes	f	%
Physical game	Play and Motor Movement	Movement	4	66.67
		Coordination	1	16.67
		Motor Skills	1	16.67

The code with the highest frequency is “movement” among the codes formed in the “Play and Motor Movement” sub-theme of the “Physical Game” theme. The “coordination” and “motor skill” codes are repeated at the same level.

One of the themes that emerged in the research is the “Traditional Game” theme (see Table 9). Since the studies under this theme are not studied enough to be divided into subcategories, the analyses are carried out without dividing them into subthemes. Accordingly, eight codes are formed under this theme, and these codes are studied at the same level.

Table 9.*Traditional game theme and its codes*

Theme	Codes	f	%
Traditional Game	Mathematics	1	12.5
	Academic Success	1	12.5
	Physical education	1	12.5
	Pleasure	1	12.5
	Cognitive Development	1	12.5
	Entertainment	1	12.5
	Strategy	1	12.5
	Parents	1	12.5

Table 10.*Mind game theme and its codes*

Theme	Codes	f	%
Mind Game	Mathematics	2	15.38
	Cognitive Thinking	2	15.38
	Competition	1	7.69
	Cooperation	1	7.69
	Pleasure	1	7.69
	Anxiety	1	7.69
	Academic Success	1	7.69
	Social Cognition	1	7.69
	Strategy	1	7.69
	Mental Health	1	7.69
	Memory	1	7.69

One of the themes that emerged in the research is the "Mind Game" theme (see Table 10). When the studies are examined, it is observed that the studies are not repeated enough to be divided into sub-themes. "Mathematics" and "cognitive thinking" codes are the subjects with the highest frequency.

Table 11.*Card games and its codes*

Theme	Codes	f	%
Card Game	Socio-Economic Awareness	1	16.67
	Decision Making	1	16.67
	Sustainability	1	16.67
	Eco-friendly	1	16.67
	Physical Activity	1	16.67
	Transportation to School	1	16.67

The theme of "Card Games" is another theme that emerged in the research (see Table 11). Since the studies examined under this theme were not repeated enough, sub-themes did not emerge. A total of six codes were formed, and these codes were repeated at the same level.

Table 12.*Types of articles examined*

Type of article	f	%
Descriptive Study	77	47.83
Experimental (Applied) Study	68	42.24
Evaluation Study	14	8.7
Other	2	1.24
Total	165	100

The types of articles scanned are shown in Table 12. The most research was carried out as "Descriptive Study" and "Experimental (Applied) Study". The least number of studies were carried out in the "Other" study type.

Table 13.*The method of articles examined*

Method	f	%
Full experimental	37	22.42
Semi-experimental	32	19.39
Correlational	31	18.79
Descriptive	18	10.91
Scanning	13	7.88
Comparative	10	6.06
Literature Compilation	6	3.64
Phenomenon Science	4	2.42
Triangulation (quantitative+qualitative)	4	2.42
Case study	3	1.82
Exploratory	3	1.82
Meta Analysis	3	1.82
Systematic Analysis	1	0.61
Total	165	100

The results regarding the method used in the examined studies are given in Table 13. Accordingly, studies conducted using the "Full Experimental", "Semi-Experimental" and "Correlational" methods are quite close to each other and are seen as the most used methods. The least used one is the "Systematic Analysis" method.

Table 14.*Data collection tools of articles examined*

Data Collection Tools	f	%
(Personality Tests) Likert	70	42.68
Other	39	23.78
(Achievement Tests) Other	20	12.20
(Interview) Semi-structured	16	9.76
(Interview) Structured	7	4.27
(Achievement Tests) Multiple choice	7	4.27
(Interview) Unstructured	2	1.22
(Personality Tests) Multiple choice	2	1.22
(Observation) Participatory	1	0.61
(Achievement Tests) Open Ended	1	0.61
Total	165	100

The data collection tools used in the studies examined are given in Table 14. Accordingly, it can be said that the most used data collection tools are "(Personality Tests) Likert" scales. On the other hand, the least used ones are "(Observation) Participatory" and "(Achievement Tests) Open-Ended".

Discussion

165 articles were examined in depth in this study, and it was observed that the studies were grouped under five different main themes (see Table 1). These themes are Digital Games, Physical Games, Traditional Games, Mind Games and Card Games. Furthermore, the studies are classified under four different types: descriptive study, experimental (applied) study, evaluation study and others (see Table 12). The research includes thirteen different methods (see Table 13), and ten different data collection methods were used (see Table 14). These results enable us to describe the framework of research in the field of "Children and Play".

It is observed that most of the studies are on the Digital Game theme. Four sub-themes were created from the data obtained: Game-based Learning, Play and Behaviour, Play and Health, and Play and Attention. The Game-based Learning sub-theme is the most concentrated theme. Technology becoming a part of our daily lives causes children to be introduced to digital games from an early age (Fang et al., 2021; Şenol et al., 2023; Tang et al., 2023). Children's addiction to digital games has also increased with the COVID-19 pandemic (Şenol et al., 2023). These situations explain why many researchers in the field of "Children and Play" deal with digital games. In this context, the concept of digital games can easily be described as the area in which the most intense studies in the field of games are carried out, as a result of the studies examined (Blasco-Fontecilla et al., 2023; Kim et al., 2023; Şenol et al., 2023; Wang et al., 2023).

The Game-based Learning sub-theme has directed researchers to reveal the relationship between digital games and learning. When the Game-based learning sub-theme is examined, the areas where most studies are done are social skills (Cerezo et al., 2023; Lee & Hsu, 2023; Mills et al., 2023) and reading-writing skills (Benton et al., 2023; Li et al., 2023; Tang et al., 2023). These studies focus on children with Attention Deficit and Hyperactivity Disorder (ADHD) (Cerezo et al., 2023), social skill development of children with autism (Lee & Hsu, 2023), and positive social behaviour skills (García-Gil et al., 2023). Researchers suggest that since today's world is the new digital world, we need to look for a new solution in the field of education that will promote children's learning autonomy, reduce the teaching burden of parents, and also connect it to school education (Tang et al., 2023). According to reports (Pew Research Center, 2021; Şenol et al., 2023; The Economist, 2021), there was a decline in children's learning processes during the Covid-19 period, and children whose parents had lower education lost their learning opportunities by at least 50%. Therefore, in similar situations, educators suggest that new teaching materials should be prepared for children. This may have enabled the concept of digital games

to focus on the learning and teaching process, that is, GBL.

The Game and Behaviour sub-theme is another sub-theme of Digital Game. How digital games affect children's behaviour has been the subject of many studies. Children's behaviours such as racism (Yang, 2023), aggression (Bonan et al., 2023), morality and dilemma (Grunberg, 2023) were examined through digital games. At this point, parent code is the most repeated. There are studies on how children's behaviour, while playing digital games, is affected by various parental factors as well as family influence and role. The dilemmas that children experience while playing games and what moral behaviour they will show in these dilemmas (e.g., murder, harassment, police-terrorist) are frequently encountered in studies (Luck, 2023; Ulbricht, 2023). The dictator game (Bonan et al., 2023), one of the most commonly played games when measuring social relations and behaviours, has been used in many studies. Finally, the impact of video games containing violence and aggression on children's aggressive behaviour in real life is also considered an important issue by researchers. Studies conducted by Chen et al. (2023) provide clues to understand the effects of such games on children's behaviour.

Another sub-theme under Digital Game is the Play and Health sub-theme. There are studies on the relationship between digital games and health under this sub-theme. Although physical games came to mind when the concept of games was mentioned in the past, today the concept of games has evolved into digital. This situation creates some health problems for children. When the literature is examined, in the play and health sub-theme, rehabilitation of people with digital gaming disorder (Almeida et al., 2023; Szász-Janocha et al., 2023), digital game effects on mental health (García-Gil et al., 2023; Raju et al., 2023) and its effect on physical activity (Johansen et al., 2023; Kilic & Yaman, 2023) are among the most recurring topics. When the situation of children regarding digital game addiction is examined, it is observed that it creates negative effects in terms of social behaviour and mental health. It is stated that game addiction is at a higher level, especially among boys (García-Gil et al., 2023). Another factor is that playing digital games causes children not to do enough physical activity (Männikkö et al., 2015; Mutlu et al., 2023). Children's spending too much time in front of digital screens not only causes them to remain physically inactive but also causes some postural health problems (Mutlu et al., 2023). However, various sports games (e.g., football, tennis, martial arts) and other activities (e.g., recreational dancing) simulated with VR (Virtual Reality) encourage physical activity and improve physical performance (Almeida et al., 2023; Lu et al., 2023; Moller et al., 2023).

The last sub-theme under the digital game theme is Play and Attention. Digital game addiction under this sub-theme constitutes the most studied code (Alexandridis et al., 2023; Kim et al., 2023; Yang et al., 2023). Attention deficit (Barkin et al., 2023; Cerezo et al., 2023) and Gaming Disorder (GD) (Blasco-Fontecilla et al., 2023; Roza et al., 2023) are also codes that occur under this theme. Overuse of video games is becoming increasingly concerning, especially in children diagnosed with Attention Deficit Hyperactivity Disorder (ADHD) (Blasco-Fontecilla et al., 2023). Psychiatric conditions such as ADHD, as well as positive and negative parenting styles, have also been associated with play disorders in children and adolescents (Chung et al., 2023). This shows that game addiction is affected not only by the child himself but also by the people around him. Furthermore, research shows that gaming intensity is a determinant of problematic gaming (Alexandridis et al., 2023; van der Neut et al., 2023). In other words, game addiction in children also leads to game disorder. Therefore, there is an increasing need for scientific studies and treatment methods regarding digital game addiction. It should not be forgotten that research in this field is an essential issue for public health and can play a critical role in the development of effective intervention methods.

Another theme that researchers study most in the field of "Children and Play" is the theme of physical games. In recent years, researchers have stated that physical activity participation has decreased with the intensive use of technological tools such as mobile phones, computers and tablets (Mei et al., 2023; Xiao et al., 2022). Since play is inherently a funny activity, it can be said to have a catalytic effect in increasing physical activity participation (Denford et al., 2020; Nikolajsen et al., 2021). When physical activity and games are combined, they increase physical activity motivation (Williams & Ayres, 2020). Physical games are used to increase children's physical activity levels and obtain various benefits as a result of participation. When the literature on children and the field of play is examined, it is seen that physical activity games are classified as learning activities, socialization and motor movement themes (Tables 6, 7, 8). The theme of game-based learning focuses on the cognitive development and studying the memory of children with autism spectrum disorder (ASD) (Zhang et al., 2023), the cognitive functions and anxiety levels of children with developmental disabilities (Nekar et al., 2023), the emotional skills and coordination skills of children with ASD (Huili et al., 2023), and sports teaching in physical education and sports classes (Diekhoff & Greve, 2023). In the theme of play and socialization, children's quality of life (Cavusoglu et al., 2023), social adaptation (Karaali & Ozcan, 2023), reducing anxiety (Nekar et al., 2023) and behavioural response to exclusion (Quadrelli et al., 2023) are discussed. In the

theme of play and motor movement, studies have been carried out on increasing children's physical activity level (Mercado Baez et al., 2024b) and motor coordination training (Iorga et al., 2023). Orhan (2019) stated that the development of children's thinking and perception performance is related to movement. In previous studies, researchers have emphasized the potential of physical games to facilitate learning processes (Tomlinson & Masuhara, 2009; Tomporowski et al., 2015). In addition, games allow the development of motor skills (Rice et al., 2025) and also increase emotional skills and social interaction (Karaali & Ozcan, 2023). Because of these effects, games have been used in intervention programs for disadvantaged and developing children to socialize and adapt to society (Tomporowski et al., 2015). Literature in the field of children and play supports the themes of game-based learning, play and socialization, and play and motor movement that emerged in our study results.

In studies in the field of children and play, traditional game has been considered the other theme (Table 9). According to the literature, the effects of traditional games on the enjoyment of physical education lessons, academic success, cognitive development, and motor skills are discussed (Eather et al., 2024; Hawani et al., 2023; Kamaruddin et al., 2023). For example, children's cardiovascular and respiratory systems, physical self-efficacy and academic achievement have improved in traditional games with a focused program (Eather et al., 2024). Another study focusing on early language development and cognitive development found that traditional games promote language development and stimulate cognitive development in children during childhood (Rahnang et al., 2023). Traditional games provide a fun, educational and cultural learning opportunity. It also develops children's values such as friendship, responsibility and cooperation (Zainuddin et al., 2020). However, it is stated in the literature that interest in traditional games is gradually decreasing (Hawani et al., 2023). Our study results also support this conclusion. Factors such as the lack of playgrounds and the fact that children find technological tools more attractive have an impact on the interest in traditional games (Putra & Hasanah, 2018). It can be said that these reasons are effective in researchers' preference to use digital games rather than traditional games in intervention practices.

Studies in the field of children and play were reviewed, and the theme of mind games was created (Table 10). Subjects such as cooperation, cognitive thinking, mathematics education, and mental health were studied under this theme (Au-Yeung et al., 2023; Jiang et al., 2023; Voutsina & Stott, 2023). According to the literature, positive results were observed in the social behaviour, executive functions, and attention control of students who played mind games (Barnes

et al., 2021; Jones & Imm, 2016). A large-scale study conducted by the International Rescue Committee (IRC) and NYU Global Ties for Children (NYU-TIES) indicated that an intervention program that included mind games improved children's learning outcomes (Weiss-Yagoda et al., 2021). In another study, students who played mind games self-reported improvements in their collaborative work, communication, and critical thinking skills (Lawlor, 2015). When previous and current studies on mind games are examined, it can be said that they address topics such as increasing students' cooperation and improving their social behaviour and academic skills.

Another theme that emerged in children and play studies is Card Games (Table 11). Researchers focused on behavioural problems and school failure in early childhood children (Djamnezhad et al., 2023), literacy, mathematics performance and active learning (Conica et al., 2023), physical activity (Lindqvist et al., 2023) and vocabulary (Masters et al., 2023). Conica et al. (2023) state that fun activities offered through card games, but not solely focused on active learning, can contribute to the school performance of children in early childhood. In addition, results obtained from a smaller study group showed that presenting structured games through flashcards to children aged 8-36 months predicted their vocabulary (Kartushina et al., 2022). When current and previous studies are examined, it can be said that card games are used as a tool together with intervention programs in the development of children's educational and social skills.

When the content analysis of the types of articles examined, it is seen that descriptive studies (47.83%) and experimental (applied) studies (42.24%) are predominantly conducted (Table 12). As a result of the systematic review of the experimental studies on serious games and computer games between 2004-2009, it was determined that 54% of the studies were experimental and 33% were descriptive studies (Connolly et al., 2012). In another study in which the systematic review of the studies focusing on digital game participation was made, it was reported that descriptive and experimental studies were frequently used (Boyle et al., 2012). Hainey et al. (2016) conducted a systematic analysis of the studies focusing on computer games at the primary school level between 2000-2014. It was stated that experimental and descriptive studies were used intensively in the study. Those experimental studies were conducted using games as tools regarding learning and behavioural outcomes, including cognitive, social, physical and affective outcomes. According to systematic analyses conducted in the field of games, it is seen that studies focus more on quantitative studies, while qualitative studies are used less. Selçuk et al. (2014) attributed this situation in systematic reviews to the fact that

quantitative studies can reach the study group quickly, and that data can be collected and analysed in a shorter time.

When we examine the studies conducted in the field of children and play in terms of method, it is seen that experimental studies (22.42%) are conducted the most, followed by quasi-experimental (19.39%), correlational (18.79%) and descriptive (10.91%) studies (Table 13). Petri and Gresse von Wangenheim (2017) emphasized that experimental and quasi-experimental studies are used the most in their systematic review of games for computer education. Marker et al. (2018) and Connolly et al. (2012) determined in their systematic review that descriptive and experimental studies are predominantly used. Experimental studies are frequently used in educational studies, especially to measure the results of changes made in the learning process, such as examining the effect of a new teaching method (Dugard & Todman, 1995). When the literature is examined, we can support this statement by stating that experimental studies involving different types of games are widely used to evaluate changes in children's learning processes, motor skills and social behaviours.

When the content analysis of the data collection tools in the studies examined in the field of children and play is made, it is seen that surveys (42.68%), achievement tests (12.20%) and semi-structured interviews (9.76%) are preferred (Table 14). Similarly, researchers (Herodotou, 2018; Marker et al., 2018) emphasized that data is collected using the survey method in descriptive studies. In another content analysis study, it was found that surveys, interviews and achievement tests are the most used data collection tools (Selçuk et al., 2014). When systematic review studies in our study and in different fields are evaluated, it is determined that data is collected using scale and survey methods, especially in descriptive studies. The reason for this situation can be explained as the fact that scale and survey-based studies are more accessible and economical compared to other methods (Baş, 2005).

Recommendations

Based on the findings of this study, it is recommended that future research prioritize a more balanced investigation of all types of play, especially traditional games, card games, and mind games, which were notably underrepresented in the current literature. These types of games have demonstrated potential in enhancing children's cognitive, emotional, and social skills, yet remain underexplored compared to digital games. Additionally, while digital game-based learning has been extensively studied, there is a need for longitudinal studies to understand the long-term impacts of digital game exposure—both positive and negative—on children's mental health, attention, and behavioral patterns.

Researchers are also encouraged to adopt interdisciplinary approaches and employ mixed-method research designs to provide richer and more nuanced insights into the multifaceted nature of children's play. Comparative studies across different cultural and educational contexts may further help identify universal versus context-specific benefits of play. Finally, educators and policymakers should be informed by this growing body of research to integrate appropriate game-based learning strategies into curricula that not only support academic development but also promote children's physical activity, emotional regulation, and social interaction.

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Innovative Approaches to Training Future Specialists in Preschool Education in Crisis Situations

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Abstract

In the context of crisis situations, making use of the most recent opportunities for future educators' training is a pertinent issue. The purpose of the suggested article is to evaluate how cutting-edge technologies might help train future preschool education specialists and assess how well they work in emergency scenarios. In order to accomplish this, scientific survey methods were used, and regression correlation and Pearson correlation were used to analyse the results. The findings show that the average score significantly increased as a result of the utilization of innovations in the educational process. The average level of professional reflection and motivation rose once the experiment started. According to Pearson's correlation, university students were far more motivated to study and utilized this advantage to pass the test. Additionally, the regression analysis showed that even one variable (in the proposed study, motivation) significantly impacts another (in our case, test results). The STEM approach showed the most significant growth results, slightly outperforming the flipped learning opportunities. The conclusions recommend using innovative methods of flipped learning and the STEM approach.

Keywords:

Innovations, Education, Surveys, STEM Approach, Crises.

Introduction

Crisis affect the professional formation and development of an individual. Military conflicts, pandemics and economic instability affect all spheres of social life, including education. Thus, the qualification of future specialists in preschool education requires flexibility, adaptation and implementation of the latest technologies to meet modern challenges. In addition, the scientific literature proves that in crisis conditions, traditional approaches to teaching may not be practical enough, so it becomes essential to develop and implement innovative teacher training methods.

However, a significant challenge is that current crises impact resource constraints, lack of practical experience among teachers, and psychological stress among students and teachers. In addition, the need for rapid adaptation to new learning formats is also a serious challenge. This calls



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into question the effectiveness of traditional methods of training specialists in early childhood education and requires the search for new approaches, which determines the relevance of this study. Thus, given the preceding considerations, the main research problem is identifying important aspects of preschool teacher training that need improvement. Attention should be paid to identifying the main innovative methods influencing teaching effectiveness in these conditions.

This study differs from the previous ones in that it focuses on the study of the leading innovative approaches by conducting a cross-sectional study among students and teachers. In addition, it aims to determine the impact of digital technologies, adaptive methods and distance learning in crises. Therefore, the study focuses on determining the importance of innovative methods in training future specialists in preschool education.

The purpose of this work is to analyse the role of innovative technologies in the system of training future specialists in preschool education and to determine their effectiveness in crises. The main tasks are as follows:

1. To analyse the empirical materials obtained through testing before and after using innovative training of future teachers.
2. To determine the effectiveness of various innovative methods.
3. To formulate recommendations for improving the system of preschool teacher training.

For this purpose, a hypothesis has also been formed that needs to be proved:

1. Using digital technologies and adaptive learning strategies will improve the professional training of future teachers in crises.
2. STEM education methods and a project-based learning approach contribute to improving the professional training of students.

Literature review

The importance of innovations in the training of preschool education specialists

Modern scholars have drawn attention to the importance of innovations in training preschool education specialists. Dychkivska and Uliukaeva (2021) analyse various innovations used in the pedagogical models of France, Germany, Sweden and other countries. The authors pointed out that the experience of pedagogical support in France and the UK should be considered an innovative technology for the professional training of future preschool teachers.

In the UK, tutoring systems are actively developing, i.e., teachers' assignments to students to teach them to act and think independently. In France, support is being developed, which involves the professional development of young teachers.

The study by Damayanti et al. (2024) provides a critical comparative analysis of the dynamics of early childhood education. The author identified a complex interaction between traditional and innovative pedagogical approaches. In general, the study points to the importance of introducing case and person-centred approaches as important innovative methods. Gavrilas et al. (2024) identified the importance of using robotic technology but indicated that not all teachers can cope with using robotic systems. This suggests better support for professionals in the future. Herut and Setlhako (2025) analysed modern preschool teacher training programmes to improve future teachers' pedagogical skills.

The authors' findings confirmed a strong and effective preservice teacher education programme that develops preservice teachers' pedagogical competencies (Artipah et al., 2024; Kozak et al., 2024). However, the authors also pointed to some limitations, including the problem of material resources and limited practical impact. Jing (2024) determined that modern preschool education has undergone a significant development evolution, and that its further development requires the involvement of new innovative solutions. Yang et al. (2023) identified the critical role of STEM education technologies in training future teachers. At the same time, Jin et al. (2023) also pointed out the importance of introducing modern innovative trends in training specialists. Modern education actively uses game modelling (Baikulova et al., 2024).

According to researchers, the use of game technologies in teacher training improves their ability to adapt the learning process to children's needs (Li et al., 2024; Lu et al., 2024; Mikrouli et al., 2024). In addition, a few studies have shown that flipped learning is one of the key technologies used in teacher training (Chen & Chen, 2014). According to the research, this methodology involves preliminary acquaintance of students with theoretical material through video lectures or interactive resources.

At the same time, classroom work focuses on the active application of knowledge (Lu et al., 2024; Kavanagh et al., 2017). Rapti et al. (2024) identified the importance of using virtual reality technologies to train the specialists of the future. The study of other authors showed the importance of introducing game modelling and project-based learning in teacher training (Martínez-Bello et al., 2023). The study by Zhufeng and Sitthiworachart (2023) presents the main results of the introduction of augmented reality in

training future preservice teachers. Luo et al. (2023) pointed out the negative side of AI involvement in teacher training and identified the negative role of AI chats.

However, modern authors also noted that these innovations are challenging to implement in education, as they require exceptional material support and appropriate professional qualifications of teachers and experts themselves (Kasioura et al., 2025; Kurniawati et al., 2024; Zubalii et al., 2024). These studies have highlighted the significant need to improve mechanisms for supporting and developing students' practical skills.

Teacher education in times of crisis and martial law

Modern crises affect the introduction of various innovative methods in the training of specialists (Tsekhmister et al., 2023). In the context of martial law, higher education must strengthen the formation of professional skills, because at this time everyone must perform their professional duties to the best of their ability. The study by Dychkivska and Kozliuk (2023) describes the main components of the training of masters in the speciality 'Preschool Education'.

The authors determined that in the content of modern disciplines provided by the master's educational and professional programme 'Preschool Education', applicants are provided with specialised knowledge and skills that affect the creation of safety and assistance in emergency and crises. Other authors have pointed out that in times of crisis, the content of courses involves both theoretical knowledge and practical skills that should influence the effective management of the educational process (Kozak et al., 2024; Nechyporenko et al., 2024; Vainola, 2024).

The study by Dychkivska & Kozliuk (2023) indicates that such modern courses as 'Organisation and Management of Preschool Education' and 'Psychology of Management' allow students to get acquainted with the regulatory framework for the organisation of the work of preschool education institutions with the provision of preschool education in the context of the crisis in Ukraine. In addition, students are introduced to the key aspects of crisis management. This area is now essential for making quick and effective decisions in the governance of preschool educational institutions. Bogush et al. (2024) identified the dual education system's role on teachers' professional development in crises. At the same time, several studies point to professional mental support for all applicants during the crisis period (Bilbrey et al., 2022; Kosenchuk & Tarnavska, 2024; Lowery, 2024).

The study by Ilichuk et al. (2024) describes the main measures to ensure the quality and accessibility of education for all participants in the educational process in war. Other scholars have also addressed

the issue of creating a quality learning space in times of war, emphasising the role of innovative solutions (Shynkar et al., 2025; Nissim & Naifels, 2024; Salha et al., 2024). At the same time, despite the considerable interest in providing preschool education in crisis conditions, several gaps should be addressed. First, there is not much empirical research on the impact of innovations in preschool teacher training.

Most existing work focuses on analysing policy and international initiatives but lacks a detailed analysis of their effectiveness. In addition, not many studies systematically examine the role of different innovative solutions. This study will fill these gaps and identify and indicate the role of innovative technologies in training future preschool education specialists.

Materials and Methods

Research design

The study employed a quasi-experimental pre-test/post-test design to examine the impact of innovative approaches (game modelling, flipped learning, project-based learning, case study, and the STEM approach) on the professional development of future preschool teachers. This research design was chosen as it allows for the comparison of student performance before and after the implementation of the selected teaching methods, thus enabling the assessment of their effectiveness. The intervention and data collection were conducted between September 2024 and December 2024. This period was selected to allow sufficient time for the application of innovative approaches and the subsequent analysis of their effects.

Sample and participants

The study used a purposive sampling of participants. The criteria for inclusion in the study included studying in the field of preschool education and readiness to participate in the study. Participants had to voluntarily agree to participate in the study and complete all the proposed tasks. An important criterion was the lack of previous experience using the study methods. Therefore, students who had previously studied using the methods (flipped learning, STEM, etc.) were not included in the sample. This was done to avoid the influence of previous experience. In addition, regular attendance at classes was an important criterion, meaning that only those students who attended at least 85% of classes during the study period were included.

Thus, 38 preschool teacher training programme students were selected for the study. Depending on the methodology, students were divided into 5 groups of 7-8 people. Table 1 shows the main groups, and the current methods used.

Table 1

Number of students in groups and adopted approaches

Name of the group	The name of approach	Number of students
Group 1	Game simulation	7 students
Group 2	Flipped learning	8 students
Group 3	Project training	8 students
Group 4	Case-study	7 students
Group 5	STEM approach	8 students

Source: author's development

Instruments and Procedure

The main instrument in the study was a knowledge assessment test. The authors developed special tests to assess the level of pedagogical training. These tests took place before and after implementing the methods (maximum score - 100). The tasks consisted of theoretical questions and situational tasks that required the identification of practical skills of students (see Appendix 1). The study also used a motivation questionnaire consisting of 10 questions that required a score from 1 to 5 (the so-called Likert Scale). This questionnaire allowed students to assess their level of knowledge, motivation to learn and interest (see Appendix 2).

The research procedure included pre-testing, which consisted of test tasks to assess knowledge and pedagogical training. The training phase lasted 3 months. At this stage, each group had the opportunity to be trained according to the appropriate methodology (game modelling, flipped learning, case studies, project-based learning, STEM approach). An essential criterion for the students was their mandatory attendance at seminars. After completing 3 months of training, all participants completed a final test and a questionnaire to assess their motivation. It should be noted that the psychometric properties (reliability and validity) of the developed instruments were not formally tested. While the content of the test and questionnaire was reviewed by a panel of three experts in pedagogical methodology to ensure content relevance, no statistical validation was performed. This lack of formal validation is acknowledged as a limitation of the study and should be considered when interpreting the results.

Data analysis

Several scientific methods were used to process the data. In particular, the use of descriptive statistics was important. The average scores before and after implementing the methods were determined to assess the changes in knowledge and motivation, i.e., the average values were calculated. The growth was also calculated. The following formula was used for this purpose:

$$\text{Increase} = \frac{\text{GPA after} - \text{GPA before}}{\text{GPA before}} \times 100\% \quad (1)$$

Using this formula, the effectiveness of each method was determined and compared. The study also used correlation analysis to determine the level of motivation and test score gains. Pearson's correlation coefficient (r), known in science, determines the strength and direction of the relationship between the variables. The paper uses the method of multiple linear regression analysis to determine the impact of each methodology on test results. The following formula was used for this purpose:

$$\beta_0 + \beta_1 (\text{Game modelling}) + \beta_2 (\text{Flipped learning}) + \beta_3 (\text{Project-based learning}) + \beta_4 (\text{Case study}) + \beta_5 (\text{STEM}) + \varepsilon \quad (2)$$

The ε indicates the error (residual term) of the regression model. It indicates that certain factors that may affect the test are considered but are not included in the model. These include the individual characteristics of test takers and random errors. Such an indicator makes the regression model more realistic, as no mathematical formula can ideally account for variations in the results. After that, the method of comparative analysis was used to compare the data obtained with the data of other scientists.

Results

Unfortunately, the emergence of modern crisis realities has profound consequences in the formation of social, economic and military challenges, which will require qualitatively new approaches to the training of students in the field of preschool education to overcome (Tsekhmister, 2024; Zahorodnia et al., 2023).

In such circumstances, innovative methods have become a key tool in developing the necessary competencies required for further work in the fluid conditions of general political or socio-economic instability and gradual adaptation to possible rapid changes. From this point of view, it is essential to analyse the use of the latest educational technologies, to trace the vectors of their impact on the professional readiness of future teachers.

The main difficulties remain problematic, as they will undoubtedly be formed using innovative approaches. Considerable attention is paid to assessing the effectiveness of using such methods by reviewing the opinions of students and teachers, in particular, to identify further prospects for improving the use of pedagogical systems in teaching.

The purpose of the proposed survey is to study and empirically measure the assessments and practical experience of students and teachers using innovative digital methods to train future specialists in preschool education.

The survey made it possible to establish the level of effectiveness of the use of the latest approaches, to conduct a professional assessment of readiness to perform professional duties in times of socio-political and military crisis, and to identify the main obstacles to establishing the educational process faced by all participants in the training.

The obtained results provide an essential empirical basis for further use in improving both existing educational practices and adjusting or developing fully independent recommendations for the future improvement of the quality of education of students in the field of preschool education (Maksymchuk et al., 2019).

The test results were based on both answers to theoretical questions (finding the correct answer) and situational tasks. In particular, the average test score was determined, as well as the assessment of knowledge (see Figure 1).

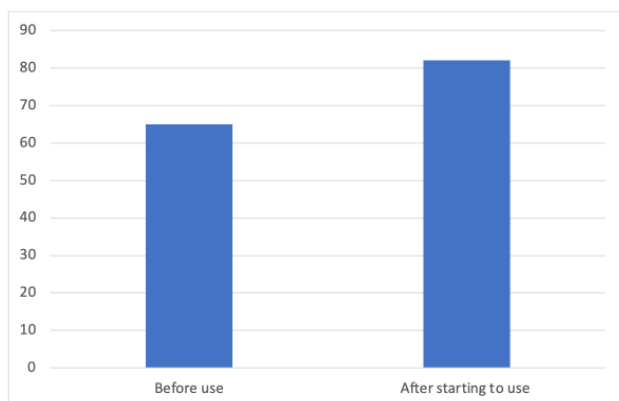
The test showed a significant increase in the average score because of using innovations in the educational process. The scores increased by more than 17 points, more than 26%. This makes it possible to discuss the experiment's somewhat tangible educational success.

A survey based on the Likert scale revealed an average level of motivation, which was 3.2 points before the experiment, while after the experiment it was 4.1.

The level of professional reflection has also increased. Before the active use of innovative education methods, self-analysis scores were 2.8 points; after active use of innovative approaches, this level increased to 3.9 points.

Figure 1.

Average score according to the test to assess the level of pedagogical training



Source: author's development

Positive dynamics in assessment and self-assessment also increased the percentage of higher education students who support using innovative methods. The increase was from 45% to 78%.

Obtaining digital values made it possible to determine the correlation between motivation and test results, i.e. to determine the Pearson coefficient. The calculations showed that before using innovative approaches, the coefficient was $r = 0.45$ (indicating a weak relationship), while after the application, the coefficient was $r = 0.72$ (i.e., a strong relationship). The regression analysis showed the following indicators: before the experiment, motivation explained 25% of the variations in performance, while after the active use of innovative methods, motivation can explain 50% of the variation in performance.

Thus, the correlation demonstrated how strongly the two variables are related. Analysing the relationship between student motivation and test results; before using innovative methods, the indicator was found $r = 0.45$ (i.e., a relatively positive relationship was demonstrated). In practice, this led to the fact that higher education students were much more motivated to study and used their positive impact to pass the test (demonstrated better results when answering questions).

However, the impact of motivation can still be considered insignificant. At the same time, after the application of modern methods, the indicator was $r = 0.72$ (a strong positive correlation was proved), which, after the introduction of innovative methods, determined a much higher level of motivation, which began to have a much more significant impact on test results. Accordingly, higher education students had a much greater interest and engagement in learning and were sufficiently motivated to improve their results.

Also, the regression analysis showed that even one variable (motivation in the proposed study) significantly impacts another (in our case, test results). Thus, before introducing innovative teaching methods, motivation could explain approximately 20% of the variation in performance ($R^2 = 0.20$). Based on this, it can be argued that the level of students' motivation before the experiment had a weak impact on learning outcomes.

After introducing progressive methods, motivation can explain half of the variation in performance ($R^2 = 0.50$). This indicator also indicates that the level of motivation began to have a significant impact on learning outcomes. The results of the correlation and regression analyses can be found in Tables 2-4.

Table 2.

Comparison of mean values

Indicator	Before implementation	After implementation
Average test score	65	82
Motivation level (1–5)	3.2	4.1
Professional reflection level (1–5)	2.8	3.9
Support for innovative methods (%)	45%	78%

Source: author's development

Table 3.

Conducting correlation analysis (determining Pearson's coefficient)

A pair of variables	Before implementation (r)	After implementation (r)
Motivation - Test results	0.45	0.72

Source: author's development

Table 4.

Regression analysis (the impact of motivation on results)

Indicator	Before implementation	After implementation
R ² (proportion of explained variation)	0,20 (20%)	0,50 (50%)

Source: author's development

The study also describes some methods used because of innovations that have demonstrated their benefits.

The measurements demonstrated the acquisition of specific theoretical knowledge, making it possible to improve the educational process and make certain adjustments.

In particular, the calculation mechanism involved dividing 38 students into 5 groups, each of which can be compared to the degree of improvement in learning outcomes (see Table 5).

Table 5.

Degrees of improvement in learning outcomes as a result of innovative methods

Method	Average score to	Average score after	Growth (%)
Game modelling	64	78	+21,9%
Flipped learning	66	85	+28,8%
Project-based learning	65	79	+21,5%
Case studies	63	77	+22,2%
STEM approach	62	80	+ 29,0%

Source: author's development

Therefore, the calculations showed that the STEM approach showed the highest growth results, which amounted to +29%, which is not much, but higher than the best results in test scores, slightly ahead of the flipped learning opportunities (+28.8%).

We also propose a definition for assessing changes in motivation (see Table 6).

Table 6.

Evaluation of changes in motivation

Methodology	Average level of motivation to	Average level of motivation after	Increase
Game modelling	3,1	4,0	+0,9
Flipped learning	3,2	4,5	+1,3
Project-based learning	3,3	4,2	+0,9
Case studies	3,0	4,1	+1,1
STEM approach	3,1	4,6	+1,5

Source: author's development

As a result of the correlation, it was determined that using the STEM approach is most important for the best increase in motivation (+1.5). This indicates the effectiveness of its use in individual test tasks, increasing the motivational component, engaging students in learning, etc. Accordingly, this made it possible to summarise the role of STEM methods in further education.

A qualitative regression analysis was also conducted. It identified the main factors that directly impacted the test results. The model was used for the regression analysis:

$$\text{Test Results} = \beta_0 + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + \beta_4 X_4 + \beta_5 X_5 + \varepsilon \quad (3)$$

In this model: X₁X₁ - use of game simulation, X₂X₂ - use of flipped learning, X₃X₃ - project-based learning, X₄X₄ - case study method used, X₅X₅ - use of STEM approach, β_iβ_i - coefficients of influence of each methodology, εε - random error.

The calculation of the regression coefficients based on the increase in test scores and the level of motivation showed the following results (see Table 7).

Table 7.

Analytical data for calculations

Methods	Test score increase (%)	Increased motivation
Game modelling	21.9%	+0.9
Flipped learning	28.8%	+1.3
Project-based learning	21.5%	+0.9
Case studies	22.2%	+1.1
STEM approach	29.0%	+1.5

Source: author's development

Regression analysis was also applied, demonstrating certain advantages of the applied innovative methods in the training organisation. The results of the regression analysis are shown in Table 8.

The efficiency of five different teaching strategies was assessed using a multiple linear regression analysis, with the dependent variable being the post-testing outcomes of the students. The reference category was the control group (conventional instruction), and dummy variables were made for each of the five approaches (1 = method utilized; 0 = otherwise) because each student had only ever used one method. Notably, there were 38 participants in the entire sample, with rather modest subgroup sizes ($n = 6-8$ per method). The statistical power and generalizability of the results are hampered by the small sample size, even though regression analysis was utilized to find broad trends.

Despite being encouraging, the effect sizes for case studies and game models fell short of statistical significance ($p > 0.05$), suggesting only moderate or ambiguous efficacy. The least effective and non-statistically significant was project-based learning.

These findings should be regarded cautiously due to the small sample size. However, the analysis indicates that the STEM approach and flipped learning may have the most potential to improve pedagogical outcomes and ought to be taken into consideration for broader adoption in teacher training. To validate these patterns and draw trustworthy statistical inferences, more studies with bigger sample sizes are required.

The regression model yielded the following coefficients (β): flipped learning (+8.23), STEM approach (+8.43), case studies (+1.63), game modelling (+1.33), and project-based learning (+0.93). Among them, only flipped learning and the STEM approach demonstrated statistically significant effects ($p < 0.05$), indicating a strong association with improved test outcomes.

It has been demonstrated that game modelling and the case study method showed a relatively moderate impact (1.33 and 1.63, respectively), demonstrating their tangible effectiveness, but not as significant as using the STEM approach or flipped learning. Accordingly, a recommendation can be made to deepen the training of future teachers using innovative methods of flipped learning and the STEM approach, as these methods have demonstrated perhaps the best results.

Discussion

Times of political and economic instability have a significant impact on the formation of educational policy and the effectiveness of innovative technologies. The purpose of this paper is to analyse

the role of innovative technologies in the system of training future specialists in preschool education and to determine their effectiveness in crises.

The realisation of this goal involves several tasks, in particular, to analyse empirical materials obtained as a result of testing before and after the use of innovative training of future teachers; to determine the effectiveness of various innovative methods; to formulate recommendations for improving the system of training of preschool teachers.

The following scientific hypotheses needed to be proved: using digital technologies and adaptive learning strategies will improve the professional training of future teachers in crises; STEM education methods and project-based learning will improve the professional training of students (Pavlenko et al., 2024). The proposed results show that the testing demonstrated a significant increase in the average score because of the application of innovations in the educational process: the indicators increased by more than 17 points, more than 26%.

The Likert scale survey determined the average level of motivation, which increased after the start of the experiment. The level of professional reflection has also increased. Pearson's correlation showed that higher education students were more motivated to learn and used their positive impact to pass the test (they showed better results when answering questions) (Bondar et al., 2021). However, the impact of motivation can still be considered insignificant. In addition, the regression analysis showed that even one variable (in the proposed study, motivation) significantly impacts another (in our case, test results). This indicator also indicates that the motivation level has significantly impacted learning outcomes.

The results confirm the findings of other researchers who consider the motivational factor one of the main advantages of using innovative teaching methods for future teachers (Bielienka, 2021; Storozhyk, 2024). Researchers rightly point out the importance of this aspect, and empirically prove the link between students' interest in new innovative teaching methods and the increase in grades (Koshil, 2018; Telychko, 2020).

Previous studies have highlighted the importance of implementing innovative teaching methods from the early stages of teacher education (Racu et al., 2017), as such approaches may support the modernisation of educational processes. The present findings provide tentative support for the hypothesis that digital technologies and adaptive learning strategies can contribute to improving the professional training of future teachers, particularly in crisis conditions.

The data suggest that the STEM approach and flipped learning were associated with comparatively higher gains in test scores and learner motivation. However, these conclusions must be interpreted with caution due to the limited sample size ($n = 38$), with only 7–8 participants per group. Such a small sample substantially limits the statistical power of the analyses and weakens the reliability of inter-group comparisons.

Regression and correlation analyses indicated that the STEM approach had the strongest relationship with both academic improvement and motivational outcomes, followed closely by flipped learning. Nonetheless, the strength of these associations cannot be generalised beyond the study sample. The observed trends require further investigation and replication using larger, more representative participant groups.

The results partially support the second hypothesis, which proposed that STEM education and project-based learning contribute to enhancing the professional preparation of students (Gumenyuk et al., 2021). While project-based learning showed lower effectiveness, flipped learning demonstrated outcomes close to those of the STEM approach. However, due to the methodological constraints of the study (particularly the small sample size) these findings remain preliminary.

The conclusions drawn align with those reported in other empirical studies on the impact of innovative teaching methods in teacher education (Brenneman et al., 2018; Dönmez & Gülen, 2024; Wan et al., 2020; Zhazira et al., 2024). Some researchers have also noted that outcomes may depend on the specific characteristics of participants and contextual factors (Arasomwan & Mashiy, 2021; Ozoinar et al., 2021), which further supports the need for careful interpretation.

Considering the small sample size, the findings of this study should not be considered definitive. Future research should be conducted with larger samples to strengthen the validity and generalisability of the results. Until then, any recommendations for the use of specific methods such as flipped learning or the STEM approach should be treated as exploratory rather than conclusive. It should also not be ruled out that the use of specific methods and their effectiveness depend on the pedagogical skills of teachers, which has also been emphasised by some scholars (Desnenko et al., 2021; Halachev, 2024). Considering these aspects will also require a broader justification in future studies.

The study's methodology has limitations, which should be considered when further processing the results. First, the proposed Likert scale contains certain limitations that may be subjective. For example, respondents may have found it difficult to determine the exact difference in scores, and their characterisation of good and satisfactory (for example) may have been

based solely on their own experience. The use of regression analysis in this study is limited by the small sample size, which reduces the robustness of statistical conclusions.

It should be noted that testing is also a method that may have some subjective characteristics of the students themselves, who may have found some tasks more straightforward than others. At the same time, this does not deny that innovative methods directly impact training future teachers in crisis conditions.

Conclusions

The use of innovative methods in the training of students of pedagogical specialties is a promising direction, especially in the conditions of modern political and economic instability. Within the framework of this study, conducted on a relatively small sample, a positive dynamic of the average academic score was recorded after the implementation of innovative educational approaches: the indicators increased by more than 17 points, or over 26%.

An increase in the level of academic motivation and professional reflection of students was also observed. Pearson correlation analysis showed that more motivated students achieved higher results in completing test tasks. At the same time, the influence of motivation on the results should be considered statistically significant but limited. Regression analysis confirmed that even one variable (motivation) can have an impact on another (test results).

The best results were recorded when using the STEM approach, which slightly surpassed the flipped learning method in terms of effectiveness. Correlations indicate that it was the STEM methodology that contributed the most to the increase in motivation, which indicates its potential effectiveness not only in performing test tasks, but also in forming a general positive attitude towards learning.

Regression analysis confirmed these trends: students who studied using the STEM approach and flipped learning showed the greatest increase in knowledge.

However, it is worth emphasizing that the results obtained are specific to this sample and cannot be automatically generalized to wider populations. Although the conclusions look promising, they are preliminary. Further research using larger and more representative samples is needed to verify the reliability of the identified trends and to form more substantiated recommendations. Accordingly, future research should be devoted to the application of innovative methods in the training of students of pedagogical specialties based on the involvement of many respondents. This will allow us to confirm the effectiveness of innovations.

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Appendix 1

Test tasks for determining the level of pedagogical training.

Part 1: Theoretical questions (choose the correct answer).

1. Which method most effectively promotes the development of creativity in pre-schoolers? a) Dictation tasks b) Game method c) Lecture teaching d) Memorizing poems.
2. What is the main goal of children's sensory development? a) Influence on the development of thinking and speech b) Only the development of fine motor skills c) Prevention of hearing problems d) Formation of abstract thinking.
3. What is the main principle of learning in preschool education? a) The principle of coercion b) The principle of clarity c) The principle of memorisation d) The principle of individualisation.
4. What is the primary means of learning in preschool children? a) Reading books b) Observation c) Game d) Lectures by a teacher.
5. Which of the modern methods contributes most to children's critical thinking development? a) STEM approach b) Traditional lecture method c) Speech dictation d) Listening to music.

Part 2: Situational tasks

6. A child in a group avoids communication and plays alone. What actions of the educator will be most effective?
7. A group of children does not want to participate in an educational session. What motivation methods can be used?
8. A child has difficulties completing a task to develop fine motor skills. How should I help?
9. During the lesson, children quickly lose attention. How can the educator change the course of the lesson to interest them?
10. The parents of one of the children insist on using traditional methods of upbringing, not innovative ones. How can we build an effective dialogue with them?

Appendix 2

Questionnaire for assessing motivation and attitude towards innovations.

Likert scale (rate from 1 to 5, where 1 - completely disagree, 5 - completely agree).

1. I enjoy learning.
2. I am interested in learning new methods of preschool education.
3. I am confident that I can work effectively with children.
4. Innovative approaches improve my understanding of the material.
5. I would like to implement new methods in my future work.
6. I am well versed in modern pedagogical technologies.
7. Using innovative methods increases the effectiveness of the learning process.
8. I believe that traditional methods are more effective than modern approaches.
9. I regularly update my knowledge of pedagogical innovations.
10. The use of interactive technologies helps to make learning more interesting.



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Mapping the First Twenty Years of the Flipped Classroom Model in Primary School Education: A Systematic Review*

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Abstract

This systematic review of flipped classrooms examined the trends, purposes, results, and recommendations of relevant research conducted in primary schools. The study evaluated 20 articles that met the eligibility criteria obtained from publications in the Web of Science, ERIC, Scopus, Science Direct, ProQuest Dissertations & Theses Global, TR Index, and Turkey Council of Higher Education Thesis Center databases between 2000 and 2020. The results revealed that the first study on this subject was published in 2014, and although most of the studies were carried out in the fourth grade, no studies were found with first-grade students. The studies were mostly conducted in the fields of language and mathematics education. The results also revealed that videos prepared by the researcher-teacher were mostly used as digital learning materials, and that content sharing was predominantly used in online environments. The most frequently examined purpose in the studies was academic achievement, followed by students' and parents' opinions. In these studies, the use of flipped classrooms positively affected the academic achievement of primary school students. Furthermore, offering fun learning and increasing student-student interaction were the common positive results. The most common negative results were that students needed parental support in extracurricular processes, that preparing and finding digital learning materials was a workload for teachers, and that parents had various concerns. The prominent suggestions made in these studies were long-term studies, parents' education, and cooperation with parents.

Keywords:

Flipped Classroom, Primary School, Systematic Review, Blended Learning



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Introduction

The interest in the flipped classroom (FC), which emerged as a concept in 2000 (Baker, 2000; Lage et al., 2000), continues to increase (Ağırman & Ercoşkun, 2022). The pervasive employment of technology and student-centered and active learning are effective in fostering this model. As seen in Figure 1, FC is a teaching model within the hybrid zone of blended learning between distance and face-to-face

education. (Üstün et al., 2024). With FC, which is a type of blended learning model, students learn the basic and theoretical parts of a subject with the assistance of educational technologies outside of class time (Bergmann & Sams, 2012; Horn & Staker, 2015). Teachers become engaged in higher-level activities such as in-depth discussions, experiments, and problem-solving with students who come to class knowing the subject to a significant extent (Baker, 2000; Lage et al., 2000). The purpose of this model is to prevent class time from the content that is appropriate for individual learning. In this way, it is possible to use the lesson for higher-level instructional activities that require teacher guidance (Lage et al., 2000; Zownorega, 2013). Thus, teachers and students have the opportunity to use the classroom more effectively.

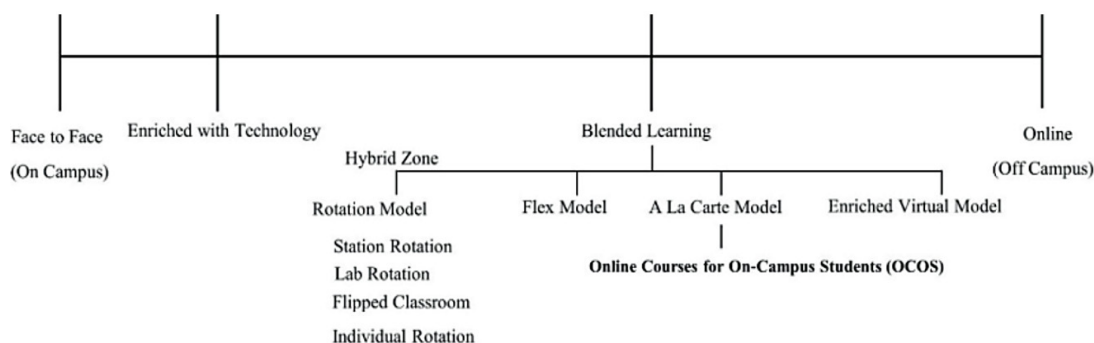
FC has several benefits in addition to creating time for an active learning environment. This model provides a learning environment appropriate for the students' learning style and individual pace (Lage et al., 2000), and it can be useful for students who may miss some lessons for some reason and then do not have the opportunity to relearn from the teacher with all the details (Bergmann & Sams, 2012). According to the results of relevant systematic reviews and meta-analyses, this model was found to increase academic achievement in the majority of studies (Chen et al., 2018; Fornons & Palau, 2021; Talan & Batdi, 2020; Tatal & Yazar, 2021; Zhang et al., 2021).

Research findings have shown that FC increases students' motivation (Abeysekera & Dawson, 2015; Zainuddin et al., 2019) and self-efficacy beliefs (Enfield, 2013), reduces the cognitive load in the learning process (Turan & Göktaş, 2016), reduces anxiety levels (Abdullah et al., 2021; Chen & Hwang, 2020), increases positive attitudes toward learning content (González Gómez et al., 2017; Yılmaz, 2017), and assists in permanent learning (Boyras & Ocak, 2017; Tatal & Yazar, 2021). The opinions of those who implemented and participated in this model at different levels and areas of the educational process are predominantly positive (Cilliers & Pylman, 2020; Gao & Hew, 2021; Li

& Jiang, 2017; Nayci, 2017). The barriers to overcome in FC are categorized under four headings: "Flipping Your Thinking", "Technological Barriers", "Finding the Time" and "Training Students, Parents, and Yourself" (Bergmann & Sams, 2015). FC is the first and foremost method that requires the use of technology and may be a problem for teachers and students who do not have the necessary facilities and competencies (Touchton, 2015; Tully, 2014). Even with the necessary competencies, according to Enfield (2013), teachers spend considerable time preparing lesson videos and finding materials to present rich content. Checking whether students watch the course content, the possibility of the presence of students who may have not watched the videos (Bergmann & Sams, 2012), and the lack of opportunities for learners who have not understood the course content in the FC model (Enfield, 2013) are considered limitations. However, Bergmann and Sams (2012, p.13) state that this limitation can be, to a great extent, eliminated by providing students with the habit of taking notes, and these questions can be asked in the lesson. Pengfei and Mingxuan (2015) state that it should not be considered only in terms of spontaneous questions; an example that a student can give during a lecture in the classroom can contribute to the understanding of the course content, and therefore, FC appears to be weak for these situations. Given its strengths and weaknesses together, the FC model is thought to be important to start with which has many benefits compared to conventional teaching in primary school. However, since FC requires individual work habits, it is largely used in classes with older students (Fornons & Palau, 2021; Özbay & Sarica, 2019; Satparam & Apps, 2022; Wright & Parkı, 2021). The use of FC in primary schools is more recent compared to other educational levels. Moreover, Bergmann and Sams (2015) stated that, due to their young age, primary school students' abilities and educational needs differ from those of students at other educational levels; therefore, the use of FC in primary schools differs in certain aspects from its use at other levels. These differences include teacher training, the use of videos, and the involvement of parents in the process.

Figure 1.

Blended learning models spectrum (Üstün et al., 2024)



Primary school students are in “The Concrete Operational Stage”, which is one of Piaget’s cognitive developmental stages (Ginsburg & Oppen, 1969). Therefore, learning processes should primarily consist of concrete content. Lessons should include activities in which students are active and learn through doing and experiencing. In addition, primary school is a period in which egocentrism among students decreases and is appropriate for cooperative learning (Erbil & Kocabaş, 2020). FC is suitable for primary school students since it takes simple parts of the subject out of the classroom and makes room for such activities in the classroom. Given that primary school students are currently composed of children in the alpha generation who come into the world intertwined with technology, FC is assumed to be appropriate for primary school (Koç Akran, 2018). According to the opinions of primary school teachers who use FC, this model increases teacher and student interaction in the classroom and transforms the classroom into a place where students become more active (Hultén & Larsson, 2018). With respect to the use of FC in primary school, it can be assumed that students cannot independently study due to their age, and this may become an impediment. Children at this level may have difficulties accessing the internet, subscribing to some internet-based applications, and using some materials alone. However, Yang (2014) stated that these situations, which can be perceived as limitations for primary school students, can be eliminated with parental support. According to Yang, FC gives more responsibility to parents in primary school, and for this reason, parents should monitor, encourage, and

accompany the students as they perform their tasks at home.

The purpose of the study

FC in primary school has some discrepancies from FC at other levels (Bergmann & Sams, 2015). Therefore, the results of research on FC in primary schools are assumed to considerably contribute to researchers and practitioners working on this subject. However, in previous systematic reviews, it was revealed that the research on FC was mostly conducted with students in the older age group, and the research on the use of FC in primary school was limited (Fornons & Palau, 2021; Özbay & Sarıca, 2019; Satparam, & Apps, 2022; Wright & Park, 2021). Although limited, systematic reviews synthesizing these studies provide valuable insights. When the literature was examined, it was found that systematic reviews focusing on FC in primary school (Susanti et al., 2024; Utami et al., 2024) focused on the effects of FC on student learning (Utami et al., 2024), its effects on learning outcomes and its challenges (Susanti et al., 2024). Unlike previous systematic reviews, this study adopts a distinct purpose and methodology.

The aim of this study is to present a systematic review of the first 20 years of literature on this subject by examining the trends, purposes, results, and recommendations of studies conducted in primary schools on FC. In this way, it is aimed to contribute to the field by showing the big picture of the use of FC in primary school (Petticrew & Roberts, 2006). The research questions and relevant categories to be examined are shown in Table 1.

Table 1.
Research questions and subcategories

Research questions	Subcategories
RQ1. What are the trends in FC research in primary schools?	Year
	Country
	Method
	Grade
	Lesson
	Number of students
	Implementation time
	Digital learning material
	Content sharing platform
RQ2. What are the purposes of FC research conducted in primary schools?	
RQ3. What are the results of FC research conducted in primary schools?	
RQ4. What are the recommendations of FC research conducted in primary schools?	

Method

The systematic review method is an unbiased review of the literature on a subject following predetermined criteria and a synthesis of the studies obtained (Newman & Gough, 2020). In systematic reviews, it is important to determine a protocol to ensure the replicability of the research and the verifiability of the results (Grant & Booth, 2009; Mulrow, 1994). In this study, the PRISMA statement was used as the systematic review protocol (Moher et al., 2009).

Literature Search Process

The concepts that are variations of the FC model and the concept of elementary schools in English and Turkish languages were initially determined through a preliminary search in the Web of Science, ERIC, Scopus, Science Direct, Proquest Dissertations & Theses Global, TR Index, and Turkey Council of Higher Education Thesis Center databases, and the keywords to be used in the database search were determined. The

keywords related to the concepts of primary school and FC were searched in the databases through "and" and "or" boolean operators. The concepts used in the search are given in Table 3.

Eligibility criteria

The determination of the publications to be included in this research was fulfilled according to the criteria in Table 2.

Data sources and search strategies

Data were obtained from the Web of Science, ERIC, Scopus, Science Direct, ProQuest Dissertations & Theses Global, TR Index, and Turkey Council of Higher Education Thesis Center databases on January 20, 2021. These databases were selected since they are SSCI-indexed and contain peer-reviewed journals and graduate theses related to education in the Turkish and English languages. An example of the search in English and Turkish is shown in Table 3.

Table 2.

Inclusion/exclusion criteria

Criteria	Inclusion	Exclusion
Scope of the studies	Flipped classroom research conducted in primary school (first, second, third, and fourth grade/ 6-10 years students)	Flipped classroom research conducted in primary school fifth and sixth grade/ 11-12 years student and other education levels
Document Type	Research articles and theses	Book chapters, technical reports, and proceeding papers.
Article type	Research articles published in peer-reviewed journals.	Reviews, meta-analyses, and conceptual articles
Thesis type	Master and doctoral theses	Others
Databases	Article databases	Web of Science, ERIC, Science Direct, Scopus, and TR Index
Thesis databases	ProQuest and Turkey Council of Higher Education Thesis Center	Articles published outside of these five databases
Publication date	Until January 20, 2021	Theses published outside of these two databases
Language	English and Turkish	Research after January 20, 2021
		Other languages

Table 3.

Database search strategy

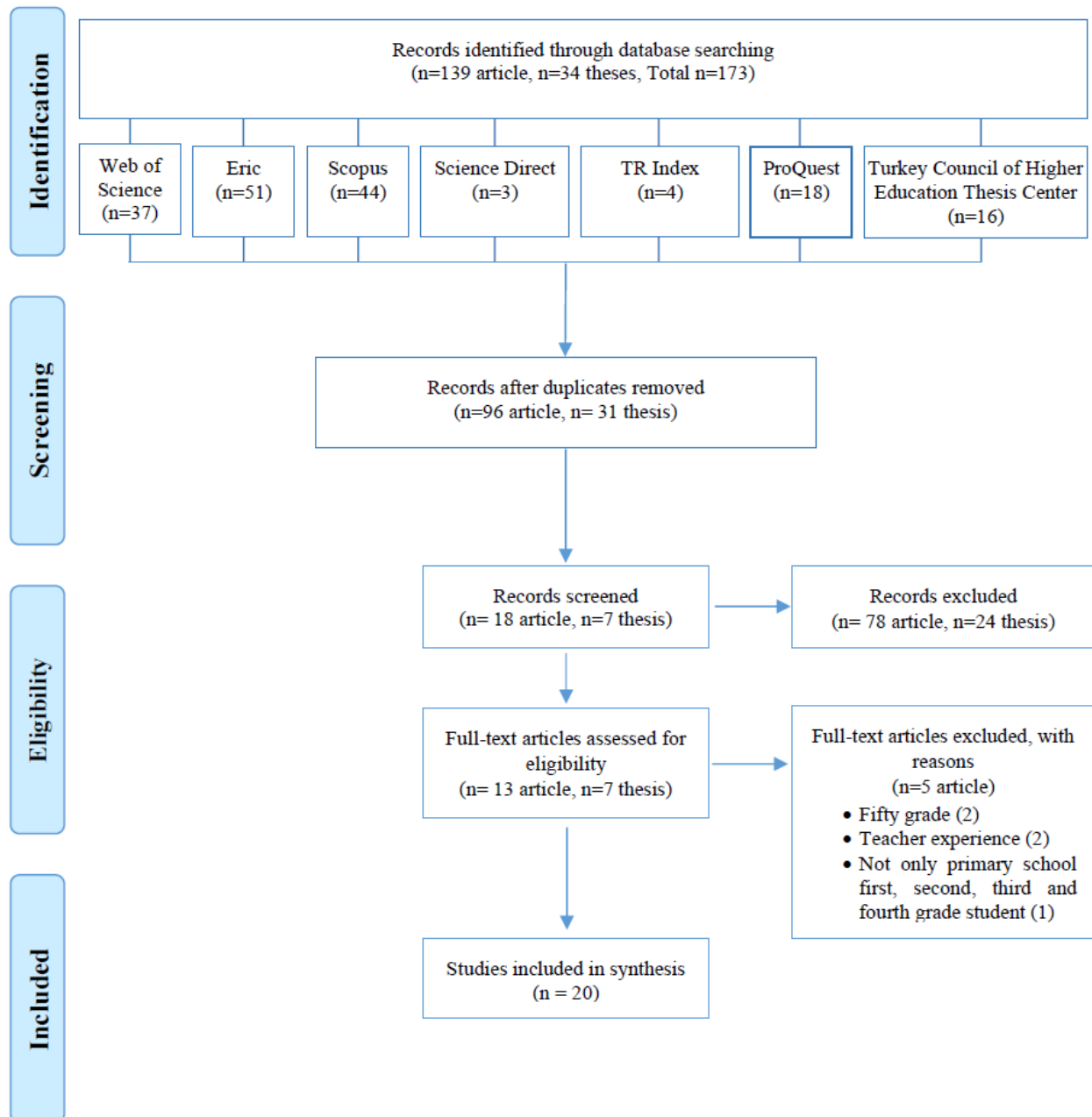
	Search Terms
Database	Web of Science
Search Fields	Topic
Document Type	Article
Languages	English
Database	TR Index
Search Fields	Searches title, abstract, author keywords, and keywords plus.
Document Type	Article (research article)
Languages	Turkish and English

After the literature was reviewed, 173 publications were obtained from seven databases. Publications with the same author and year were re-examined. The 46 publications identified as duplications were excluded. If an article was derived from a thesis (3 publications), the article was included and the theses were accepted as duplicates. The title, abstract, and keywords of the other 127 publications were read first. The obtained publications were evaluated according to eligibility criteria. Seventy-eight studies of the 102 publications that did not meet these criteria were conducted with students other than primary school first, second, third, and fourth-grade students. Ten studies were conducted with only teachers, and one

study involved other school staff. Three of these studies were conducted with students from upper grades in addition to primary school fourth-grade students. One study was a theoretical article, one study was a meta-analysis, and eight studies were not the focus of this research. The full texts of 25 publications that met the eligibility criteria determined within the scope of the research and 25 publications that did not fully meet the eligibility criteria were read. Five publications did not meet the eligibility criteria. This study was conducted with 20 publications that met the eligibility criteria. The list of publications included in the study is shown in Appendix A. The review procedure is displayed in Figure 2.

Figure 2.

PRISMA flow diagram, based on Moher et al. (2009)



Data Analysis

Content analysis was used to analyze the data. The 20 publications identified within the scope of the research were labelled from 1-20. Microsoft Excel was used for coding. The information about the research questions was coded on the opposite side of the relevant publication in the Excel program. One of the researchers coded all the publications twice with an interval of one month. In this way, the accuracy of the coding was checked. The points that could not be clearly coded in the first phase were corrected. The other researcher randomly selected 20% of the publications and independently coded them. The coding agreement between the results was compared. According to Miles and Huberman's (1994) intercoder reliability formula ($\text{Reliability} = \frac{\text{Agreement}}{[\text{Agreement} + \text{Disagreement}]}$), 97% similarity was found in RQ1, 88% in RQ2, 71% in RQ3 and 73% in RQ4. Given that a value above 70% indicates reliability (Miles & Huberman, 1994), the intercoder agreement for all coding was found to be acceptable (88%). Within the scope of RQ1, while coding regarding the years of the studies, grade level, course, number of students, and content sharing platform information, one-to-one coding was performed in all studies, as information was given. In the studies where sufficient information about the country, method, implementation period, and digital learning material was given, one-to-one coding was performed. In the case of inadequate information obtained regarding the country of the research, the name of the school was used, and the needed information was reached. To prevent any inaccuracies that may arise from school name similarities, coding was performed by checking the country information of the authors, and the schools in the contents were verified. If the method type was not explained, coding was done by determining the research methods, data collection tools, and data

analysis procedures. To code the implementation periods of the studies, only the implementation period of the model within the research process was coded.

For example, if 4 weeks of research implementation were stated as 6 weeks in a research study as the experimental process and 2 weeks as the data collection process, the implementation period of this research was coded as 4 weeks. In the studies in which information about the duration of the application and who prepared the digital learning material used was not clearly explained, the researcher was contacted, and coding was accurately completed. To increase the reliability of the coding, screenshots of some of the interviews with the researchers are shown in Appendix B. Despite these, in cases where clear information could not be reached while coding for RQ1, coding was labelled "not specified". For RQ2, the main aims of the studies and the research questions were formed accordingly; for RQ3, the results, discussion, and conclusion sections of the studies; and for RQ4, the recommendation sections of the studies were coded and analyzed. The codes were then grouped into comprehensive categories according to their similarities. The results of the research are presented in graphs and tables.

Results

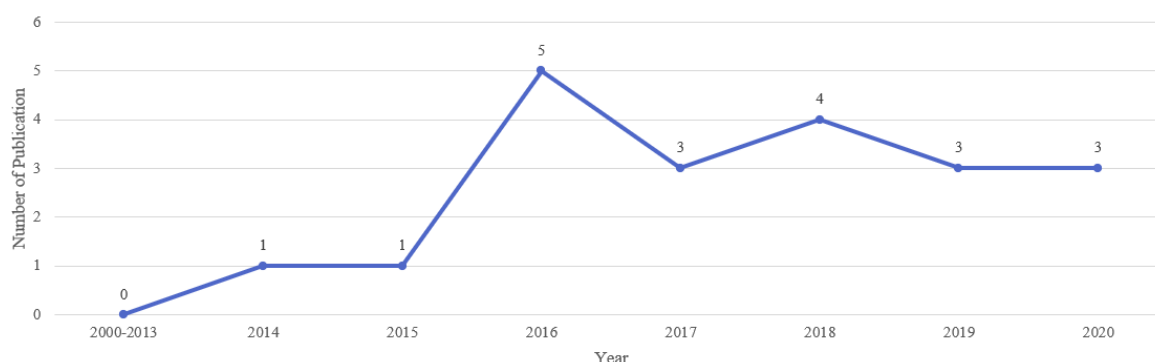
Trends in FC Studies Conducted in Primary School

Distribution of the studies according to year

The distribution of FC research conducted in primary schools by year is shown in Figure 3. The first research on the subject was published in 2014. Most of the publications were published in 2016. Since 2015, the number of studies has increased.

Figure 3.

Distribution of the studies according to year



Distribution of the studies by country

The distribution of studies according to country is shown in Figure 4. Most of the studies were conducted in Turkey (30%) or the US (30%). This is followed by China (10%), Libya, Malaysia, Romania, Jordan, Taiwan, and Indonesia.

Distribution of the studies according to methods

The distribution of studies according to their methods is

shown in Figure 5. The studies were mostly conducted with quantitative, mixed-methods, action research, and qualitative methods respectively.

Distribution of the studies according to primary school grade level

The distribution of the studies according to primary school grade level is shown in Figure 6. Most of the studies were conducted in fourth grade. There were no studies conducted with first-grade students.

Figure 4.

Distribution of the studies by country

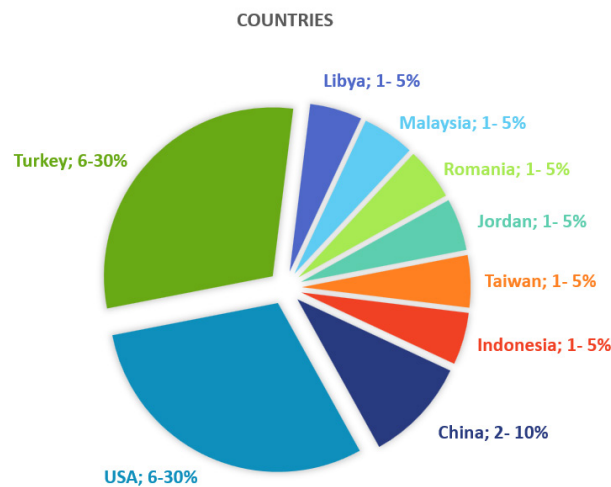


Figure 5.

Distribution of the studies according to methods

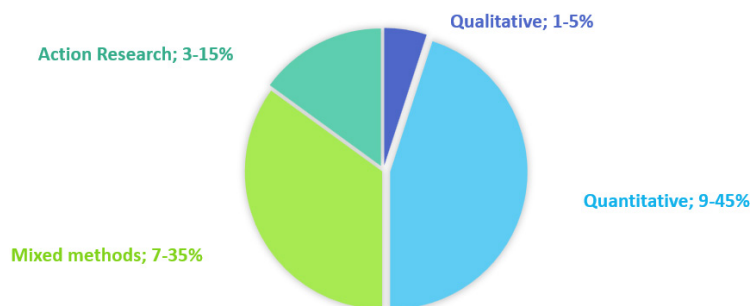
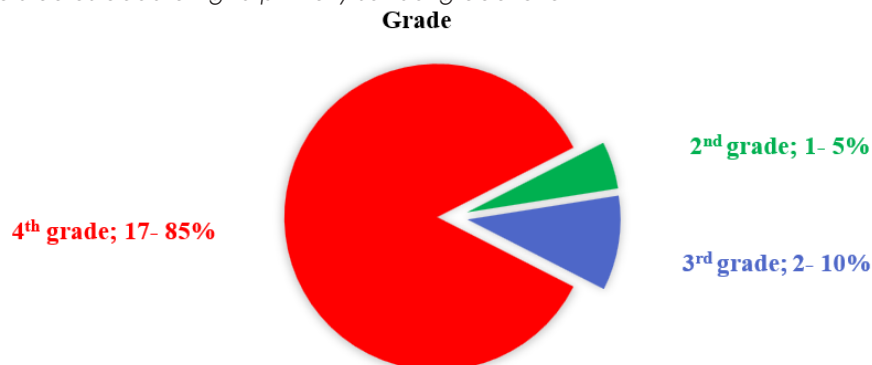


Figure 6.

Distribution of the studies according to primary school grade level



Distribution of the studies according to course

The distribution of the studies according to course is shown in Figure 7. Most research has been conducted in language education followed by mathematics education.

Distribution of the studies according to number of students

The distribution of the studies according to the number of students participating in the implementation is

shown in Figure 8. It is seen that FC, traditional model, and other FC were used in the studies. FC is mostly conducted with 20-24 students.

Distribution of the studies according to the duration of FC implementation

The distribution of the studies according to the implementation duration of FC is shown in Figure 9. The duration of implementation in the studies lasted between once and 16 weeks. Most of the implementations lasted for 4 weeks.

Figure 7.

Distribution of the studies according to course

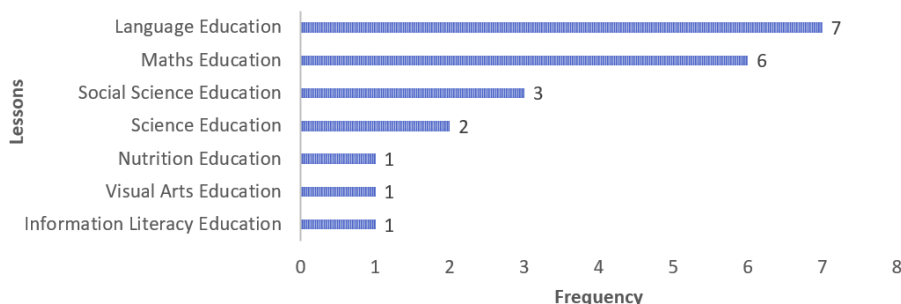


Figure 8.

Distribution of the studies according to number of students

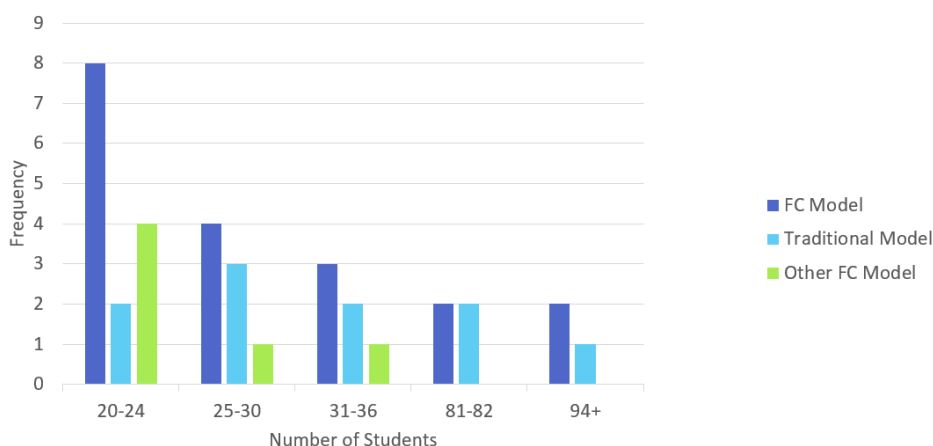
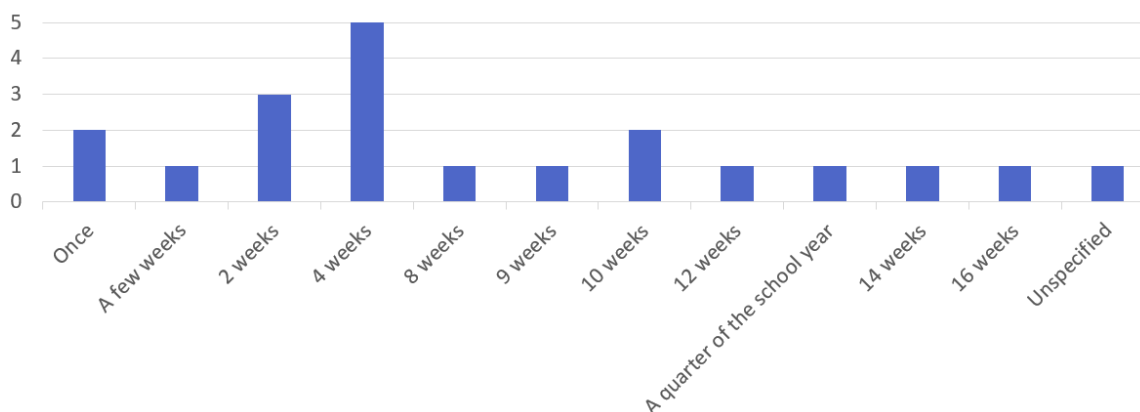


Figure 9.

Distribution of the studies according to the duration of FC implementation



Distribution of the digital learning materials used in the studies according to their preparation/selection status

The distribution of the studies according to the digital learning materials used is shown in Table 4. Videos, e-books, e-learning content, slides, tutorials, animations, and online tasks were used as digital learning materials. These tools were prepared by various people and directly selected from among the ready-made tools. Videos were mostly used as digital learning materials. Among these, the videos prepared by the teacher-researchers were used the most. This was followed by the videos selected from YouTube.

Distribution of the studies according to content sharing platform

The distribution of the studies according to content sharing platforms is shown in Figure 10. In these studies, 75% of the content sharing was performed over the internet, 15% was directly uploaded to technological tools, and 10% of the sharing platforms provided no information. Most of the content was shared through websites created by the researchers.

Table 4.

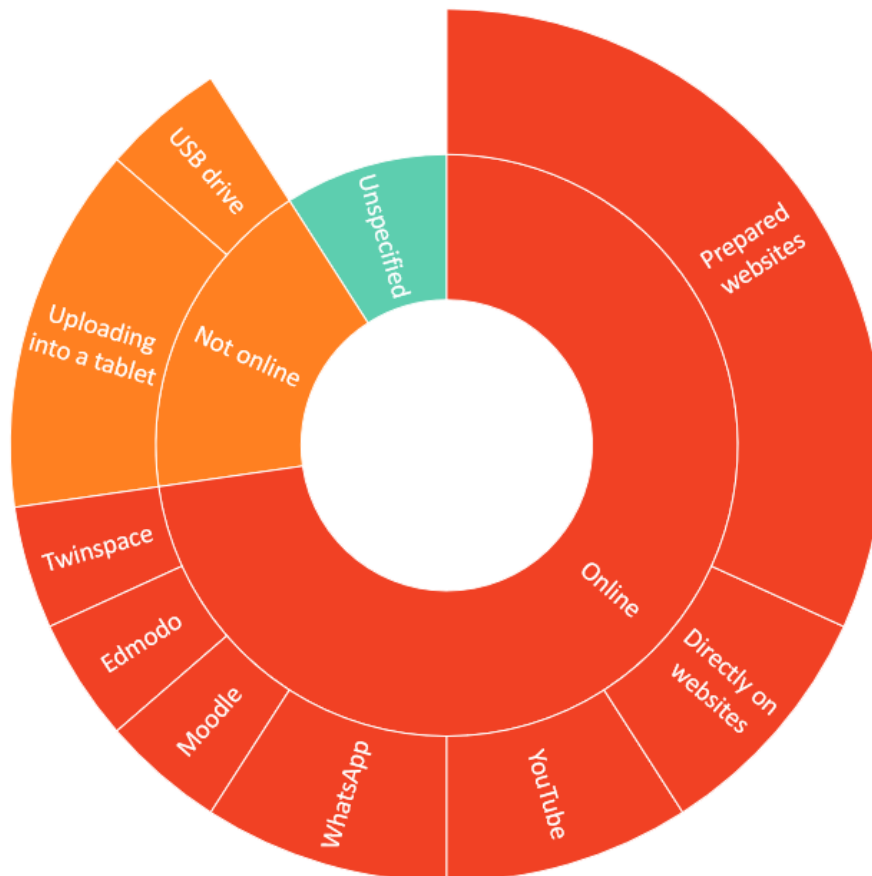
Distribution of the digital learning materials used in the studies according to their preparation/selection status

	Prepared by						Selected from		f
	R	T	RT	R&T	T&O	O	YouTube	Other websites	
Video	1		4	1	1	1	3	1	12
e-book		2	1						3
e-learning contents	2								2
Slide		1							1
Tutorial			1						1
Animation	1								1
Online tasks		1							1
f	4	4	5	1	1	1	3	1	

Note. R = researcher; T = teacher; RT = researcher who also teacher; R&T = researcher and teacher; T&O = teacher and others (not researcher or teacher); O = others. e-learning contents includes material that visual, video, listening text, reading text, etc.

Figure 10.

Distribution of the studies according to content sharing platform



The Purposes of The Studies

For the purposes of the studies shown in Table 5, in addition to FC, teaching models blended with different teaching models/strategies and labelled "Other FC" were also investigated. In these studies, the effect of the teaching model (FC-Other FC) on the academic achievement of primary school students was most frequently examined (75%). Quantitative methods were preferred in most of these studies. These studies aimed to reveal the effects of FC on academic achievement by comparing conventional models. Whether there was a difference in the results

in terms of gender (10%) and the effect on the retention of learning (5%) were investigated. After academic achievement, the opinions of students (45%), parents (25%), and teachers (15%), and the benefits and difficulties of FC (15%) were frequently examined. These studies also aimed to reveal the effects of the instructional model (FC Model-Other FC Model) on self-efficacy (10%), motivation (10%), self-regulation (5%), and planning skills (5%), student engagement (5%), student behaviors (5%), student satisfaction (5%), applicability (5%) and the use of FC with other instruction (5%).

Table 5.

Purposes of the studies

Inductive-categories	Sub-categories	Quantitative	Qualitative	Mixed	Action Research
Academic achievement	FC	P7-P9-P13-P14-P16-P17-P18	P5-P11		P3
	Comparison of FC and Traditional Model	P1-P2-P6-P7-P9-P11-P14-P16-P17-P18 P2-P6 P17	P5		
	Other FC	AT-FC R-FC CL-FC P1 P7	P5		
	Comparison of FC and Other FC	AT-FC R-FC CL-FC P7 IB-FC P10 SR-FC P12	P5		
	Comparison Other FC and Traditional Model	AT-FC R-FC CL-FC P1 P7	P5		
Students' opinions	FC		P5-P8-P14-P17	P4-P11-P15-P18-P20	
Parents' opinions	FC		P8-P14-P17	P4-P11	
Teachers' opinions	FC	P13	P17-P18		
Benefits and challenges	FC		P11		P4-P8
Self-efficacy	Comparison of FC and Other FC	IB-FC SR-FC P10 P12			
Motivation	FC	P7-P9			
	Comparison of FC and Traditional Model	P7-P9			
	Other FC	CL-FC P7			
	Comparison of FC and Other FC	CL-FC P7			
	Comparison Other FC and Traditional Model	CL-FC P7			
Planning skills	Comparison of FC, Other FC and Traditional Model	R-FC P5			
Self-regulation	Comparison of FC and Other FC	SR-FC P12			
Student engagement	FC				P4
Student behaviors	FC and Other FC	R-FC	P5		
Student satisfaction	Other FC	AT-FC P1			
Applicability	FC	P13			
Use of FC with other instructions	Reform-Based Math Instruction		P19		

AT-FC= Adaptive technique in the FC Model (FC Model where different contents are prepared according to student-level differences); R-FC=Revised FC Model (FC Model where videos are watched at school, not at home); CL-FC=Cooperative learning in the FC Model; IB-FC=Interactive E-Book-Based FC Model (FC Model using interactive e-books instead of videos); SR-FC= Self-regulated FC Model (FC Model in which students set their learning objectives before out-of-class learning activities)

Results of the studies

Results of the studies on academic achievement

The results of the studies on the effect of the teaching model on the academic achievement of primary school students are shown in Table 6. Fifty percent of the studies examined the effect of FC on the academic achievement of primary school students. In all of these studies (100%), FC was found to be effective in improving the academic achievement of primary school students. Compared with the traditional model 55% of the studies examined the impact of FC on academic achievement. In 82% of these studies, FC was more effective than the traditional model; in 18% of these studies, it made no difference. There was no significant difference between the FC and traditional models in terms of gender. In research aiming to reveal its effect on learning retention (5%), FC was significantly more effective than the traditional model was. Fifteen percent of the studies examined the effect of Other FC (AT-FC, R-FC, and CL-FC) on the academic

achievement of primary school students. In all of these studies, Other FC was found to be effective in the academic achievement of primary school students. The results of this research (25%), revealed that the AT-FC, IB-FC, and SR-FC models from Other FC were more effective than the FC model in primary school students although there was no significant difference between them and the R-FC and CL-FC models. In all of the studies (15%) that revealed the effects of Other FC on academic achievement by comparing them with the traditional model, Other FC (AT-FC, R-FC, and CL-FC) was found to be more effective than the traditional model.

As a result, no studies have revealed that the traditional model is more effective than FC or Other FC for primary school students' academic achievement. In other words, FC has positive effects on the academic achievement of primary school students in all the studies examined and is even more effective than the traditional model is.

Table 6.

Results of studies on the effects of teaching models (FC, Other FC, and Traditional Model) on primary school students' academic achievements

		Effective	No difference
FC	FC	P3-P5-P7-P9-P11-P13-P14-P16-P17-P18	-
	FC	P1-P5-P6-P7-P9-P11-P14-P16-P17	P2-P18
Between FC and Traditional Model	Traditional Model	-	-
	Gender as a variable	-	P2-P6
	Learning retention as a variable	P17	-
Other FC	AT-FC	P1	-
	R-FC	P5	-
	CL-FC	P7	-
Between FC and Other FC	FC	-	-
	AT-FC	P1	-
	R-FC	-	P5
	CL-FC	-	P7
	IB-FC	P10	-
	SR-FC	P12	-
Between Other FC and Traditional Model	Traditional Model	-	-
	AT-FC	P1	-
	R-FC	P5	-
	CL-FC	P7	-

Results of the studies on students' opinions

Table 7 shows the results of the studies on student opinions. Students had certain opinions on learning, interaction, extracurricular processes (video), classroom activities, personal development, learning environment, and extracurricular processes (short tests). The most frequently mentioned positive student opinion is that the model provides them with effective learning. This is followed by the view that the model provides fun learning and increases student-student

interaction. In addition, the view that the model provides easy learning, supports learning, provides an opportunity to watch the videos again, and encourages active participation in classroom activities was frequently mentioned. The most frequently stated negative opinion is the need for parental support in extracurricular processes. The most frequently mentioned suggestion is to use it in different courses. As a result, students have predominantly positive opinions about FC.

Table 7.

Results of the students' opinions on FC

	Positive Opinions	Negative Opinions	Suggestions
Learning	Effective (P5-P8-P11-P17-P18-P20) Fun (P5-P8-P11-P14-P20) Easy (P14-P11-P17-P20) Supportive (P11-P14-P17-P18) Permanent (P5-P14-P17) Flexible (P11-P14-P20) Personalized (P17) Active (P14) Effective (P5) Satisfaction (P11)		In different courses (P5-P14) Other issues (P18) In other classes (P14) To friends (P20) Continued use (P20)
Interaction	Student-student (P4-P8-P14-P17-P20) Student-teacher (P14-P20)		
Extracurricular Processes (video)	Replay facility (P11-P14-P17-P20) Enabler of learning (P8-P14-P20) Easy learning (P5-P14-P20) Fun learning (P5-P14) Satisfaction with learning (P15-P20) Preliminary preparation for the course (P14-P17) Learning according to individual pace (P17-P20) Positive attitude toward the course (P14) Permanent learning (P14) Active learning (P11) Willingness to do homework (P8) Developing technology skills (P8) No need for parental support (P15)	Need for parental support (P17-P15-P20) Inability to ask questions (P11-P17) Lack of immediate teacher feedback (P11-P17) Long time (P11-P14) Technological problems (P14-P17) Concerns about technological problems (P17) Fear of making mistakes when working alone (P17) Time-consuming when there are other assignments (P11) Boring (P14) A little homework stress (P11)	Short duration (4-5 min.) (P11) Song at the end of the video (P17) Game orientated studies (P14)
Classroom Activities	Active participation (P4-P8-P14-P17) Fun learning (P4-P5-P8) Enhancing learning (P8-P17) Cooperative learning (P5-P8) Fast learning (P5-P8) Satisfaction (P4-P15) Developing technology skills (P5) Preparing for real life (P11) Reinforcing learning (P5) Easy learning (P17) Instant teacher support (P14) New activities (P5)		
Personal Development	Individual learning skills (P4-P17-P18) Self-management skills (P17-P18) Sense of autonomy (P4-P20) Intrinsic motivation (P4-P20)		
Learning Environment	Silent (P17) Comfortable (P17)	Home environment sounds (P11)	
Extracurricular Processes (Short tests)	Active participation in the lesson (P14) Opportunity for self-assessment (P14) Learning motivation (P14) Ensuring success (P14) Opportunity to correct mislearning (P14)		

Results of the studies on parents' opinions

Table 8 shows parents' opinions about learning, FC, students', and parents' concerns and suggestions. For positive results, the most frequently mentioned parental opinion is that FC provides effective learning. This is followed by the view that it increases students'

interest in the lesson, reduces homework stress, provides easy learning, and that the model is a tool for students to learn technology. For negative results, FC is assumed to increase parental responsibility and is merely appropriate for students who can work independently. However, parents have predominantly positive opinions about FC.

Table 8.*Results of parents' opinions on FC*

	Positive Opinions	Negative Opinions	Neutral Opinions
Learning	Effective learning (P4-P8-P11-P17) Easy learning (P8-P11) Learning without distractions of the classroom environment (P11) Activities to prepare for the real world (P11)		
Student	Increased interest in the lesson (P4-P8-P14) Reducing homework stress (P4-P11) Improved individual learning skills (P4) Increased responsibility (P17) Increased autonomy (P17) Active while watching a video (P11) Spends more time studying (P14) Cognitive, affective, and psychomotor development (P8) Development of disadvantaged students (P8) A positive experience (P4)	Only suitable for students who can work independently (P11)	
FC	Tool for learning technology (P8-P17) Parents and students' collaborative work (P11) The benefit of pausing and rewatching a video (P11)		
Parent	Reduced responsibility (P14) Reducing homework stress (P4) Digital learning materials enable them to understand what their children are learning (P4) Satisfaction (P8)	Increased responsibility (P14)	No change in responsibility (P14)
Anxiety		Technology addiction (P14) Making studying boring (P14) Increasing student load (P14) Loss of control over their child's learning (P4) New and unfamiliar (P4)	
Suggestions			Practice in specific courses (P14)

Results of the studies on teachers' opinions

Teachers stated that FC provided effective learning (P13-P17-P18), was applicable in primary schools (P13-P17), and improved students' independent learning skills (P18). With respect to limitations, they mentioned that preparing and finding digital learning materials is a workload for teachers (P17-P18), but working as a team is important in this regard (P18), and despite this difficulty, they recommended the use of FC to diversify teaching (P17). They also suggested that parental support is important (P18) and that students and parents should be informed about FC (P17).

Results of the studies on the benefits and challenges of FC

Table 9 shows the benefits and challenges of the FC. The most frequently cited benefit is that FC enables students to actively participate in the lesson and improve their collaborative work skills. The most frequently cited challenge is the increase in the teacher's workload. As a whole, FC is seen to have more benefits than challenges.

Other research results (self-efficacy, motivation, planning skills, self-regulation, student engagement, student behavior, student satisfaction, applicability of FC, use of FC with other instructions)

According to the results of the studies on self-efficacy, the IBFC (P10) and SRFC (P12) from other FCs were found to be significantly more effective than the FC in developing primary school students' self-efficacy.

Given the results of the studies on motivation, FC and CLFC had a similar effect on primary school students' motivation in 5% of the studies and were statistically significantly more effective than the traditional model was (P7); in 5% of the studies, there was no difference within the group and compared with the traditional model (P9). The results of the studies on planning skills, revealed that FC and Other FC were not effective in improving students' planning skills (P5). Other FC (SRFC) was significantly more effective than FC in improving primary school students' self-regulation skills (P12). According to the results of the studies on student participation (P4) and student behaviors (P5), FC and Other FC enabled students to actively participate in out-of-class and in-class processes. With respect to student satisfaction with Other FC (AT-FC), the majority of the students were satisfied with the model; they sought to continue and recommend it to other students (P1). FC was found to be appropriate and applicable for the students given their age (P13). With respect to the use of FC with other instructions, there was a balance between FC and reform-based math instruction, they could be applied together and had positive effects on students' learning (P19).

Recommendations of The Studies

Table 10 shows the suggestions for researchers, teachers, and administrators regarding the use of FC. The most frequent suggestion was to conduct long-term research for researchers and then provide training and cooperation with parents before the first implementation for teachers.

Table 9.
The benefits and challenges of FC

	Benefits	Challenges
For the student	Active participation in the lesson (P4-P8-P11) Improvement in collaborative working skills (P4-P8-P11) Increased motivation toward the course (P4-P8) Learning to be sensitive to individual differences (P8-P11) Increase in higher-level learning activities (P4-P11) Effective use of teacher-guided time (P4-P11) Increase in academic achievement (P4) Improvement in taking responsibility for own learning (P11) Flexible working opportunity (P11) Development of 21st century skills (P11) Helps prepare for the real world (P11) Development of leadership skills (P4) Development of disadvantaged students (P8) Increased achievement of those with reading weakness (P11) Providing peer support (P4) Increase in parent support (P4)	Need for teacher and parent support at the beginning (P4)
For the teacher	Providing opportunities for collaborative activities (P4-P8) Providing opportunities for student-centered activities (P4) Opportunity to be informed about students' learning before class (P4) Ease in classroom management (P8) Providing professional satisfaction (P4)	Increased workload (P4-P11) Difficulty in finding appropriate digital learning materials (P4) Difficulty in preparing appropriate digital learning materials (P11) Disruption of teaching by coming without watching the videos (P11)
Technical aspects	Increased interaction with technology (P8-P11)	Necessity of technological equipment (P11)

Table 10.*Recommendations of the studies*

Recommendations		Research Codes
Suggestions for Re-searchers	Research duration	Long-term research
		P7-P9-P12-P17-P19
	Working group	Large sample
		P9-P12-P17
		Different levels
		P6-P9-P14
	Courses	Primary school first, second, and third grades
		P7
		Schools at different socio-economic levels
		P14
	Research Method-ology	Courses other than social studies
		P5-P7-P14
		Courses other than science
		P5-P6
	Participants in the research	All courses
		P17
		Methods other than experimental research
		P7-P18
	Research topic	Experimental research with control group
		P11-P13
		Mixed methods
		P2
	Data collection	Pre-test and post-test research for individual student development
		P11
		Longitudinal research
		P17
	LMS	Involvement of parents in the research process
		P14-P20
		Receiving student opinions
		P2
	Different situations	Involvement of all teachers in the school in the research process
		P17
		Involvement of school administrators in the research process
		P20
	Other FC	Meaning of FC
		P2
		Combined use of different learning strategies appropriate with FC
		P12
	Other FC	Impact on affective dimensions of learning
		P17
		Student effort before the lesson
		P18
	Other FC	Factors affecting student engagement
		P19
		Determining the impact of FC on academic achievement through process evaluation
		P5
	Other FC	Observation of classroom activities
		P18
		Investigating the impact on academic achievement and planning skills using online classroom management platforms
		P5
	Other FC	Impact on learning when applied in offline environments
		P11
		Classes with low motivation toward FC
		P17
	Other FC	Students with lower prior knowledge
		P13
		(AT-FC) Impact on students with disabilities
		P1
	Other FC	(AT-FC) Other subjects in English
		P1
		(AT-FC) Other levels
		P1
	Other FC	Classrooms where FC and Other FC (R-FC) are effective
		P5

Table 10.
Continue

	Recommendations	Research Codes
Recommendations for teachers	Parents' education	P8-P14-P15-P17
	Piloting	P2-P15
	Identifying content that students can learn at home	P2
	Assessing the willingness of students and parents	P17
	Practical student education	P14
	Planning with the knowledge that preliminary preparation will take time	P11
	Cooperation	P14-P17-P18-P20
	Cooperation with school administration	P20
	English	P17-P18
	Science	P6
	Social studies	P7
	Courses that students can achieve individually	P14
	Video	P11-P15
	4-5 minutes long	P11
	Technically and pedagogically adequate	P17
	Remarkable	P17
	Receiving feedback from parents and students for improvement	P17
	Classroom activities	P8-P17
	Using digital story and game-based activities	P17
	Preparation for classroom activities	P8
	Providing detailed instructions to students	P8
	Giving students sufficient time	P8
	Giving individual feedback to students	P8
	Use of cooperative and active learning activities	P17
	Teacher training	P14-P17
	Providing practical teacher training	P6
	Providing training to prospective teachers	P11
	Receiving practical teacher training	P15
	LMS	P18
	Accessibility via tablets and computers	P18
	Having the function of tracking students' participation in the course (Moodle)	P11
	Day	P11
	Extracurricular activities	P14
	Fun and learning reinforcing activities	P17
	Online sessions to answer student questions after the video	P17
	Update	P17
	Updates to keep interest alive	P19
	Other FC	P5
	The combination of reform-based mathematics and FC	P5
	(R-FC) Deciding on the type of model according to student characteristics	P5
	(R-FC) Use in schools with students with technological facilities	P10
	Use of IB-FC	P10
	Development of an e-book system	P10
	Reducing Workload	P17
	Ministry of Education to prepare content suitable for FC	P18
	Teachers' collaboration in finding and preparing videos	P17
	Creating blogs where teachers can share materials online	P17
Recommendations for administrators	Supports	P6
	Providing technological equipment	P11
	Supporting the use of FC	P14
	Providing technical support	P14

LMS*Learning management system

Discussion, Conclusion, and Recommendations

To identify the current situation, uncertainties, and gaps, a systematic review of research on the use of FC in primary schools encompassing the trends, aims, results, and recommendations of the studies was conducted. Although the emergence of FC occurred in the 2000s, research on its use in primary schools started in 2014 and continues. Notably, the majority of the studies were conducted with fourth-grade students, and no studies were conducted with first-grade students. The tendency of researchers to use FC in older age groups (Bond, 2020; Fornons & Palau, 2021; Özbay & Sarıca, 2019; Satparam & Apps, 2022; Wright & Parki, 2021) is also valid in primary school. There is a significant gap in the field in terms of its applicability, particularly for first-grade students, who need more teacher-guided activities. Another tendency of the research was to examine the effects of the model in language education and mathematics lessons. Examining the applicability of the model in the classes and whether it is worth implementing is assumed to contribute to the field. In these studies, FC was mostly implemented for four weeks, and the results were evaluated. It is thought that making evaluations after longer implementations, particularly to determine the real effects of a new model, will reveal better results (Rodrigues et al., 2022; Stoa & Chu, 2023). The possibility that FC may attract the attention of primary school students as a new approach should be taken into consideration. In these studies, the videos prepared by classroom teachers were the most frequently used digital learning materials. The results are similar to those of systematic review studies focusing on the K-12 education level (Bond, 2020; Satparam & Apps, 2022) and primary school (Susanti et al., 2024). Although Bond (2020) revealed that teacher-created videos increase the likelihood of completing tasks and ensuring participation, the possibility that teachers may not have found digital learning materials suitable for their students' ages may have led them to prepare their own materials. It was also determined that 75% of the digital learning materials were shared in online environments and that 15% were shared through nononline tools. This result is expected to encourage classroom teachers who do not have the opportunity to share content in online settings and who are encouraged to use FC.

Among the online tools, content sharing is mostly performed through websites created by researchers. In contrast to the preference for LMSs, which are widely known in the use of FC in adult education, researchers who prepare websites in primary schools consider the situation of the unavailability of LMSs appropriate for the level of primary school students and the needs of teachers. Therefore, digital learning materials and LMSs appropriate for primary school students can be developed. It is thought that this situation will also

contribute to distance education processes in primary school. This may also be a solution to the limitations of the studies which are often highlighted as "preparing and finding digital learning materials is a workload for the teachers" and "increase in the teachers' workload" within the scope of difficulties.

Given the aims and results of these studies, the effects of FC on academic achievement were mostly examined, and FC had positive effects on the academic achievement of primary school students in all of them. These studies revealed that the effect of FC on academic achievement was greater than that of the traditional model; however, in a few studies, no statistically significant difference between these two models was found. Therefore, the use of FC in primary school was more effective than the traditional model in terms of academic achievement. The results are compatible with and complementary to those of meta-analyses and systematic review studies conducted at primary school and other education levels. According to the results of systematic reviews and meta-analyses, the model increases academic achievement in the majority of studies (Chen et al., 2018; Çiftçi Seyhan et al., 2022; Fornons & Palau, 2021; Susanti et al., 2024; Talan & Batdi, 2020; Tural & Author, 2021; Utami et al., 2024; Zhang et al., 2021), and a systematic review conducted with only quantitative studies revealed that FC is as effective as other teaching methods in terms of academic success (Galindo-Dominguez, 2021).

Although the effect of FC on academic achievement is frequently examined in studies, only one study has investigated its effect on learning retention. Therefore, researching the effect of FC on the retention of learning is recommended.

Following academic achievement, students, parents, and teachers' opinions about FC, with the aim of revealing the benefits and difficulties of FC, have been frequently examined. Given these results, the model provided effective learning, as the most frequently mentioned opinion students, teachers, and parents had. FC provided fun learning, increased student-student interaction, increased students' interest in the lesson, provided active participation, and improved collaborative working skills. The most common negative results were the need for parental support in extracurricular processes for students, various concerns for parents, and the workload of preparing and finding digital learning materials for teachers. There were considerably fewer negative results regarding FC than positive results. The results are similar to those of systematic review studies examining primary school (Susanti et al., 2024), K-12 (Satparam & Apps, 2022) and different levels of education (Akçayır & Akçayır, 2018; Shnai, 2017) and it is assumed that these results are contributory. Considering that all

of the negative results, although few, are caused by the extracurricular processes of FC, it is thought that improvements in these points will also improve the asynchronous processes of distance education in primary school because the reasons why primary school teachers prefer face-to-face education compared to distance education are similar to these reasons (Aktay & Keser, 2023).

In addition to conventional FC, studies have been conducted on the use of Other FC models in primary schools. According to the results of these studies, the FC and Other FC models were found to be effective in improving students' self-efficacy and self-regulation skills. Although the model improved students' planning skills according to the qualitative results, the model did not affect the quantitative results. Similarly, the research results regarding the effects of FC on primary school students' motivation are quite limited and differ from each other. To overcome the uncertainty of these issues, further studies on the effects of FC on students' planning skills and motivation are recommended. In addition, the fact that the FC enabled students to actively participate in in-class and out-of-class activities led to the consideration that it was an age-appropriate and applicable model for students. The most common suggestion in these studies was to conduct long-term research to provide parents with education and cooperation before the first implementation.

Given the findings of the current research, although research on the use of FC in primary schools is limited, it can be said that FC in primary schools is an effective teaching model for primary school students and has many contributions despite some limitations. For this reason, increasing the number of studies on the use of FC in primary schools and using the model in primary schools by making some necessary arrangements are strongly recommended. Based on this result, it can be said that since FC is a blended learning model and contains asynchronous processes of distance education in itself, the research results offer important implications for distance education processes that are widely used in primary schools in critical situations such as pandemic.

Limitations

The current study is limited to research in which the FC model is conducted with students in the first, second, third, and fourth grades of primary schools. In addition, since the researchers were proficient in English and Turkish, the research was limited to publications in these two languages. The inclusion of publications in different languages may have affected the results.

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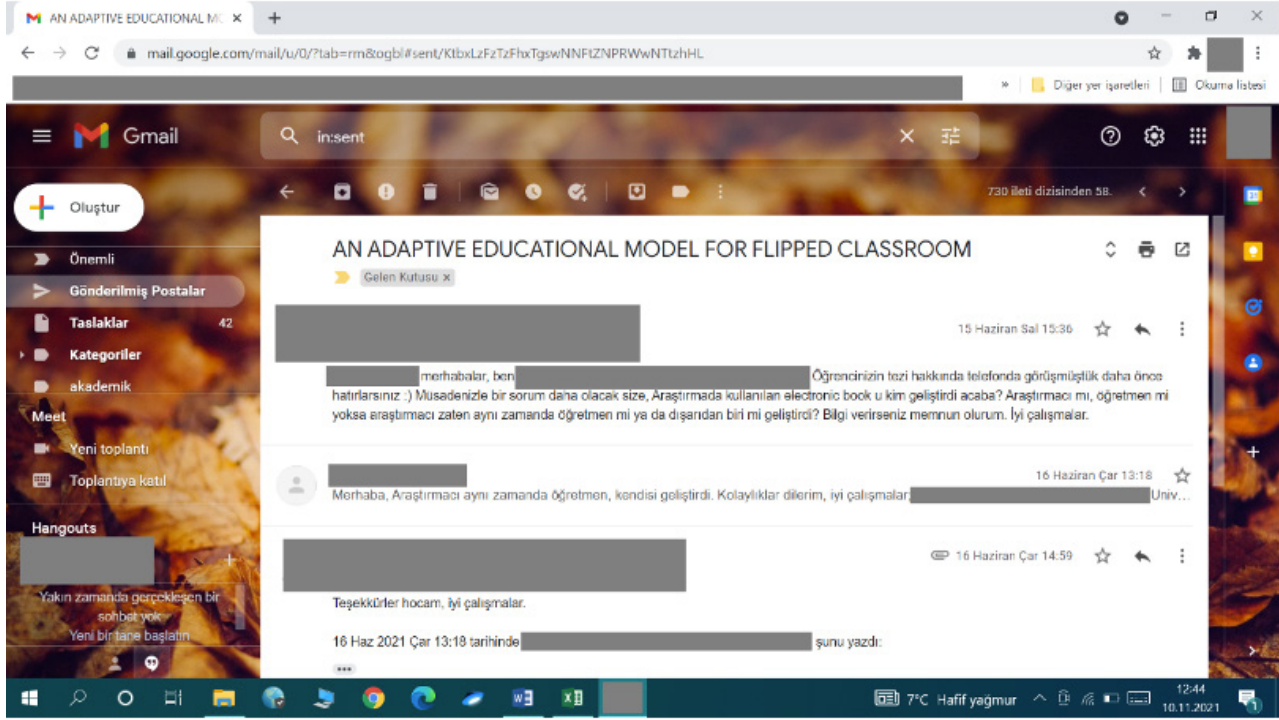
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Appendices

Appendix A. List of Publications Included in the Study

Publication Code	Publication
P1	Ahmed, A. A. A. (2017). An adaptive educational model for flipped classroom (Publication No. 490287) [Master's thesis, Atılım University-Ankara]. Turkey Council of Higher Education Thesis Center.
P2	Cashin, M. (2016). The effect of flipped classrooms on elementary students' reading scores (Publication No. 10242069) [Doctoral dissertation, Northcentral University-Arizona]. ProQuest Dissertations & Theses Global.
P3	Crîșan, G.I., & Albușescu, I. (2018). Approaching landscapes in fine arts, with young schoolchildren, through flipped classroom strategy. Applications within the context of e-twinning projects. Romanian Review of Geographical Education, 7(1), 5-19. https://doi.org/10.23741/RRGE120181 .
P4	D'addato, M., & Miller, L. R. (2016). An inquiry into flipped learning in fourth grade math instruction. Canadian Journal of Action Research, 17(2), 33-55. https://doi.org/10.33524/cjar.v17i2.261 .
P5	Güven Demir, E. (2018). Ters yüz sınıf modeline dayalı uygulamaların ilkökul 4. Sınıf öğrencilerinin akademik başarı ve planlama becerilerine etkisi (Publication No. 519317) [Doctoral dissertation, Ondokuz Mayıs University-Samsun]. Turkey Council of Higher Education Thesis Center.
P6	Elian, S. A., & Hamaidi, D. A. (2018). The effect of using flipped classroom strategy on the academic achievement of fourth grade students in Jordan. International Journal of Emerging Technologies in Learning. 13(2), 110-125. https://doi.org/10.3991/ijet.v13i02.7816 .
P7	Erbil, D. G., & Kocabaş, A. (2020). Flipping the 4th grade social studies course in a cooperative way: Effects on academic achievement and motivation. Studies in Educational Evaluation, 66, 1-12. https://doi.org/10.1016/j.stueduc.2020.100878 .
P8	Girmen, P., & Kaya, M. F. (2019). Using the flipped classroom model in the development of basic language skills and enriching activities: Digital stories and games. International Journal of Instruction, 12(1), 555-572. https://doi.org/10.29333/iji.2019.12i136a .
P9	Gökdaş, İ., & Gürsoy, S. (2018). The effect of flipped classroom model on academic achievement and motivation in mathematics course in primary schools. Mediterranean Journal of Educational Research 12(26), 159-174. https://doi.org/10.29329/mjer.2018.172.9 .
P10	Hwang, G. J., & Lai, C. L. (2017). Facilitating and bridging out-of-class and in-class learning: An interactive e-bookbased flipped learning approach for math courses. Educational Technology & Society, 20(1), 184-197. https://www.jstor.org/stable/10.2307/jeductechsoci.20.1.184 .
P11	Kinderman, K. A. (2015). The flipped classroom: An alternative to teaching models in an elementary classroom scores (Publication No. 10019483) [Master's Thesis, The Art of Education University-Osage]. ProQuest Dissertations & Theses Global.
P12	Lai, C. L., & Hwang, G. J. (2016). A self-regulated flipped classroom approach to improving students' learning performance in a mathematics course. Computers & Education, 100, 126-140. https://doi.org/10.1016/j.compedu.2016.05.006 .
P13	McEvoy, C. S., Cantore, K. M., Denlinger, L. N., Schleich, M. A., Stevens, N. M., Swavely, S. C., Odom, A. A., & Novick, M. B. (2016). Use of medical students in a flipped classroom programme in nutrition education for fourthgrade school students. Health Education Journal, 75(1), 38-46. https://doi.org/10.1177/0017896914561879 .
P14	Nayci, Ö. (2017). The evaluation of implementation of flipped class model in the teaching of social studies (Publication No. 481748) [Doctoral dissertation, Ankara University-Ankara]. Turkey Council of Higher Education Thesis Center.
P15	Smith, D. (2016). Lessons learned from designing flipped lessons for fourth grade students: Implications for school librarians. Library Hi Tech News, 8, 19-23. https://doi.org/10.1108/LHTN-08-2016-0037 .
P16	Sukasih, S., Zamzani, & Haryanto. (2019). The effect of the Flipped Classroom Model on the language skills of primary school students. International Journal of Innovation, Creativity and Change, 5(3), 1-19.
P17	Şık, P. (2019). The effect of flipped classroom on young learners' vocabulary learning in primary elt classrooms (Publication No. 594862) [Master's Thesis, Çanakkale Onsekiz Mart University-Çanakkale]. Turkey Council of Higher Education Thesis Center.
P18	Yang, C. C. R., & Chen, Y. (2020). Implementing the flipped classroom approach in primary English classrooms in China. Education and Information Technologies, 25, 1217-1235. https://doi.org/10.1007/s10639-019-10012-6 .
P19	Young, L. L., (2014). Online Student Discussions in a Blended Learning Classroom: Reconciling Conflicts Between a Flipped Instruction Model and Reform-Based Mathematics (Publication No. 28103590) [Master's Thesis, Brigham Young University -Provo]. ProQuest Dissertations & Theses Global.
P20	Zakaria, S., & Yunus, M. M. (2020). Flipped classroom in improving ESL primary students' tenses learning. International Journal of English Language and Literature Studies, 9(3), 151-160. https://doi.org/10.18488/journal.23.2020.93.151.160 .

Appendix B. A screenshot of the interviews conducted with the researchers to increase the reliability of the coding





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The Effect of the “My Parent is My Digital Game Guide” Family Education Program on Children’s Digital Game Addiction and Parental Mediation

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Abstract

Playing games occupies an essential place throughout life, particularly in childhood. With technological advances, urbanization, and the reduction of playgrounds, children’s engagement with digital games has steadily increased. This shift highlights the importance of raising parental awareness about children’s digital game preferences and gaming processes. This study aimed to examine the effectiveness of the “My Parent is My Digital Game Guide” Family Education Program in enhancing parental digital game guidance strategies among parents of preschool-age children. A one-group pre-test–post-test experimental design was employed. The study group consisted of 200 parents, selected through convenience sampling, from preschool children’s families in the central district of Ankara, Türkiye. Data were collected using the Digital Game Addiction Tendency Scale, the Digital Game Parental Guidance Strategies Scale, and a Personal Information Form. The program was implemented over seven weeks, totaling seven instructional hours. Data were analyzed through Kolmogorov-Smirnov Z, Homogeneity of Variances, Mann-Whitney U, Kruskal-Wallis H, and Wilcoxon signed-ranks tests. Results indicated a significant difference between pre- and post-test scores, showing that the program effectively improved parental guidance strategies regarding digital gaming. Moreover, boys exhibited higher digital game addiction tendencies compared to girls. Parent education programs that incorporate digital game guidance can contribute to strengthening parental strategies and reducing children’s risk of digital game addiction. Expanding such programs may benefit wider populations.

Keywords:

Digital Game Addiction, Parental Mediation, Screen Time, Preschool Children, Family Education Program



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Introduction

In today’s world, developments in information technologies, alongside the advancement of technology, greatly affect interpersonal interaction as well as social, economic, and cultural life. These developments provide new environments for societies to share their feelings and thoughts and enable the effective use of information technologies. At

present, the internet is widely used by all age groups. Internet users generally access it through devices such as computers, tablets, and smartphones. Since technology appeals to all generations, it has also become one of the environments that attract the attention of children and adolescents.

From infancy to old age, play is a natural medium through which individuals express and realize themselves in the best possible way (Kulaksızoğlu, 2016; Sormaz & Yüksel, 2012). From the earliest periods of history to the present day, all segments of society have engaged in play for entertainment and relaxation. With the adaptation to today's technological developments, the foundation of traditional games has shifted, and digital games have increasingly been preferred (Biricik & Atik, 2021). Digital games have now become one of the main life activities of children, serving as a significant part of their entertainment and leisure time. Indeed, children often prioritize playing digital games as their first choice of activity whenever they find the opportunity (Hazar et al., 2017). Digital games refer to computer-based games that can be played using an internet-connected device such as a computer, console, tablet, or mobile phone, as well as offline on devices without internet access (Biricik & Atik, 2021).

According to the results of the research on Information Technologies Usage and Media Among Children Aged 6–15, published by the Turkish Statistical Institute, internet usage among children in this age group was 50.8% in 2013 and rose to 82.7% in 2021. In the same survey, 36.0% of children aged 6–15 reported playing digital games, with 32.7% among children aged 6–10 and 39.4% among children aged 11–15. When analyzed by gender and age group, 46.1% of boys aged 6–15 played digital games, compared to 25.4% of girls. Among younger children, 38.7% of boys and 26.4% of girls aged 6–10 played digital games, while among older children, the rates were 53.7% for boys and 24.4% for girls aged 11–15 (TÜİK, 2021).

These findings indicate that digital games are increasingly preferred across all age groups and are now being adopted in early childhood as well. It can also be suggested that children's preference for digital games in early childhood is influenced by their parents' use of digital technologies (Tuğrul, Ertürk, Özen, & Güneş, 2014). Technological advancements from past to present have led to changes in many areas of life. With the development of the internet and digitalization, habits and lifestyles have also undergone transformation (Uzunoğlu, 2021). Technological devices initially used for communication and educational purposes have additionally become important sources of entertainment (Çelen et al., 2011). Games affect players in various ways. They are effective biologically using muscles; psychologically and sociologically

through the establishment of positive relationships; and cognitively through the development of creativity and learning (Yalçın & Bertiz, 2019). Furthermore, it has been noted that games support children's problem-solving, reasoning, analysis, and decision-making skills (Kim & Smith, 2015). Although digital games are enjoyable, engaging, and possess pedagogical value, many of them contain violent content. A lack of adult awareness when offering such games to children facilitates their access to violent content (Aydoğdu Karaaslan, 2015). Parents play a critical role in children's access to digital gaming devices such as tablets and smartphones, as well as in the purchase and installation of applications. Particularly in early childhood, children may struggle to distinguish between reality and imagination. Consequently, they interpret situations within their own world by observing parental reactions. Parents who either overreact or show indifference may inadvertently harm their children. Thus, parental approaches to digital gaming are of great importance (Bozkuş, 2021). Parents have critical roles not only in introducing children to digital games in early childhood but also in shaping their gaming experiences (Budak & Işıkoğlu, 2022). Understanding children's play habits at this crucial stage of physical and cognitive development is vital. However, many parents are uncertain about how to manage this process and often resort to sanctions such as prohibitions, restrictions, and deprivation. These practices may damage the parent-child relationship and hinder children from keeping pace with technological developments (Neumann et al., 2018). Rather than solely restricting or prohibiting digital engagement, parents carry significant responsibilities in balancing their children's use of digital tools, protecting them from associated risks, and teaching them age-appropriate and developmentally suitable usage (Budak & Işıkoğlu, 2022). For this reason, parent education and guidance services should address issues such as selecting appropriate digital games, regulating play duration and timing, co-playing with the child, and organizing the play environment and materials (Akçay & Özcebe, 2012). In general, research has focused on digital game addiction and the influence of parents on children. However, there are limited studies specifically addressing digital game addiction among preschool children and parental guidance strategies. In this regard, developing a family education program for parents, informed by a digital game addiction tendency scale and digital game parental guidance strategies, is considered a necessary contribution to this field.

Research Question

Problem Statement

The problem statement of this research is as follows: Is the "My Parent's Digital Game Guide" Family Education

Program effective in reducing children’s digital game addiction and improving parental guidance strategies related to digital games?

Sub-Problems

The study seeks to address the following sub-problems:

1. What are the pre- and post-intervention levels of digital game addiction among preschool children?
2. Is there a significant difference between preschool children’s digital game addiction levels and their ages?
3. Is there a significant difference between preschool children’s digital game addiction levels and their gender?
4. Is there a significant difference between preschool children’s digital game addiction levels and the duration of their preschool attendance?
5. What are the levels of parents’ digital game guidance strategies before and after the program’s implementation?
6. Do parents’ educational backgrounds significantly influence the strategies they employ during their children’s digital gameplay?
7. Do parents’ occupations significantly influence the strategies they employ during their children’s digital gameplay?
8. Do parents’ ages significantly influence the strategies they employ during their children’s digital gameplay?
9. Do parents’ perspectives on digital games influence the strategies they employ during their children’s digital gameplay?
10. Is there a significant difference between parents’ digital game guidance strategies and the ages of their children?
11. Is there a relationship between preschool children’s digital game addiction tendencies and the digital game guidance strategies employed by their parents?

Methodology

Research Design

A one-group pre-test–post-test experimental design was employed in the study, without the inclusion of a control group. The independent variable was the “My Parent is My Digital Game Guide” Family Education Program, while the dependent variable was the change in families’ digital game parental guidance strategies following the program.

Study Group

The study was conducted with 200 parents (181 mothers and 19 fathers) of preschool-age children attending kindergartens and independent preschools within official primary schools affiliated with the Ministry of National Education in Ankara province during the 2022–2023 academic year. Participants were selected through a convenience sampling method, which refers to the researcher’s orientation toward the most easily accessible elements of the target population (Patton, 2005).

Data Collection Tools

Four instruments were used to collect data in this study:

1. Digital Game Addiction Tendency Scale (DOBE)
2. Digital Game Parental Guidance Strategies Scale (DOERS)
3. “My Parent is My Digital Game Guide” Family Education Program
4. Personal Information Form

Digital Game Addiction Tendency Scale (DOBE)

The Digital Gaming Addiction Tendency Scale (DOBE), developed by Budak (2020) with established validity and reliability, was used to assess children’s gaming addiction levels based on parental responses. The scale consists of 20 items across four sub-dimensions: Detachment from Life (7 items), Conflict (5 items), Continuous Game Playing (5 items), and Reflection on Life (3 items). This five-point Likert-type scale is rated as never, rarely, sometimes, most of the time, and always, where never corresponds to 1 and always corresponds to 5. The total score ranges from 20 to 100, with no reverse-scored items. Higher scores indicate greater tendencies toward digital game addiction. Each dimension can be evaluated independently, or a total score can be calculated. According to Budak (2020), five score groups are defined for interpretation. Furthermore, the relationship between the total score and the sub-dimensions is both positive and highly significant. These findings confirm that the Digital Gaming Addiction Tendency Scale is a reliable tool for measuring children’s digital game addiction tendencies.

Digital Game Parental Guidance Strategies Scale (DOERS)

In this study, the Digital Gaming Parental Guidance Strategies Scale (DOERS), developed by Budak (2020), was used to determine how parents guide their

children’s digital gaming. This 21-item scale consists of four sub-dimensions: Active Guidance Strategies, Parental Guidance Strategies Directing to Digital, Free Parental Guidance Strategies, and Technical Parental Guidance Strategies. The DOERS scale includes 5-point Likert-type items ranging from 1 (never) to 5 (always). It measures the extent to which parents employ different strategies for guiding their children’s digital gameplay. The reliability coefficients of the sub-dimensions were reported as follows: Active Parental Guidance Strategies = .79, Directive to Digital = .76, Free = .57, and Technical Parental Guidance Strategies = .61. Although the reliability coefficients for the Free and Technical sub-dimensions are relatively lower, the internal consistency of the scale as a whole is considered to be at an acceptable level (Budak, 2020). These findings indicate that the DOERS scale is a reliable instrument for assessing how parents guide their children’s digital game use.

My Parent is My Digital Game Guide Family Education Program

In this study, the “My Parent is My Digital Game Guide” family education program was developed by the researcher. The opinions of six experts—faculty members from the Departments of Child Development and Computer Education and Instructional Technologies—were obtained. The program was finalized by incorporating their suggestions and revisions.

Following the expert review, the family education program was implemented over seven weeks, with one-hour sessions held each week. The content of the program included:

- Meeting with parents
- The history of digital games and the concept of childhood
- Characteristics of digital games and their effects on child development
- The concept of addiction and digital game addiction
- Digital parenting and safety in digital games
- Parental responsibilities and guidance strategies
- Evaluation of the parent education program

Parental responses were analyzed before and after participation in the “My Parent is My Digital Game Guide” family education program.

Table 1
Family Education Program

Program Objectives	» To develop parents’ awareness of the concept of play » To discuss the needs and stimuli of children in the 21st century » To raise awareness about play deprivation » To provide information on the features of digital games and their contributions to children » To raise awareness of addiction and digital game addiction » To improve parents’ digital parenting behaviors » To increase parents’ knowledge about safety in digital games » To support parents in selecting digital games that are high-quality and developmentally appropriate
Flow of the education program	Target Group: Parents with children aged 3–5 years Planning of Family Education Sessions Session 1: Meeting the Parents Session 2: History of Digital Gaming and the Concept of Childhood Session 3: Characteristics of Digital Games and Their Impact on Child Development Session 4: The Concept of Addiction and Digital Game Addiction Session 5: Digital Parenting and Safety in Digital Games Session 6: Parental Responsibilities and Guidance Strategies Session 7: Evaluation of the Parent Education Program
Program Evaluation	The Family Digital Game Addiction Scale and the Parental Guidance Strategies Scale were administered after the implementation of the training program.

The Personal Information Form

The Personal Information Form was designed for both children and parents and included demographic questions such as age. The form consisted of two sections: one to be completed by the parent on behalf of themselves, and the other on behalf of the child. The variables collected included the parent’s gender, age, education level, employment status, and perspective on digital games, as well as the child’s age, gender, and duration of preschool attendance.

Table 2
Demographic Information

Demographic Information		F	%
Parent's Gender	Female	181	89.9
	Male	19	10.1
Parent's Education Level	Primary School	40	20.1
	High School	53	25.4
	Undergraduate	99	50.8
	Master	7	3.7
Parent's Age	25-29	38	19.0
	30-34	75	37.6
	35-39	55	27.5
	40 and over 40	32	15.9
Parent's Working Status	Working	110	52.9
	Not working	90	47.1
Parent's Perspective on Digital Games	Positive	21	10.1
	Negative	82	40.7
	Neutral	97	49.2
Age of Children Parents Have	4 Years	65	31.8
	5 Years	78	39.2
	6 Years	57	29.1
Gender of Children Parents Have	Male	115	58.2
	Female	85	41.8
Duration of Children's Schooling	1 Year	119	60.8
	2 Years	62	30.7
	3 Years	19	8.5
TOTAL			

The table presents demographic information about the preschool children and parents who participated in the study. Among the parents, 181 (89.9%) were female and 19 (10.1%) were male. Regarding educational background, 40 (20.1%) had completed primary school, 53 (25.4%) high school, 99 (50.8%) university, and 7 (3.7%) held a master's degree. In terms of age distribution, 38 (19.0%) were between 25–29 years, 75 (37.6%) between 30–34 years, 55 (27.5%) between 35–39 years, and 32 (15.9%) were 40 years or older. Employment status revealed that 110 (52.9%) of the parents were employed, while 90 (47.1%) were not. Regarding their perspectives on digital games, 21 (10.1%) expressed positive views, 82 (40.7%) negative views, and 97 (49.2%) were neutral. When the children's ages were examined, 65 (31.8%) were four years old, 78 (39.2%) were five years old, and 57 (29.1%) were six years old. Concerning gender, 115 (58.2%) of the children were boys and 85 (41.8%) were girls. In terms of preschool attendance, 119 (60.8%) had been enrolled for one year, 62 (30.7%) for two years, and 19 (8.5%) for three years. Although not all parents were able to attend every training session, all 200 parents completed the scales in both the pre-test and post-test phases of the program.

Data Collection Process

Expert opinions were obtained for the “My Parent is My Digital Game Guide” family education program. A

total of 200 parents who volunteered to participate in the program were reached. The contact information of the parents, selected through a simple random sampling technique, was collected. To facilitate full participation, the program was conducted online via the Zoom platform during weekend evening hours. Once the volunteer parents were identified, the research was carried out in three stages:

Stage 1: Administration of the DOBE and DOERS scales prior to the “My Parent is My Digital Game Guide” family training program.

Stage 2: Implementation of the “My Parent is My Digital Game Guide” family education program.

Stage 3: Administration of the DOBE and DOERS scales after completion of the program.

The family education program consisted of seven sessions, each lasting one hour per week. The session content included: (1) meeting the parents, (2) the history of digital games and the concept of childhood, (3) characteristics of digital games and their effects on child development, (4) the concept of addiction and digital game addiction, (5) digital parenting and safety in digital games, (6) parental responsibilities and guidance strategies, and (7) evaluation of the parent education program. Parental responses were analyzed both before and after participation in the “My Parent is My Digital Game Guide” family education program.

Data Analysis

Within the scope of the study, the Digital Game Addiction Tendency Scale and the Digital Game Guidance Strategies Scale were administered to parents of preschool children both before and after the intervention. The data obtained from these scales were processed and analyzed using the SPSS 21 software package. To test the assumptions of parametric analysis for the mean values of parents with preschool children, normality and homogeneity tests were conducted.

The results of these tests indicated that the assumptions for parametric analysis were not met. Specifically, the Kolmogorov-Smirnov Z test and the Homogeneity of Variances test, applied to the overall scale scores, showed that the data did not follow a normal distribution and that variances were not homogeneous ($p < .05$). Consequently, non-parametric statistical methods were employed. Differences between the averages of independent variables were analyzed using the Mann-Whitney U test and Kruskal-Wallis H test, while repeated measures before and after the intervention were compared using the Wilcoxon signed-rank test.

Results

Findings on the Digital Addiction Tendency of Pre-school Children

According to the parents of preschool children, there was a significant difference between pre- and post-test scores on the Digital Game Addiction Tendency Scale following the implementation of the family education program ($Z = 6.81$; $p < .05$). The analysis indicated that the number of participants whose rank averages decreased or remained constant was lower than the number of participants whose rank averages increased.

Based on these findings, it can be concluded that the family education program had a significant positive

effect on reducing children's digital game addiction tendencies.

Findings Related to Digital Game Addiction Tendency and Age of Pre-school Children

According to the parents of preschool children, there was no significant difference in the Digital Game Addiction Tendency Scale scores with respect to children's ages, either before ($\bar{X} = 2.00$; $p > .05$) or after ($\bar{X} = 1.66$; $p > .05$) the family education program. This finding indicates that children's age did not have a significant effect on their digital game addiction tendency.

Findings Related to Pre-school Children's Digital Game Addiction Tendency and Gender

Table 3

Findings on the Digital Addiction Tendency of Pre-school Children

Sub-dimensions		N	Rank Average	Row Total	Z	p
Detachment from life	Decreasing	82	51.52	4225.00	3.30	.001
	Increasing	29	68.66	1991.00		
	Constant	78				
Conflict	Decreasing	79	49.04	3874.50	4.18	.000
	Increasing	23	59.93	1378.50		
	Constant	87				
Continuous game play	Decreasing	112	67.52	7562.00	6.81	.000
	Increasing	22	67.41	1483.00		
	Constant	55				
Reflecting on Life	Decreasing	53	39.20	2077.50	1.98	.047
	Increasing	28	44.41	1243.50		
	Constant	108				
DOBE Total Score	Decreasing	138	80.76	11145.00	6.81	.000
	Increasing	28	97.00	2716.00		
	Constant	23				

Table 4

Findings Related to Digital Game Addiction Tendency and Age of Pre-school Children

Sub-factors	Age	N	Pre-implementation			Post-implementation				
			Rank	Average	X	p	Rank	Average	X	p
Detachment from life	3	3		65.17	3.19	.36		68.17	1.63	.65
	4	57		96.63				96.61		
	5	74		88.76				93.22		
	6	55		103.34				97.74		
Conflict	3	3		89.00	.36	.94		84.17	1.87	.59
	4	57		95.87				101.70		
	5	74		92.45				89.14		
	6	55		97.85				96.54		
Continuous game play	3	3		56.33	4.41	.22		60.00	3.02	.38
	4	57		85.54				93.40		
	5	74		98.99				91.22		
	6	55		101.55				103.65		
Reflecting on Life	3	3		56.83	2.55	.46		68.17	1.49	.68
	4	57		97.35				98.49		
	5	74		90.78				96.96		
	6	55		100.32				90.21		
DOBE Total Score	3	3		62.83	2.00	.57		61.67	1.66	.64
	4	57		93.75				98.32		
	5	74		92.43				91.97		
	6	55		101.50				97.45		

According to the parents of preschool children, there was a significant difference in Digital Game Addiction Tendency Scale scores with respect to gender before the implementation of the family education program ($U = 3080.0$; $p < .05$). Boys were found to have a higher tendency toward digital game addiction than girls prior to the program.

Following the implementation of the program, a significant difference between genders was also observed ($U = 3508.0$; $p < .05$). Although boys continued to exhibit higher addiction tendencies than girls, overall decreases were observed in both genders.

Findings Related to Pre-school Children's Digital Game Addiction Tendency and Duration of Attendance to Pre-school Education Institution

As shown in Table 6, according to the parents of preschool children, there was no significant difference in Digital Game Addiction Tendency Scale scores with respect to the duration of preschool attendance, either before ($\bar{X} = 3.28$; $p > .05$) or after ($\bar{X} = 2.14$; $p > .05$) the implementation of the family education program. This finding indicates that the length of time children attended preschool did not have a significant effect on their tendency toward digital game addiction.

Findings Related to Parents' Digital Game Guidance Strategy Levels Before and After the Implementation of the Family Education Program

A significant difference was found between the pre- and post-test scores on the Digital Game Guidance Strategies Scale following the implementation of the family education program ($Z = 7.52$; $p < .05$). These

Table 5

Findings Related to Pre-school Children's Digital Game Addiction Tendency and Gender

Sub-factors	Gender	N	Pre-implementation			Post-implementation		
			Rank Average	U	p	Rank Average	U	p
Detachment from life	Male	110	103.69	3279.0	.00	99.51	3739.0	.13
	Female	79	81.54			87.44		
Conflict	Male	110	106.07	3017.0	.00	103.49	3301.0	.00
	Female	79	78.18			81.83		
Continuous game play	Male	110	104.83	3154.0	.00	100.68	3610.0	.06
	Female	79	79.94			85.79		
Reflecting on Life	Male	110	99.96	3689.0	.10	97.78	3929.0	.32
	Female	79	86.79			89.88		
DOBE Total Score	Male	110	105.50	3080.0	.00	101.61	3508.0	.03
	Female	79	78.99			84.47		

Table 6

Findings Related to Pre-school Children's Digital Game Addiction Tendency and Duration of Attendance to Pre-school Education Institution

Sub-Factors	Duration of Continuation	N	Pre-implementation			Post-implementation		
			Rank Average	X	P	Rank Average	X	p
Detachment from life	1 year	115	99.64	2.12	.34	96.86	.77	.67
	2 years	58	87.81			89.91		
	3 years	16	87.72			100.09		
Conflict	1 year	115	101.44	4.92	.08	100.10	2.61	.27
	2 years	58	88.03			86.40		
	3 years	16	73.97			89.50		
Continuous game play	1 year	115	100.18	3.62	.16	99.06	4.95	.08
	2 years	58	83.66			82.62		
	3 years	16	98.88			110.72		
Reflecting on Life	1 year	115	98.90	1.51	.47	97.91	.93	.62
	2 years	58	89.06			91.50		
	3 years	16	88.50			86.78		
DOBE Total Score	1 year	115	100.78	3.28	.19	99.08	2.14	.34
	2 years	58	86.02			86.28		
	3 years	16	86.00			97.28		

results indicate that the family education program was effective in improving parents' digital game guidance strategies. In particular, the program was shown to have a significant effect on the Technical Parenting Strategies sub-dimension ($Z = 10.27$; $p < .05$).

Findings Related to the Strategies Implemented by Parents in Digital Gaming Processes and Their Educational Background

It was determined that there was no significant

difference in the Digital Game Guidance Strategies Scale scores with respect to parents' educational backgrounds, either before ($\bar{X} = 2.18$; $p > .05$) or after ($\bar{X} = 1.59$; $p > .05$) the implementation of the family education program. This finding indicates that parents' educational backgrounds did not have a significant effect on the strategies they employed during digital game processes.

Findings Related to the Strategies Applied by Parents in Digital Game Processes and Their Working Status

Table 7

Findings Related to Parents' Digital Game Guidance Strategy Levels Before and After the Implementation of the Family Education Program

Sub-dimensions		N	Rank Average	Row Total	Z	p
Active Parental Strategies	Decreasing	17	38.68	657.5	10.58	.00
	Increasing	160				
	Constant	12	94.35	15095.5		
Parental Strategies that Direct to Digital	Decreasing	158	87.72	13860.0	10.27	.00
	Increasing	12	56.25	675.0		
	Constant	19				
Technical Parental Strategies	Decreasing	13	43.85	570.0	10.27	.00
	Increasing	153				
	Constant	23	86.87	13291.0		
DORS Total Score	Decreasing	48	57.15	2743.0	7.52	.00
	Increasing	129				
	Constant	12	100.85	13010.0		

Table 8

Findings Related to the Strategies Implemented by Parents in Digital Gaming Processes and Their Educational Background

Sub-factors	Education Status	N	Pre-implementation			Post-implementation		
			Rank Average	X	P	Rank Average	X	p
Active Parental Strategies	Primary School	38	82.68	3.51	.32	89.18	2.41	.49
	High School	48	91.94			87.86		
	Undergraduate	96	101.61			99.96		
	Master	7	92.14			107.50		
Parental Strategies that Direct to Digital	Primary School	38	104.50	5.42	.14	103.46	1.98	.57
	High School	48	101.04			98.51		
	Undergraduate	96	86.47			89.82		
	Master	7	118.83			96.00		
Technical Parental Strategies	Primary School	38	79.64	6.74	.08	84.16	5.02	.17
	High School	48	89.07			86.55		
	Undergraduate	96	104.63			103.48		
	Master	7	86.93			95.43		
DORS Total Score	Primary School	38	84.99	2.18	.53	90.26	1.59	.66
	High School	48	92.56			89.05		
	Undergraduate	96	99.69			99.79		
	Master	7	101.71			95.79		

Table 9

Findings Related to the Strategies Implemented by Parents in Digital Game Process and Their Working Status

Sub-factors	WorkingStatus	N	Pre-implementation			Post-implementation		
			Rank Average	U	p	Rank Average	U	p
Active Parental Strategies	Working	100	103.88	3562.0	.02	94.40	4390.0	.87
	Non- working	89	85.02			94.67		
Parental Strategies that Direct to Digital	Working	100	80.53	3002.5	.00	90.23	3972.5	.20
	Non- working	89	111.26			100.37		
Technical Parental Strategies	Working	100	104.17	3533.0	.02	95.45	4405.5	.91
	Non- working	89	84.80			94.50		
DORS Total Score	Working	100	97.25	4225.5	.54	92.62	4212.0	.52
	Non- working	89	92.48			97.67		

As shown in Table 9, there was no significant difference in the Digital Game Guidance Strategies Scale scores with respect to parents' employment status, either before ($U = 4225.5$; $p > .05$) or after ($U = 4212.0$; $p > .05$) the implementation of the family education program. This indicates that parents' employment status did not have a significant effect on the strategies they used during digital play processes. However, the results revealed a decrease in the mean rank of employed parents and an increase in the mean rank of unemployed parents. Thus, the program appeared to be more effective for unemployed parents.

Findings Related to Age and Strategies Implemented by Parents in Digital Gaming Processes

As shown in Table 10, there was no significant difference in Digital Game Guidance Strategies Scale scores with respect to parents' ages, either before ($\bar{X} = 1.59$; $p > .05$) or after ($\bar{X} = 2.63$; $p > .05$) the implementation of the family education program. This finding indicates that parents' ages did not have a significant effect on their digital game guidance strategies.

Findings Related to the Strategies Implemented by Parents in Digital Game Processes and Their Perspective on Digital Games

Table 10

Findings Related to Age and Strategies Implemented by Parents in Digital Gaming Processes

Sub-factors	Age	N	Pre-implementation			Pre-implementation		
			Rank Average	X	P	Rank Average	X	p
Active Parental Strategies	25-29	36	96.93	.71	.87	96.86	4.29	.23
	30-34	71	96.99			104.32		
	35-39	52	95.30			86.25		
	40 and over 40	30	87.45			85.87		
Parental Strategies that Direct to Digital	25-29	36	108.06	4.62	.20	100.17	4.57	.21
	30-34	71	89.27			86.10		
	35-39	52	88.14			94.76		
	40 and over 40	30	104.77			110.28		
Technical Parental Strategies	25-29	36	97.74	1.53	.67	96.92	1.62	.65
	30-34	71	99.52			96.87		
	35-39	52	92.09			87.30		
	40 and over 40	30	86.07			101.62		
DORS Total Score	25-29	36	104.67	1.59	.66	102.00	2.63	.45
	30-34	71	94.79			97.32		
	35-39	52	90.44			84.89		
	40 and over 40	30	91.80			98.62		

Table 11.

Findings Related to the Strategies Implemented by Parents in Digital Game Processes and Their Perspective on Digital Games

Sub-factors	DBO	N	Pre-implementation			Post-implementation		
			Rank Average	X	P	Rank Average	X	p
Active Parental Strategies	Positive	19	98.92	4.99	.08	81.79	1.28	.52
	Negative	77	84.39			97.40		
	Neutral	93	102.98			95.72		
Parental Strategies that Direct to Digital	Positive	19	99.68	1.94	.39	111.87	2.73	.25
	Negative	77	88.32			89.24		
	Neutral	93	99.57			96.32		
Technical Parental Strategies	Positive	19	100.63	5.50	.06	85.00	.72	.69
	Negative	77	83.82			96.44		
	Neutral	93	103.10			95.85		
DORS Total Score	Positive	19	103.92	16.04	.00	92.76	.55	.75
	Negative	77	75.89			91.94		
	Neutral	93	109.00			97.99		

As shown in Table 11, a significant difference was found between parents' digital game guidance strategies and their perspectives on digital games before the implementation of the family education program ($X^2 = 16.04$; $p < .05$). The analysis indicated that parents generally held a negative perspective on digital games prior to the program.

However, after the implementation of the program, no significant difference was observed between parents' digital game guidance strategies and their perspectives on digital games ($X^2 = .75$; $p > .05$). This finding suggests that the program did not have a notable effect on changing parents' overall perspectives on digital games.

Findings Related to the Strategies Implemented by Parents in Digital Gaming Processes and Children's Ages

As shown in Table 12 (see Appendix), there was a significant difference between parents' digital game guidance strategies and the ages of children before the implementation of the family education program ($X^2 = 2.73$; $p < .05$). The analysis indicated that digital game guidance strategies varied according to children's ages prior to the program, with parents who held negative perspectives toward digital games displaying less effective guidance strategies.

However, after the implementation of the program, no significant difference was observed between children's ages and parents' digital game guidance strategies ($X^2 = 1.23$; $p > .05$). This finding suggests that the program contributed to balancing parents' guidance strategies across different child age groups.

Findings Related to Digital Game Addiction Tendencies of Pre-school Children and Digital Game Guidance Strategies Implemented by Their Parents

As shown in Table 13 (see Appendix), there was a positive, moderate, and significant relationship between the Digital Game Addiction Tendency sub-dimension of the Digital Game Addiction Tendency Scale and the Parental Strategies Directing to Digital sub-dimension of the Digital Game Guidance Strategies Scale ($r = .44$; $p < .05$). This indicates that as parents' use of digital guidance strategies increased, their children's digital game addiction tendency scores also increased.

A negative, weak, but significant relationship was found between the Digital Game Addiction Tendency sub-dimension and the Technical Parental Strategies sub-dimension ($r = -.28$; $p < .05$). In other words, children of parents who implemented technical strategies had lower digital game addiction scores. There was also a positive, weak, but significant relationship between the Parental Strategies Directing to Digital sub-

dimension and the overall Digital Game Guidance Strategies Scale ($r = .17$; $p < .05$).

Finally, a positive, strong, and significant relationship was found between the Technical Parental Strategies sub-dimension and the overall Digital Game Guidance Strategies Scale ($r = .72$; $p < .05$). This result suggests that a greater number of parents implemented technical strategies as part of their overall digital game guidance practices.

Discussion and Implications

In this research, the digital game addiction tendencies of preschool children and the digital game guidance strategies implemented by their parents were examined before and after the "My Parent is My Digital Game Guide" family education program.

The first finding of the study concerned the levels of digital game addiction among preschool children before and after the implementation. A significant difference was found between pre- and post-test scores on the Digital Game Addiction Tendency Scale. These results indicate that the family education program was effective in reducing digital game addiction tendencies among the majority of the participants. In line with the findings, addiction tendencies decreased after the program. However, previous research has yielded different results. For instance, Ünsal (2019) reported that preschool children in his study exhibited high levels of digital game addiction. This discrepancy may be attributed to the diversity of factors influencing digital game addiction.

The study also examined whether children's ages affected their digital game addiction tendencies. The results showed no significant difference between the age variable and children's addiction tendencies. Similarly, Taş and Güneş (2019) found that age did not significantly affect digital game addiction. These findings suggest that children of different age groups may exhibit similar levels of addiction tendencies.

Another research question focused on the relationship between gender and digital game addiction. The results indicated a significant difference, with boys showing higher addiction tendencies than girls. Following the implementation of the family education program, boys continued to display higher addiction tendencies, although overall decreases were observed in both genders. Previous studies also support these results, showing that boys spend more time on digital games and exhibit stronger tendencies toward addiction than girls (Akçay & Özcebe, 2012; Arda, Kaya, & Çakır, 2021; Aydoğdu, 2018; Brito, 2016; Horzum, 2011; Kars, 2010; Mustafaoğlu & Yasacı, 2018; Şahin & Tuğrul, 2012; Ünsal, 2019). This difference can be explained by boys' greater interest in and curiosity toward technological devices compared to girls.

The study also investigated whether the length of preschool attendance influenced children's digital game addiction tendencies. No significant difference was found between the duration of preschool attendance and addiction tendencies after the program. This suggests that the time spent in preschool education did not affect children's tendency toward digital game addiction. One possible explanation is that preschool institutions may offer limited awareness-raising activities related to digital game use.

The fifth research question addressed the levels of digital game guidance strategies used by parents of preschool children before and after the implementation of the program. Differences were observed in the strategies preferred by parents following participation in the program compared to beforehand. Results indicated that parents most frequently used the active guidance strategy. With this strategy, parents reported that they monitored their children's digital gaming processes by sharing and following media content together and by establishing two-way communication. However, it was also observed that children of parents who relied on free or digital-directive strategies tended to show higher levels of digital game addiction (Budak, 2020). Supporting this, Beyens and Beullens (2017) emphasized that when parents apply active guidance, conflicts between children and parents regarding technology use decrease, and children benefit more positively from digital tools.

The sixth research question examined whether parents' educational background influenced their use of digital game guidance strategies. The findings revealed no significant differences before the implementation of the program. This suggests that awareness of digital games and their impact on children does not vary substantially according to parents' education level. In contrast, other studies have reported different outcomes. For example, Aydoğdu (2018) and Hazar et al. (2017) found no differences in children's game addiction tendencies by parental education level, while Gökçearlan and Durakoğlu (2014) reported higher addiction levels among children of more highly educated parents. Similarly, Işıkoğlu et al. (2019) found that children of less educated parents are more likely to prefer digital games, whereas other studies indicated that more educated parents limit their children's digital game use (Işıkoğlu-Erdoğan, 2019; Işıkoğlu et al., 2021).

The seventh research question focused on the relationship between parents' professions and their digital game guidance strategies. A significant difference was found between working and non-working parents before the implementation of the program. Specifically, differences emerged in the

Parental Strategies Leading to Digital and Active Parenting Strategies sub-dimensions, in favor of non-working parents. Non-working parents were more likely to apply active guidance strategies, which increased their average ranks. Overall, the program appeared to be more effective for non-working parents. However, children of parents who used free or digital-directive strategies were observed to spend more time with digital games, thereby increasing the risk of addiction.

The eighth research question explored whether parents' ages affected their digital game guidance strategies. The results showed no significant differences after the program. This finding contrasts with those of Çakır, Kocagöz, and Karakuş (2021), who reported that children of older parents exhibited stronger digital game addiction tendencies than those of younger parents. This suggests that the relationship between parental age and children's addiction levels may vary across different contexts.

The ninth research question considered whether parents' perspectives on digital games influenced their strategies. Parents with negative views of digital games scored lower on the digital-directive and free strategies, suggesting that they preferred to limit their children's interaction with digital games. After the program, no significant differences were found between parents' perspectives and their strategies. This aligns with findings in the literature indicating that children of parents who spend more time playing digital games themselves tend to engage more in digital play (Akçay & Özcebe, 2012).

The tenth research question examined whether the ages of children influenced parents' strategies. No significant differences were found between children's ages and the strategies parents applied. This indicates that the program was not equally effective in shaping parents' guidance strategies across different child age groups. It is possible that parents' inability to fully adapt their strategies according to their children's developmental levels contributed to this outcome.

The eleventh research question investigated the relationship between children's digital game addiction tendencies and parents' guidance strategies. The analysis revealed no significant overall relationship. However, significant associations were observed in specific dimensions: parental digital-directive and free strategies were linked to higher addiction tendencies among children. These results support Budak's (2020) findings that children of parents who apply digital-directive or free strategies are more likely to develop addictive tendencies. It can be inferred that the training increased parents' awareness of the risk factors associated with their choice of strategies.

Taken together, the findings demonstrate that family education programs can effectively reduce digital game addiction tendencies in preschool children while enhancing parents' use of active and technical guidance strategies. Persistent gender differences, with boys consistently showing higher addiction levels, highlight the need for targeted interventions. These results underscore the importance of integrating digital literacy into preschool curricula and combining it with structured family education. Embedding such initiatives into national early childhood education policies could strengthen parental involvement, foster healthy digital habits, and provide a systemic approach to supporting children's holistic development.

Conclusion

The findings of this study indicate that the family education program was effective in reducing digital game addiction tendencies among preschool children. Comparisons between pre- and post-program measures revealed a significant decrease in children's addiction levels. While age did not have a significant effect, boys consistently exhibited higher levels of digital game addiction compared to girls. Similarly, the duration of preschool attendance was not significantly associated with addiction tendencies. Parents' digital game guidance strategies improved significantly following the program, with active guidance strategies being employed more frequently; however, parental education level and age did not significantly influence strategy use.

Several limitations should be acknowledged. A convenience sampling method was employed due to access constraints, which may limit the generalizability of the findings. The absence of a control group restricts causal inferences, although ethical considerations and practical constraints made it difficult to establish one. Furthermore, only 19 fathers participated in the study, leading to a gender imbalance that may have resulted in findings predominantly reflecting mothers' perspectives. These limitations should be taken into account when interpreting and generalizing the results.

Overall, the study provides evidence that the family education program effectively reduced children's digital game addiction, improved parents' guidance strategies, and highlighted the ongoing gender disparity, with boys showing higher addiction tendencies than girls. These findings underscore the importance of structured family education programs in promoting healthy digital habits and supporting early childhood development.

Declarations

Conflicts of Interest were not disclosed by the author.

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Annex 1.**Table 12.***Findings Related to the Strategies Implemented by Parents in Digital Gaming Processes and Children's Ages*

Sub-factors	Age	N	Pre-implementation			Post-implementation		
			Rank Average	X	p	Rank Average	X	p
Active Parental Strategies	3	3	79.33	.89	.82	56.67	2.07	.55
	4	57	97.47			97.07		
	5	74	97.22			97.93		
	6	55	90.32			91.00		
Parental Strategies that Direct to Digital	3	3	63.67	1.01	.79	101.50	.98	.80
	4	57	95.49			100.62		
	5	74	95.01			91.61		
	6	55	96.19			93.38		
Technical Parental Strategies	3	3	81.00	.86	.83	88.33	.68	.87
	4	57	100.01			99.80		
	5	74	93.84			93.69		
	6	55	92.14			92.15		
DORS Total Score	3	3	48.17	2.73	.43	73.17	1.23	.74
	4	57	98.04			100.34		
	5	74	97.20			94.20		
	6	55	91.45			91.73		

Annex 2.**Table 13.***Findings Related to Digital Game Addiction Tendencies of Pre-school Children and Digital Game Guidance Strategies Implemented by Their Parents*

		Detach- ment from life	Conflict	Continuous game play	Reflecting on Life	Digital Game Addiction Tendency	Active Game Strategies	Parental Strate- gies that Direct to Digital	Technical Parental Strategies	Digital Gaming Guidance Strategies
Detach- ment from life	r p	1	.683 .00	.56 .00	.49 .00	.86 .00	-.33 .00	.32 .00	-.23 .00	-.11 .14
Conflict	r p		1	.75 .00	.49 .00	.90 .00	-.34 .00	.34 .00	-.27 .00	-.14 .04
Continuous game play	r p			1	.44 .00	.84 .00	-.44 .00	.49 .00	-.32 .00	-.13 .07
Reflecting on Life	r p				1	.66 .00	-.25 .00	.38 .00	-.17 .02	.002 .97
Digital Game Addiction Tendency	r p					1	-.39 .00	.44 .00	-.28 .00	-.12 .11
Active Game Strategies	r p						1	-.47 .00	.61 .00	.69 .00
Parental Strategies that Lead to Digital	r p							1	-.33 .00	.17 .02
Technical Parental Strategies	r p								1	.72 .00
Digital Gaming Guidance Strategies	r p									1



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Understanding School Happiness: The Influence of Justice Disposition and Demographic-Social and Behavioral Factors

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Abstract

This study investigated the levels and predictors of school happiness among primary school students, with a particular emphasis on justice disposition. The sample consisted of 1065 students from public schools in three provinces of Aegean Region in Türkiye. Data were collected using the Justice Disposition Scale and the School Happiness Scale, and analyzed through descriptive statistics, correlations, and hierarchical regression. Results revealed that students reported moderately high levels of both school happiness and justice disposition. Regression findings showed that behavioral adaptation was the strongest predictor of school happiness, followed by justice disposition. In contrast, academic achievement, age, grade level, and family income were not significant. Screen time variables (mobile phone and television use) and number of siblings emerged as negative predictors, while maternal education showed a small positive contribution. Importantly, the inclusion of justice disposition provided the largest incremental increase in explained variance, underscoring the central role of fairness in student well-being. Overall, the findings suggest that relational, ethical, and behavioral factors outweigh purely demographic or academic indicators in shaping children's happiness at school, highlighting the need for school environments that foster fairness, emotional support, and positive peer relations.

Keywords:

School Happiness; Justice Disposition; Social and Behavioral Factors; Primary School Students; Subjective Well-Being

Introduction

In recent years, the importance of children's happiness has gained increasing attention in global educational and psychological research. For example, the Malta Wellbeing Index reports that 88.5% of children aged 7–8 consider themselves happy; however, this rate declines to 70% among adolescents aged 11–15, with notable challenges such as bullying and emotional distress (TVMnews.mt, 2024). Similarly, a large-scale study conducted in Italy with 1549 children aged 7 to 14 found that younger children report higher levels of happiness than pre-adolescents, with self-concept, self-esteem, and loneliness playing significant roles (Baiocco et al., 2019). These findings align with broader



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psychological theories emphasizing developmental transitions in childhood and their impact on subjective well-being (Holder & Coleman, 2009; López-Pérez et al., 2016).

In light of this literature, the present study aims to explore how Turkish primary school students' happiness is shaped not only by individual and behavioral factors but also by their sense of justice—a construct that has received limited empirical attention despite its moral and developmental significance during early schooling years.

Despite growing global interest in subjective well-being, the 2024 World Happiness Report ranks Türkiye 98th among 143 countries, and national data such as the 2023 Life Satisfaction Survey conducted by the Turkish Statistical Institute ([TÜİK], 2024) reveal limited attention to children's happiness. Yet, childhood—particularly the primary school years—is a critical period for emotional development, with direct implications for academic success and social adaptation (Suldo et al., 2011). International initiatives, including UNESCO's Happy Schools Framework (2016), highlight the importance of school environments that support student well-being. However, in Türkiye, especially at the primary level, empirical studies remain limited.

Various studies have explored the demographic and psychosocial determinants of children's happiness. Gender differences, for instance, consistently show that female students report higher levels of happiness (Çankaya & Meydan, 2018). Parental education—particularly maternal education—has been linked to enhanced emotional and social adjustment in children (Göçen, 2015), while low family income may increase vulnerability to peer bullying and emotional difficulties (Dilmaç & Özkan, 2019). Lifestyle factors such as book reading and screen time also influence happiness. While regular reading is associated with stronger social-emotional skills, excessive screen use has been linked to loneliness and psychological distress (Burhan & Moradzadeh, 2020; Twenge & Campbell, 2018).

Nevertheless, one critical construct—justice disposition, defined as sensitivity to fairness and ethical treatment—remains underexplored in the context of school happiness. Justice, a foundational moral value (Rawls, 1971), begins to develop in early childhood and significantly influences peer relations, empathy, and a sense of belonging (Dalbert, 2009). Yet few studies in Türkiye have examined how justice disposition interacts with broader demographic and behavioral variables in shaping children's happiness.

Research focus and variables included

Building on this foundation, the present study examines how a range of variables—organized

into demographic, socioeconomic, justice-related, lifestyle, and school-related performance domains—predict the happiness level of primary school students. These include students' gender, age, grade level, parental education, family income, number of siblings, household size, justice disposition, book reading, mobile phone/game use, television viewing time, academic achievement, and behavior scores. Collectively, these factors have been widely recognized for their role in student well-being and adjustment (Bibou-Nakou & Markos, 2013; Diener & Ryan, 2009; Suldo & Huebner, 2006).

For instance, demographic and socioeconomic variables such as parental education and family size have been linked to children's access to resources and emotional support. Justice disposition reflects students' perceptions of fairness, which shape trust and belonging in the school environment. Lifestyle habits—including reading and screen time—impact emotional and social functioning, while school-related performance and adaptation capture both academic outcomes and behavioral regulation, the latter being closely tied to peer interactions and prosocial competence. Controlling for these diverse predictors enables a clearer assessment of justice disposition's unique contribution to school happiness.

While the model captures these core influences, certain variables—such as peer relations, school climate, and teacher support (Eccles & Roeser, 2011; Oberle et al., 2014), personality traits (Shoshani & Slone, 2017), and health behaviors (Tomprowski et al., 2011)—were excluded due to data limitations. Nonetheless, by systematically accounting for the key demographic, socioeconomic, lifestyle, and school-related variables, this study offers a comprehensive and contextually relevant perspective on the predictors of school happiness in Türkiye's primary education context. By systematically aligning the research model with these categories, the study directly addresses the research questions outlined below.

Research Questions

To achieve this aim, the study seeks to answer the following research questions:

1. What are the justice disposition and happiness levels of 2nd, 3rd, and 4th-grade (aged 8–10) primary school students?
2. To what extent do the following variables predict the happiness level of 2nd, 3rd, and 4th-grade primary school students?
 - a) Demographic factors: Students' gender, age, and grade level
 - b) Socioeconomic background: Students' parental education (mother's and father's education), monthly family income, number of siblings, and household size
 - c) Justice disposition: Students' justice disposition

- d) Lifestyle habits: Students' book reading, mobile phone/game use, and television viewing time
- e) School-related performance and adaptation: Students' academic achievement and behavior score

Methodology

This study was conducted using a correlational survey model. The correlational survey model is a research design used to determine the degree and direction of the relationship between two or more variables (Büyüköztürk, 2011; Karasar, 2005). This model aims to observe and collect data on the status of different variables in their natural settings without any intervention. Therefore, the results objectively reflect existing relationships (Tabachnick & Fidell, 2013).

Participants

The participants consisted of 1065 primary school students from the 2nd, 3rd, and 4th grades across three provinces in the Aegean Region of Türkiye. All students attended public primary schools officially affiliated with the Ministry of National Education. The research was conducted with the support and approval of provincial and district directorates of national education, as well as in collaboration with school administrations and classroom teachers. The participants were chosen through stratified sampling, considering demographic characteristics to ensure a balanced representation. The schools were selected to reflect diverse socioeconomic backgrounds, including low, middle, and high-income areas. Detailed descriptive information about the participants is provided in Table 1.

Table 1

Distribution of study participants by demographic, socioeconomic, lifestyle, and school-related variables

Variable	N	%	Variable	N	%
Gender			Grade		
Female	594	55.8	2nd Grade	287	26.9
Male	471	44.2	3rd Grade	348	32.7
Total	1065	100	4th Grade	430	40.4
Age			Total	1065	100
8 years	317	29.8	Family Income		
9 years	314	29.5	Low	86	8.1
10 years	434	40.8	Middle	843	79.2
Total	1065	100	High	136	12.8
Mother's Education			Total	1065	100
Functionally literate	121	11.4	Number of Siblings		
Primary School	282	26.5	1 sibling	173	16.2
Middle School	200	18.8	2 siblings	487	45.7
High School	278	26.1	3 siblings	248	23.3
University	184	17.3	4 siblings	82	7.7
Total	1065	100	5 siblings +	75	7.0
Father's Education			Total	1065	100
Functionally literate	87	8.2	Daily TV Watching		
Primary School	268	25.2	1 hour	405	38.0
Middle School	273	25.6	2 hours	364	34.2
High School	264	24.8	3 hours	172	16.2
University	173	16.2	4 hours	85	8.0
Total	1065	100	5 hours	39	3.7
Books Read Monthly			Total	1065	100
1 book	67	6.3	Phone/Tablet Usage		
2 books	289	27.1	1 hour	440	41.3
3 books	243	22.8	2 hours	375	35.2
4 books	172	16.2	3 hours	127	11.9
5 books	294	27.6	4 hours	123	11.5
Total	1065	100	Total	1065	100
Behavior Scores			Academic Achievement		
1 point	12	1.1	1 point	109	10.2
2 points	55	5.2	2 points	179	16.8
3 points	395	37.1	3 points	203	19.1
4 points	215	20.2	4 points	206	19.3
5 points	388	36.4	5 points	368	34.6
Total	1065	100	Total	1065	100

Data collection instruments

Three different instruments were used to collect data in this study: a personal information form, the Justice Disposition Scale, and the School Happiness Scale. The Justice Disposition Scale was developed specifically for this research to measure students' justice dispositions.

These instruments were designed to capture both the demographic and psychological profiles of the participants, ensuring a comprehensive understanding of the factors influencing their school happiness levels.

Justice disposition scale

The Justice Disposition Scale, developed and validated specifically for primary school students aged 8–10 (Akar & Can Kaya, 2025), consists of seven items rated on a 4-point Likert scale (1 = Never, 4 = Always). It measures students' sense of fairness through dimensions such as rule adherence, honesty, impartiality, and justice awareness. The scale demonstrated a strong unidimensional structure, with high factor loadings (0.874–0.936) and an explained variance of 82.92%. Internal consistency was excellent (Cronbach's α = 0.96). Confirmatory Factor Analysis supported model fit with χ^2/df = 2.951, CFI = 0.989, GFI = 0.948, AGFI = 0.956, IFI = 0.989, RMSEA = 0.061, and RMR = 0.016, confirming its reliability and validity for this age group.

Although unidimensional, the scale captures three key dimensions of justice through representative items: Distributive justice: "I want everyone to be treated fairly." Procedural justice: "I follow the rules and do not cheat." Interactional justice: "Even if I dislike someone, I don't treat them unfairly."

School happiness scale

To assess students' school-related happiness, the School Happiness Scale for Primary Students developed by Gündoğan and Akar (2019) was employed. The original version includes nine items across two dimensions—happiness and unhappiness—rated on a 3-point Likert format. Exploratory and Confirmatory Factor Analyses confirmed good construct validity (e.g., CFI = 0.989, RMSEA = 0.026), with a reliability coefficient of α = 0.76.

The scale was later adapted into a 4-point Likert format (1 = Never, 4 = Always) by Akar and Ay (2025), with the aim of increasing sensitivity while maintaining suitability for young students, consistent with recommendations in the literature (Revilla et al., 2014; Garland, 1991). This 4-point version was used in the present study and demonstrated strong psychometric properties, including an explained variance of 66.86% and a Cronbach's α of 0.81. Reverse coding was applied to negatively worded items, and total scores ranged from 9 to 36, with higher scores indicating greater school happiness.

Example items include: "I can't wait for school to start," "School is a happy place," and the negatively worded item "I want school to end."

Personal information form

A Personal Information Form was used in this study to collect demographic and social information about the participants. This form facilitated the measurement of independent variables and allowed for the categorical classification of data in line with the study's research questions. Specifically, the form included the following domains:

Demographic factors: Students' gender, age, and grade level.

Socioeconomic background: Parental education (mother's and father's education), monthly family income, number of siblings, and household size.

Lifestyle habits: Students' book reading, daily mobile phone/game use, and television viewing time.

School-related performance and adaptation: Behavior scores and academic achievement, both rated on a five-point scale by teachers.

This categorical organization allowed the independent variables to be systematically examined in relation to students' happiness levels.

Data collection, analysis, and interpretation

Data were collected with the support of school administrators and classroom teachers. Participation was voluntary, and informed consent was obtained from parents or legal guardians following ethical approval by the relevant committee (see in ethical approval). The final dataset comprised responses from 1065 students. Prior to analysis, data were screened for missing values, outliers, and normality. Negatively worded items were reverse-coded to ensure consistency in scoring.

Variables were coded based on their structure. Ordinal variables—such as parental education, academic achievement, behavior scores, grade level, number of siblings, screen time, and reading frequency—were treated as ordered categories. Nominal variables (e.g., gender, family income) were dummy-coded, with male gender and low income used as reference categories. This coding approach helped ensure statistical validity in the regression models.

Descriptive statistics (means, standard deviations, percentages) were calculated for the Justice Disposition and School Happiness Scales. Pearson's correlation was used for continuous variables, and Spearman's Rho for ordinal ones. Finally, a multiple regression analysis was conducted to assess the

contribution of each independent variable to school happiness and to evaluate overall model fit and effect sizes (Büyüköztürk, 2004).

Hierarchical Regression Analysis

Hierarchical regression was chosen because it allows researchers to examine the incremental contribution of theoretically distinct sets of predictors while controlling for potential confounding variables. By entering predictors in theoretically justified blocks, researchers can first account for basic demographic characteristics and then test the added value of psychological, behavioral, and academic factors. This structured and theory-driven approach enhances interpretive clarity and ensures that the unique contribution of key variables, such as justice disposition, can be identified beyond demographic and socioeconomic influences (Field, 2018; Tabachnick & Fidell, 2013).

Model 1. Students' demographic factors

Gender, age, and grade level were entered in the first step. These variables provide a baseline for understanding individual differences and are commonly used as control variables in well-being research. Previous studies have shown that female students often report higher subjective well-being than males (Çankaya & Meydan, 2018), while age and grade differences tend to play a limited role in primary school years. Including these variables first ensures that later effects are not confounded by basic demographic characteristics.

Model 2. Students' socioeconomic background

In the second step, parental education, family income, number of siblings, and household size were added. These indicators reflect family resources and structural conditions that shape children's opportunities for support and development. For example, higher parental education is often associated with increased cultural and social capital, whereas larger families may reduce individual parental attention, which in turn can affect children's happiness (Dilmaç & Özkan, 2019; Göcen, 2015; Steelman et al., 2002). By adding these variables, we accounted for the broader social context in which students grow up.

Model 3. Students' justice disposition

The third model introduced justice disposition, which has been highlighted in the literature as a key predictor of students' well-being (Dalbert, 2009). Perceived fairness at school is closely linked to feelings of belonging, trust, and emotional security. Including this variable after demographic and socioeconomic controls allowed us to test whether justice disposition

independently contributes to school happiness beyond background factors.

Model 4. Students' lifestyle habits

In the fourth step, book reading and screen time were entered. These lifestyle behaviors represent daily practices that influence both cognitive and emotional development. Reading for pleasure can foster imagination, empathy, and positive emotions, whereas excessive digital exposure has been associated with stress, reduced attention, and lower subjective well-being (Burhan & Moradzadeh, 2020; Twenge & Campbell, 2018). By including these habits, we assessed the role of children's everyday activities in shaping their happiness.

Model 5. Students' school-related performance and adaptation

Finally, academic achievement and behavior scores were added to the model. While grades reflect cognitive outcomes, behavioral adaptation represents social functioning and adjustment in the school environment. Prior research indicates that positive behavior contributes more directly to happiness than academic performance, as supportive peer interactions and teacher approval play a central role in students' daily well-being (Bibou-Nakou & Markos, 2013; Suldo et al., 2006). Including these variables last allowed us to test whether happiness is more closely related to socio-emotional adjustment than to performance outcomes.

Results

The basic statistics related to students' school happiness and justice disposition

The mean, standard deviation, and percentile values of the scores obtained by students on school happiness and justice disposition are presented in Table 2.

Table 2

Mean, standard deviation, and percentile values of the scores obtained by students on the scales

Scales	N	Min	Max	Mean (M)	Std. Dev. (SD)	%
School Happiness	1065	9	36	27.3	6.90	76
Justice disposition	1065	7	28	22	4.65	78.5

Students' school happiness levels

The minimum score on the school happiness scale is 9, while the maximum score is 36. The mean score obtained was 27.3, with a standard deviation of 6.90. This indicates that 76% of students are generally happy. However, the relatively high standard deviation

suggests significant differences in happiness levels among students. While some students reported very high happiness levels, others indicated lower levels.

Students' justice disposition levels

The Justice Disposition Scale has a minimum score of 7 and a maximum score of 28. The mean score was calculated as 22, with a standard deviation of 4.65. This result shows that students have a high level of justice disposition, at 78.5% of the maximum score. The relatively low standard deviation indicates that students have more homogeneous attitudes toward justice, meaning their perceptions of fairness are quite similar.

Overall, the findings suggest that students exhibit both happiness and a strong emphasis on fairness in the school environment. However, further in-depth research into the reasons behind the variations in happiness levels may be beneficial. These differences could be linked to factors such as social relationships, academic success, and family support.

The correlations between school happiness and the variables

A Pearson correlation analysis was conducted to explore relationships among the study variables, and the results are presented in Figure 1.

Figure 1

The correlations between school happiness and the variables

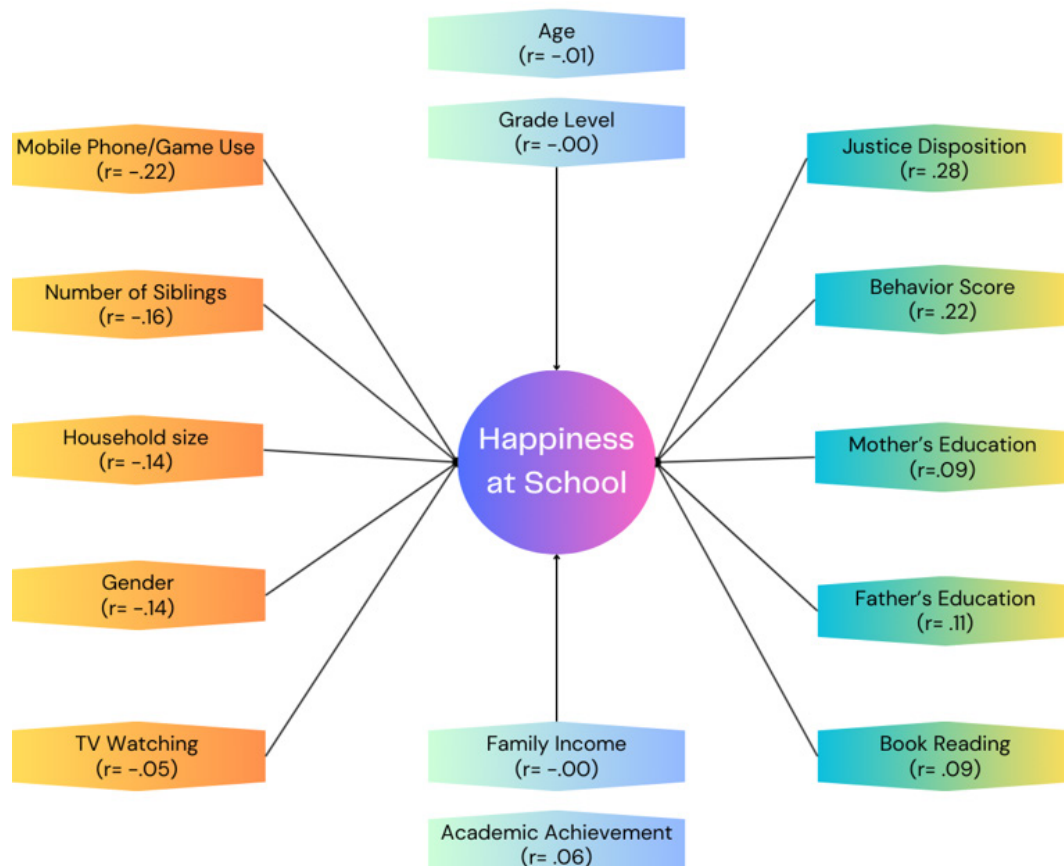


Figure 1 visually summarizes the correlation coefficients between school happiness and a range of demographic, behavioral, and psychosocial variables. The central node, Happiness at School, is connected to each variable, with the color tones reflecting the direction and strength of the relationships.

On the left side of the diagram, represented in orange tones, are the variables that showed negative correlations with school happiness. These include number of siblings ($r = -.16$), household size ($r = -.14$), gender ($r = -.14$, with girls reporting higher scores since gender was coded as 1 = female and 2 = male), mobile phone/game use ($r = -.22$), and TV watching ($r = -.05$). These findings suggest that excessive digital exposure, reduced parental attention in larger families, and gender-related differences in social-emotional adjustment may hinder students' subjective well-being.

By contrast, the variables on the right side, depicted in yellow-green tones, demonstrated positive associations with happiness. These include justice disposition ($r = .28$), behavior score ($r = .22$), book reading ($r = .09$), father's education ($r = .11$), and mother's education ($r = .09$). Such results highlight the role of ethical sensitivity, adaptive social behavior, family educational resources, and intellectual engagement in fostering school happiness.

Finally, the top and bottom nodes, shown in neutral blue tones, represent variables that did not yield statistically significant correlations. These include age ($r = -.01$), grade level ($r = -.00$), family income ($r = -.00$), and academic achievement ($r = .06$). The absence of significant relationships suggests that structural and economic indicators, as well as performance outcomes, may play a less central role compared to relational and behavioral factors.

In sum, the diagram underscores the multidimensional nature of school happiness and points to the greater importance of justice perception, behavioral adaptation, and emotional support over demographic or purely academic indicators. Accordingly, educational interventions aiming to enhance students' well-being should prioritize relational, ethical, and socio-emotional development alongside cognitive achievement.

Regression analysis for predicting students' school happiness scores

To examine the factors influencing students' happiness, a hierarchical regression analysis was conducted. The results are summarized in Table 3.

When examining the results in Table 3, justice disposition emerged as the strongest predictor of school happiness ($\beta = .28$). This finding indicates that a fair school environment plays a central role in children's subjective well-being. The second most influential factor was behavior score, showing that positive social and behavioral adjustment is strongly associated with happiness. Third, mobile phone/game use was negatively related to happiness, suggesting that excessive screen time may undermine students' emotional well-being. Next came number of siblings and household size, both negatively associated with happiness, implying that children in larger families may receive less individual attention and support. Gender was also a significant predictor; since girls were coded as "1" and boys as "2," the results show

that female students reported higher levels of happiness compared to males. At a lower level of influence, father's and mother's education (with a small but positive effect), book reading (positive), and television watching (negative) were also associated with happiness. In contrast, academic achievement, age, grade level, and family income did not make significant contributions.

Table 3

Hierarchical regression model summary

Model	Predictors Included	R Square	ΔR^2	F Change	df1	df2	Sig. F Change
1	Demographic factors: Students' Gender, Age, Grade level	.022	-	7.82	3	106	<.00
2	Socioeconomic background: Students' Parental Education, Family Income, Number of Siblings, Household Size	.056	.034	9.44	4	106	<.00
3	Justice disposition: Students' Justice Disposition	.115	.059	69.9	1	106	<.00
4	Lifestyle habits: Students' Book Reading, Mobile Phone/Game Use, TV Watching Times	.132	.017	6.71	3	105	<.00
5	School-related performance and adaptation: Students' Academic Achievement and Behavior Score	.171	.039	24.7	2	105	<.00

The hierarchical regression analysis was conducted in five steps. In the first step, demographic factors (gender, age, grade level) explained 2.2% of the variance in school happiness, with gender showing a significant effect in favor of girls. In the second step, socioeconomic background variables (parental education, family income, number of siblings, household size) added 3.4%, raising the total explained variance to 5.6%. The third step introduced justice disposition, which produced the largest increase, accounting for an additional 5.9% and raising the total explained variance to 11.5%. In the fourth step, lifestyle habits (book reading, mobile phone/game use, TV watching) contributed a further 1.7%, reaching 13.2%. Finally, in the fifth step, school-related performance and adaptation (academic achievement, behavior score) added 3.9%, increasing the total explained variance to 17.1%.

Figure 2

Cumulative explained variance (R^2) of hierarchical regression models predicting school happiness

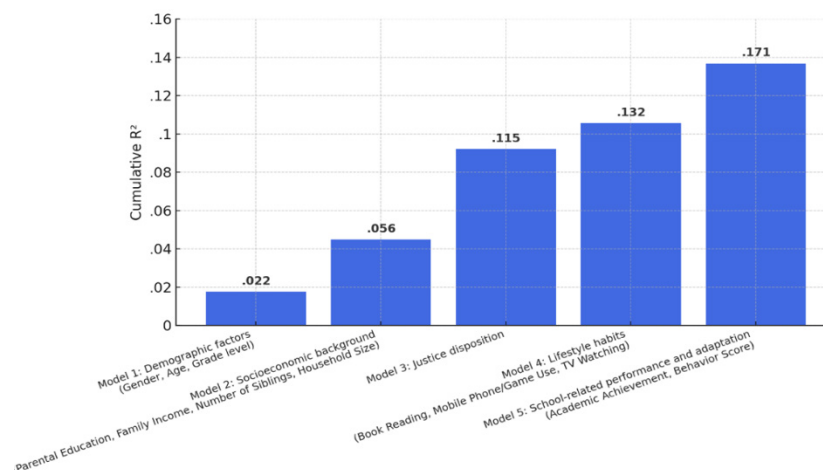


Table 4
Standardized and unstandardized regression coefficients for the final model

Predictor	B	SE B	Beta	t	Sig.
(Constant)	17.939	3.692	-	4.859	<0.001
Gender (Female)	-1.499	0.399	-0.108	-3.761	<0.001
Grade	-0.105	0.461	-0.012	-0.229	0.819
Age	0.098	0.448	0.012	0.218	0.827
Father's Education	0.044	0.202	0.008	0.219	0.826
Mother's Education	0.603	0.215	0.105	2.809	<0.005
Household Size	-.292	.183	-.059	-1.596	.111
Number of Siblings	-0.804	0.189	-0.125	-4.246	<0.001
Family Income	-0.511	0.445	-0.034	-1.148	0.251
Justice Disposition	0.308	0.044	0.207	7.067	<0.001
Books Read	0.206	0.161	0.039	1.279	0.201
Phone Usage	-0.640	0.215	-0.092	-2.975	<0.003
TV Watching	-0.471	0.190	-0.094	-2.476	<0.013
Students'Academic Achievement	0.255	0.195	0.040	1.312	0.190
Behavior Score	1.786	0.260	0.262	6.878	<0.001

Significant predictors

Behavior score emerged as the strongest positive predictor of school happiness ($\beta = .262$, $p < .001$), showing that students with better behavioral adjustment report higher well-being. Justice disposition also made a robust contribution ($\beta = .207$, $p < .001$), indicating that fairness perceptions are a key factor in students' happiness at school. Mother's education had a modest but significant positive effect ($\beta = .105$, $p = .005$), suggesting that maternal educational background contributes positively to children's well-being. In contrast, several factors had negative effects: number of siblings ($\beta = -.125$, $p < .001$) reduced happiness, while phone usage ($\beta = -.092$, $p = .003$) and TV watching ($\beta = -.094$, $p = .013$) both indicated that excessive screen time is detrimental

to well-being. Finally, gender ($\beta = -.108$, $p < .001$) was significant; since gender was coded as 1 = female and 2 = male, this negative coefficient means that female students reported higher happiness than their male peers.

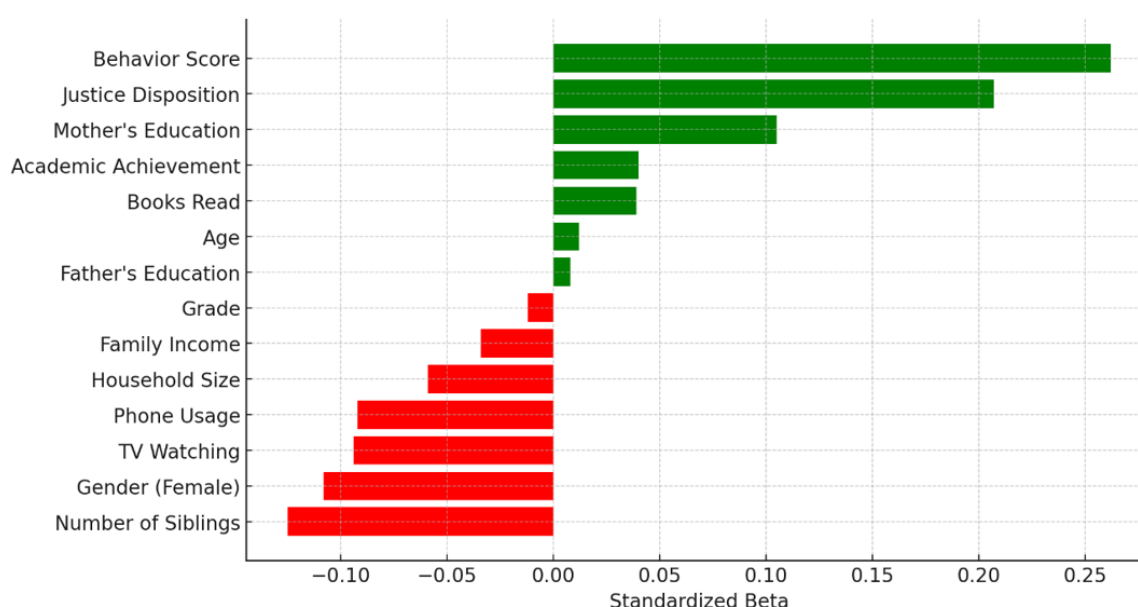
Grade level, age, father's education, family income, household size, book reading, and academic achievement were not significant predictors in the final model. These findings suggest that structural and purely academic indicators have limited influence on students' happiness compared to relational and behavioral dimensions.

Taken together, the results highlight that justice disposition and behavioral adaptation are the most influential predictors of happiness at school, while screen time and family size factors can undermine well-being. Importantly, female students consistently reported higher happiness, and maternal education had a modest but meaningful positive role. Overall, the findings emphasize that social, emotional, and ethical dimensions are more decisive than academic performance or demographic factors in shaping students' subjective well-being.

Discussion

The present study examined the levels and predictors of school happiness among primary school students, with a particular focus on the role of justice disposition. Descriptive findings revealed that both students' reported happiness and their sense of justice were at moderate to high levels, consistent with prior research highlighting the importance of fairness and social connectedness in children's subjective well-

Figure 3
Standardized regression coefficients for predictors of primary school students' happiness



Non-significant predictors and key insights

being (Dalbert, 2009; López-Pérez & Sánchez, 2016). Beyond these overall levels, the hierarchical regression analysis provided a nuanced picture of how different groups of variables contributed to school happiness. The results showed that, at the individual predictor level, behavioral adaptation emerged as the strongest factor ($\beta = .262$), followed closely by justice disposition ($\beta = .207$). At the model level, the inclusion of justice disposition contributed the largest increase in explained variance ($\Delta R^2 = .059$). Taken together, these findings indicate that both behavioral and ethical dimensions play a central role in shaping school happiness, followed by socioeconomic background, lifestyle habits, and demographic factors. This layered structure not only clarifies the relative weight of each domain but also demonstrates that relational, ethical, and behavioral dimensions carry greater importance than purely demographic or academic indicators in fostering student well-being.

Students' school happiness levels

Students' school happiness level was found to be 76%, which is broadly consistent with general satisfaction levels reported in the literature. However, given that primary schools often fulfill children's basic needs—such as play, friendship, and structured support—a slightly higher rate might be anticipated. In the absence of peer bullying, discrimination, or academic stress, students typically perceive school environments positively.

International frameworks underscore the importance of fostering happiness in education. The United Nations (2016) emphasizes its relevance to quality of life and social cohesion, while UNESCO's Happy Schools Framework (2016) calls for inclusive and emotionally supportive school environments. The World Happiness Report (Helliwell et al., 2024) indicates that student well-being is highest in countries like Finland, Denmark, and the Netherlands. Compared to these contexts, the 76% observed in this study appears lower, potentially reflecting structural or cultural challenges specific to Türkiye.

This finding is further contextualized by comparative studies in Europe. For instance, the Malta Wellbeing Index reports that 88.5% of children aged 7–8 describe themselves as happy, though this drops to 70% among 11–15-year-olds due to rising exposure to emotional distress and peer-related issues (TVMnews.mt, 2024). Similarly, an Italian study involving 1549 students aged 7–14 revealed that younger children report significantly higher happiness levels than older peers, with key mediators including self-concept, self-esteem, and perceived loneliness (Baiocco et al., 2019).

In Türkiye, earlier studies reported even higher school happiness rates—around 90% and 91%—based on 3-point Likert scales (Okutan et al., 2024; Tay, 2023).

The current study's use of a 4-point Likert scale likely facilitated more differentiated and realistic responses. As UNESCO (2016) notes, culturally relevant and age-appropriate assessment tools are essential when measuring constructs like school happiness across diverse educational settings.

Students' justice disposition levels

Students' justice disposition was measured at 78.5%, suggesting a strong awareness of fairness and ethical behavior. This aligns with developmental theories which suggest that children at this age are increasingly capable of recognizing moral dilemmas, even if they still require adult guidance for resolution (Kohlberg, 1981; Piaget, 1932). UNESCO (2016) also emphasizes the role of fairness and inclusion in supporting students' moral and emotional development.

Cross-cultural evidence reinforces these findings. In both Germany and the U.S., students who perceive their school environments as fair report greater satisfaction and well-being (Dalbert, 2009; Tyler, 2006). The positive correlation observed between justice disposition and school happiness in the present study is consistent with these patterns. Moreover, as Baiocco et al., (2019) point out, children with a strong sense of self-worth and lower levels of loneliness—often associated with perceived fairness and emotional security—tend to report higher levels of happiness, reinforcing the broader socio-emotional relevance of justice in education.

Students' demographic and socioeconomic factors and school happiness

The findings indicate that demographic variables explained a modest portion of the variance in school happiness ($R^2 = .022$). Within this group, female students reported significantly higher happiness than males, consistent with earlier studies highlighting girls' stronger social connectedness and greater emotional resilience (Göcen, 2015; López-Pérez & Fernández-Castilla, 2018; Mertoğlu, 2020; Tenney, 2011). Similar gender-related patterns have also been observed in international research conducted in Spain and Canada. In contrast, grade level and age were not significant predictors, suggesting that developmental differences across schooling years may not substantially influence subjective well-being in this sample. While some studies point to fluctuations in happiness across school stages (Okutan et al., 2024; Tay, 2023), further longitudinal research is needed to clarify these developmental trajectories.

Socioeconomic background contributed an additional 3.4% of explained variance ($\Delta R^2 = .034$). Maternal education was positively associated with school happiness, reinforcing previous findings on its importance for children's emotional and academic

development (Pentti et al., 2019; Stevens & Jarden, 2019). In contrast, parental education and household income were not significant predictors, supporting the view that social and emotional resources may outweigh purely economic ones (Pentti et al., 2019). A higher number of siblings significantly predicted lower happiness, echoing research that highlights reduced parental attention and competition for family resources as potential explanations (Steelman et al., 2002; Whiteman et al., 2011). However, in collectivist cultural contexts such as Türkiye, where extended family support is more common, these negative effects may be moderated. Future studies should investigate how cultural norms and family structures interact with sibling dynamics to shape student well-being.

Students' justice disposition and school happiness

The regression analysis demonstrated that justice disposition was the strongest individual predictor of school happiness, with a standardized effect of $\beta = .207$ ($p < .001$). The inclusion of this variable in the third step of the hierarchical model explained an additional 5.9% of the variance, underscoring the central role of perceived fairness in shaping students' subjective well-being at school.

These findings are consistent with earlier research showing that perceptions of fairness enhance trust, satisfaction, and belonging within educational settings (Colquitt et al., 2001; Tyler, 2006). At the primary school level, where moral and social development are still emerging, fair treatment by teachers and peers is especially influential (Piaget, 1932; Kohlberg, 1981; Pentti et al., 2019). Such practices not only promote harmony in the classroom but also strengthen children's broader sense of justice and security.

Although justice disposition is a particularly salient predictor, it interacts with other domains of school life. Social relationships, behavioral adaptation, and even certain lifestyle habits also play complementary roles in fostering happiness (Diener, 2012; Suldo & Huebner, 2006). Therefore, cultivating fairness in school environments should be seen as a foundational but not solitary strategy; a holistic approach that integrates ethical, emotional, and social dimensions is crucial for promoting student well-being.

Students' school-related performance and adaptation and school happiness

The results indicate that behavioral adaptation was the strongest predictor of school happiness ($\beta = .262$, $p < .001$), emphasizing the importance of emotional regulation, prosocial behavior, and positive peer interactions in fostering student well-being (Bibou-Nakou & Markos, 2013). Recent empirical evidence supports this as well—Somerville (2024) found that supportive teacher behaviors and students' emotion

regulation skills significantly predicted well-being in primary school contexts.

By contrast, academic achievement did not emerge as a significant predictor of happiness. This finding aligns with research suggesting that academic pressure can undermine students' emotional well-being, even when performance levels are high (Gilman & Huebner, 2006; Suldo & Huebner, 2006). However, recent data from a large-scale Chilean sample shows a positive relationship between school happiness and academic performance, particularly for younger students and those with higher self-efficacy, indicating a more nuanced connection that is mediated by grade level and emotional factors (Hochschild Ovalle, 2024). Similar patterns have been observed internationally; in both the U.S. and East Asia, high academic demands are often associated with reduced life satisfaction (Suldo et al., 2011; Twenge & Campbell, 2018).

Students' lifestyle habits and school happiness

Lifestyle factors also played an important role in students' well-being. Excessive mobile device use and television watching were both negatively associated with school happiness ($\beta = -.092$ and $\beta = -.094$, respectively). These results reinforce prior findings that excessive screen time is linked to diminished social interaction, greater emotional strain, and lower physical activity (Burhan & Moradzadeh, 2020; Twenge & Campbell, 2018).

In contrast, book reading was not a significant predictor of happiness in this study. Although previous research has highlighted its potential benefits for emotional intelligence and perspective-taking (Mar & Oatley, 2008; Twenge & Campbell, 2018), its impact on daily school happiness may depend on factors such as the depth of engagement or the social context in which reading occurs.

Cross-national studies provide further support for these findings. In the U.S., excessive screen use has been linked to lower psychological well-being (Twenge & Campbell, 2018), while in South Korea, high smartphone use has been associated with stress and emotional difficulties (Kim et al., 2020). Finnish research likewise indicates that although moderate screen use can sometimes be neutral or even beneficial, excessive use is consistently linked to disengagement and reduced motivation (Pentti et al., 2019).

Taken together, these global patterns suggest that the negative impact of digital overexposure on happiness is widely observed, although its severity may depend on the type of activity—passive versus interactive. This underscores the need for schools and families to collaborate in promoting balanced technology use, ensuring that digital engagement does not replace

meaningful social and physical experiences.

Conclusion

This study explored the factors affecting school happiness among primary school students, with a focus on justice disposition, behavioral and demographic variables. Behavioral adaptation was the most significant predictor, emphasizing the value of emotional and social skills. Justice disposition also significantly predicted happiness, highlighting the importance of fairness in school life.

Excessive screen time (via phones and TV) had a negative impact, while academic achievement was not a significant predictor—indicating that academic success alone does not guarantee happiness. Girls reported higher happiness levels than boys, suggesting gender-based differences in social-emotional development. Additionally, maternal education had a positive effect, while parental education and income were not significant. Having more siblings was associated with lower happiness, likely due to limited parental attention and shared resources.

Overall, these results underline the importance of supporting not only academic, but also emotional and social development to enhance students' happiness at school.

Recommendations

Based on the findings of this study, several recommendations are presented to enhance students' happiness at school. To foster a sense of justice among students, it is suggested that they be actively involved in establishing behavioral rules, while teachers receive in-service training on educational justice, equitable classroom practices, and inclusive language. Strengthening student councils and encouraging meaningful student participation in school decision-making processes can further support students' sense of belonging.

To support social and emotional learning (SEL), integrating weekly activities—such as empathy games, emotion cards, and storytelling—into the curriculum is recommended. Initiatives like peer mediation and classroom-based emotional sharing can provide safe environments for conflict resolution and emotional support. Guidance counselors may adopt a more proactive role by not only offering individual guidance but also leading structured SEL sessions at the classroom level.

To mitigate the negative effects of academic pressure on student well-being, schools may consider reducing homework and assessment loads and incorporating play-based or exploratory learning activities into weekly routines. Regular well-being screenings and

emotional check-ins can help identify students who need additional support. Shifting from grade-based evaluations to formative, process-oriented feedback may also enhance students' intrinsic motivation.

Strengthening family involvement can be achieved through regular information sessions, especially targeting mothers with lower levels of formal education. Initiatives such as shared reading sessions, co-learning activities, and parent support groups can foster deeper school-family collaboration and extend emotional and academic support into the home.

Regarding digital technology use, introducing digital literacy education in the early years of primary school is recommended. Schools can work in collaboration with families to guide students in critically engaging with media and managing screen time responsibly. In addition, increasing access to non-digital recreational spaces and activities within school settings may help support students' holistic development.

For students from large families, personalized mentoring and academic support programs may prove benefits. Assigning volunteer teachers or older peers as mentors and offering after-school study groups or homework clubs can ensure more individualized academic and emotional support.

Limitations and future directions

This study was conducted with primary school students in the Aegean Region of Turkey, and its findings should be interpreted with caution when generalizing to other regions. The Aegean Region has a higher-than-average socio-economic status compared to other parts of Turkey, which may influence student happiness levels and access to educational resources (TÜİK, 2024). Future studies should explore regional variations and conduct longitudinal research to assess how happiness evolves across different grade levels.

Additionally, while this study focused on demographic, behavioral, and justice-related factors, future research could explore peer relationships, school climate, and mental health variables to provide a more comprehensive understanding of school happiness.

Disclosure and conflicts of interest

The authors declare no competing interests.

Ethical Approval

This study was conducted in accordance with established principles of research ethics, including respect for participant rights, confidentiality, and voluntary participation. Ethical approval was granted by the Social and Human Sciences Scientific Research and Publication Ethics Board of Uşak University

(Decision Date: May 9, 2024; Approval Number: 2024/122). Prior to data collection, all participants were fully informed about the study's purpose and procedures, and written informed consent was obtained. Furthermore, all data were anonymized to ensure participant privacy and confidentiality throughout the research process.

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Examining the Role of Curriculum Evaluation in Schools: A Challenge for Pedagogical Leadership

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Abstract

The challenge of leading learning in schools has shifted the role of school leadership teams towards a more pedagogical approach to managing and evaluating curriculum implementation. In this regard, the objective of this study is to examine the involvement of educational actors in the curriculum evaluation promoted by school leadership teams to enhance teaching and learning processes in schools. Along these lines, the research adopts an interpretative qualitative methodology with a multiple case study design comprising 12 schools in the La Araucanía region of Chile. The participants consist of 117 education professionals serving in managerial positions or as class teachers. Data collection was conducted through semi-structured interviews and focus groups. The findings reveal that curriculum evaluation in the schools studied is concentrated primarily within the leadership teams and heads of pedagogical-technical units (UTP), who guide most evaluative practices from a hierarchical standpoint. Classroom teachers are only marginally involved, while student participation is almost absent. The most widespread practices include the review of teacher-designed assessments and the administration of diagnostic tests, both present in all cases. Although teachers value the feedback they receive, many perceive it primarily as supervisory and controlling. The study concludes that pedagogical leadership in schools must advance towards more democratic and collaborative practices that acknowledge teachers and students as active agents in curriculum development, thereby fostering a school culture that is more reflective, inclusive, and oriented toward educational improvement.

Keywords:

Democratisation Of Education, Curricular Evaluation, Internal Assessment, Assessor, Participation

Introduction

The aim of enhancing the comprehensive development of children and young people in schools has given impetus to the approach of "pedagogical leadership" or "learning-centred leadership", which focuses on the curriculum and pedagogy rather than on administration (Bolívar, 2019; Robinson et al., 2009). From this perspective, leadership refers to a social phenomenon that is manifested in practices based on social interactions, going beyond tasks associated with a management role (Maureira, 2018;



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Sisson et al., 2021; Spillane & Ortiz, 2019). Along these lines, school culture is transformed through various practices involving each educational actor and influencing the implementation of the curriculum and the learning process (Elmore, 2010; Rincón-Gallardo et al., 2019).

The management of teaching and learning programmes, along with teacher professional development, are recognised as key practices in effective school leadership (Leithwood et al., 2019; Robinson et al., 2008). In this regard, it has been demonstrated that, in high-performing schools, school leaders engage in teaching and learning processes and encourage teachers to assess and make decisions regarding the implementation of the curriculum in the classroom (Robinson, 2019; Robinson & Gray, 2019). In other words, pedagogical leadership requires school leadership teams and teachers to act collectively and make decisions that are consistent with the educational purposes of learning and comprehensive development.

On the other hand, curriculum evaluation practices have been approached from various perspectives, some with a supportive and collaborative nature and others that have been limited to prescription and control (Aravena et al., 2019; Santos-Guerra, 2014). Similarly, in recent decades, different levels of participation of educational actors in the curriculum evaluation process have been observed (McCormick & James, 1996; Santos-Guerra, 2013). Along these lines, a meta-analysis conducted by Carrera-Hernández (2024) is particularly noteworthy. This study reviewed conference papers, journal articles, doctoral theses and books with the purpose of examining the theoretical and methodological perspectives from which curriculum evaluation has been addressed in the Mexican context. The findings indicated the predominance of a technical and quantitative approach, oriented towards accountability, the measurement of performance indicators and students' graduate profiles. This points to the need to broaden and diversify research by incorporating participatory and critical methodologies that transcend the logic of control and contribute more directly to the improvement of educational practices.

In the Brazilian context, a study by Freire-Sánchez et al. (2025) explores the challenges and perspectives surrounding curriculum evaluation in schools. The research was carried out through a critical analysis of scientific articles and education policies. The results indicate that there are significant obstacles in the evaluation process, including teacher resistance to change, limited resources, pressure from standardised external assessments and insufficient opportunities for continuous professional development. The study also identifies as pressing the integration of educational

technologies, the adaptation of the curriculum to labour market demands and the development of a more inclusive curriculum.

Leiva et al. (2024) conducted a qualitative study on school leaders' perceptions of curriculum management in 25 Chilean schools, using in-depth interviews. The findings indicate that these educational actors attribute the barriers in the process of curriculum implementation to low levels of teacher competence and student performance. The study concludes that it is necessary to strengthen pedagogical leadership and to foster the engagement of school leaders in curriculum management from a situated perspective that takes account of the contexts and requirements of schools. In turn, Rodríguez-Gallego et al. (2020) underline the need to study pedagogical leadership in relation to the level of teacher involvement in decision-making. Consequently, the challenge of leading learning in the 21st century requires curriculum assessment to be linked to the creation of a collaborative culture of learning and reflection on educational practice.

In a framework of pedagogical leadership, assessment is intrinsic to learning because it enables awareness of the quality of curriculum implementation (Jara et al., 2022). Similarly, the purpose of curriculum evaluation not only shapes the culture of learning (Sanmartí, 2007) but also has the power to maintain or subvert relationships of authority and control (Rincón-Gallardo, 2019). In this context, the following question arises: Who are the educational actors participating in curriculum evaluation processes? How is the participation of these actors expressed in curriculum evaluation depending on factors such as the performance category and type of financing of the school? What are the perceptions of educational actors regarding the process of curriculum evaluation? What is the nature of the relationships established among the educational actors who participate in the curriculum evaluation process? What challenges emerge for pedagogical leadership in the context of curriculum assessment in schools?

In response to these questions, the objective of this study is to examine the involvement of educational actors in the curriculum assessment that is promoted by school leadership teams to enhance teaching and learning processes in schools. The significance of this objective lies in the need to expand reflection on curriculum management as a socio-educational construction shaped within schools, which necessarily entails an interpretation of educational policy (Cox, 2018). Examining the degree of participation and engagement of educational actors in curriculum management is therefore crucial to understanding how pedagogical leadership is exercised.

Curriculum evaluation from a democratic and participatory perspective

Assessment in schools is a genuine opportunity for learning through a shared understanding of educational practices, moving away from mere task checking or evaluation of performance by school authorities or management (Santos-Guerra, 2014; Villagra & Fritz, 2017). Therefore, curriculum evaluation should be approached from a democratic and participatory perspective to foster learning within the educational community (Ríos-Muñoz & Herrera-Araya, 2021; Santos-Guerra, 2013). That is, curriculum evaluation is essentially a collective practice that requires the involvement of various educational stakeholders through a shared responsibility for learning.

Despite efforts to position leadership in learning, curriculum management and assessment practices have focused particularly on instrumental and bureaucratic aspects at the expense of professional reflection (Bolívar, 2019; Mansilla & Beltrán, 2016; Mellado et al., 2017). In this regard, a study conducted by Ahtiainen et al. (2021) found that only a small number of headteachers include students and their families in assessment processes. Therefore, the bureaucratisation and centralisation of curriculum evaluation in schools are factors that weaken pedagogical leadership.

According to Santos-Guerra (2020), the perverse nature of assessment in schools manifests itself in organisational structures because evaluation increases as one descends the hierarchy. However, the power dynamics inherent in assessment can be mitigated through a willingness to engage in dialogue and foster participation (Del Pino, 2016; Venegas, 2023). In response to these challenges, Maureira (2018) explains the resurgence of more participatory and shared approaches to leadership, where influence is not confined to management teams as the sole agents capable of influencing the development of practices aimed at improving education.

The involvement of teachers in assessment intentionally promotes their leadership within the school and, therefore, their professional development (Bolívar, 2019; Maureira & Garay, 2019; Tuytens & Devos, 2014). From this perspective, teacher involvement in assessment processes could serve as a driver to encourage student and family involvement in curriculum design and evaluation, going beyond considering their opinions only at specific moments and blurring the hierarchical relationships between members of the educational community (Larsen & Hesby, 2023; Londoño, 2016). Therefore, assessment from the standpoint of pedagogical leadership requires authentic democratic practices that foster dialogue and reciprocal intergenerational learning in

the school (Aguirre & Schugurensky, 2017; Mayes et al., 2020).

The importance of democratic leadership that incorporates the participation of the school community in curriculum evaluation lies in the dynamic and deliberate co-construction of this process. Therefore, the assessment approach adopted should be aligned with the educational goals being pursued (Rojas, 2019; Gordon et al., 2022; Knight, 2022). According to McCormick and James (1996), curriculum evaluation "is concerned with questions about what should be taught as well as with finding out what happens in the classroom" (p. 15). Thus, curriculum evaluation that considers context, processes, and outcomes enables schools to become aware of the quality of their educational work.

Taking into account the concept of educational quality, several studies indicate that leadership practices and curriculum evaluation are more focused on teacher instruction than on student learning (Aravena et al., 2019; Maureira, 2018). This may be explained by the limited pedagogical knowledge possessed by management teams, which influences decision-making in managing teaching and learning processes, emphasising the prominent role of the teacher in the classroom (Mellado et al., 2017; Treviño et al., 2019). Specifically, those leading curriculum evaluation face the challenge of collaboratively building a shared vision of pedagogy with the educational community for decision-making from a democratic and participatory perspective.

In the context, various international educational policies have consistently aimed to guide the pedagogical role of school management teams, who are called upon to deploy collective leadership for the development of a more equitable future (Organisation for Economic Co-Operation and Development, OECD, 2016; 2017; Organization of Ibero-American States, OEI, 2022). In particular, emphasis has been placed on the teams leading teaching and learning processes by monitoring the comprehensive implementation of the curriculum, conducting classroom observation, and providing feedback to teachers, among other initiatives. Appropriate development of these practices requires reflection on the evaluative approach, as its essence can either promote or hinder the educational improvement of the school.

From an initial perspective, examining the participation of educational agents in curriculum evaluation provides an approach to understanding how pedagogical leadership can promote the involvement of students and teachers as key components of the pedagogical core.

Methodology

This research is grounded in a qualitative-interpretative paradigm and adopts a multiple case study design (Smith, 2018), in which the research problem takes precedence over the particularities of each case (Stake, 2005). The selected cases are representative of the Chilean school system, specifically in the Araucanía region, and encompass the three types of school administration that receive state subsidies. In this sense, the sample corresponds to a group of cases that share a common problem (Canta & Quesada, 2021). From a qualitative-constructionist perspective, categories were developed from the contextual realities in which the participants construct, interpret and socialise their everyday activities within the chosen school settings (Torres & Villagra, 2021).

Participants and context

For the selection of the case studies, 12 schools were deliberately chosen based on pertinent research criteria (Mallimaci & Giménez, 2006). These criteria included: a) schools funded by the Chilean State (public, municipal, or subsidised private); b) those offering primary education; c) those with enrolment of more than 100 students in primary education; and d) schools with performance categories determined by the Education Quality Agency (high, medium, medium-low, or insufficient). These performance categories are delineated within the Education Quality Measurement System (SIMCE), considering the weighting of student achievement levels on written tests (67%) and personal and social development indicators (33%) collected via questionnaires. Adjustments to this index are made in

accordance with the socioeconomic characteristics of the school. Table 1 provides a breakdown of the participants based on their professional roles and the characteristics of the schools.

With respect to the ethical considerations of the study, participants were invited to take part voluntarily and were informed about the purpose of the research. They signed an informed consent form detailing the scope of their participation and were briefed on the confidentiality and the measures for managing their data. All study protocols and procedures were approved by the Ethics Committee of the institution sponsoring the research.

Procedures and instruments

The empirical production of information is grounded in the principles of participatory social research (Guba & Lincoln, 1989) and the co-construction of situated knowledge (Haraway, 1995). Firstly, a semi-structured interview was conducted with each headteacher and the head of the pedagogical-technical unit (UTP) from the 12 schools. In total, 24 interviews were conducted to explore curriculum evaluation practices from the perspective of "self-narration" (Cruz et al., 2012). To carry out these interviews, a script of open-ended questions was created to reveal the curriculum evaluation practices implemented by the school leadership and to construct a narrative that enables the practice to be objectified. This script underwent a content validation process by three expert judges, who analysed the consistency, relevance, and clarity of the questions based on the study's objective. The detailed questions asked are the following:

Table 1.

Characteristics of participants

School	School funding	Performance category	Headteacher	Head of Pedagogical-Technical Unit	Other members of Management team or Pedagogical-Technical team	Class teachers	No. of participants
A	Public	High	1	1	4	5	11
B	Public	Medium	1	1	3	7	12
C	Public	Medium-low	1	1	1	6	09
D	Public	Medium-low	1	1	1	5	08
E	Municipal	High	1	1	4	6	12
F	Municipal	Medium	1	1	2	5	09
G	Municipal	Medium-low	1	1	2	6	10
H	Municipal	Insufficient	1	1	0	4	06
I	Subsidised private	High	1	1	0	5	07
J	Subsidised private	Medium	1	1	6	6	14
K	Subsidised private	Medium-low	1	1	3	5	10
L	Subsidised private	Insufficient	1	1	2	5	09
Total			12	12	51	66	117

Table 2.*Question framework to guide data collection*

Research questions	Analytical Dimension	Questions
Who are the educational actors participating in curriculum evaluation processes? How is the participation of these actors expressed in curriculum evaluation depending on factors such as the performance category and type of financing of the school?	Participation and curriculum evaluation practices	How does the school management and leadership team evaluate the implementation of the curriculum and the achievement of learning objectives? What is the purpose of each practice mentioned? Who participates in the implementation of these practices? What tools do they use to evaluate the practices mentioned?
What are the perceptions of educational actors regarding the curriculum assessment process? What is the nature of the relationships established among educational actors participating in the curriculum assessment process? What challenges emerge for pedagogical leadership in the context of curriculum assessment in schools?	Perceptions and nature of relationships in curriculum evaluation	How do they integrate these practices with some of the management instruments of the institution, for example, the Institutional Educational Project (PEI) or Educational Improvement Plan (PME)? To what extent is a practice effective and sustainable in the long term? In what ways do the practices mentioned guide student development and institutional improvement? How do they perceive that these practices affect student learning?

Secondly, focus groups were conducted with the management team and with a group of classroom teachers from each participating school, with the aim of validating the accounts of curriculum evaluation practices that had been systematised from the interviews. In this process, the research team provided participants with feedback on their practices, and participants were responsible for verifying or refining the description of each practice to ensure alignment with the school's daily routines. This self-examination of practice enables reflection on the influence of curriculum evaluation and pedagogical leadership on student learning.

This approach to data collection emphasises the perspectives and subjectivities of educational actors through guiding questions that illuminate evaluative practices, fostering dialogic and contextually situated reflection. Moreover, it reinforces data triangulation as a mechanism for verification (Arias, 2022) in multiple case studies, where the richness of the data is derived from diverse sources of evidence (Smith, 2018).

Figure 1.*Knowledge production process*

Fuente: Torres & Villagra, 2021.

Data analysis

As a result of the knowledge production process, 13 curriculum evaluation practices were validated and categorised. Each practice was characterised according to the dimension "who evaluates?", referring to the person who, in their role in the school,

issues the value judgment regarding the object of evaluation. We used ATLAS.ti 8.0 software to facilitate and organise the analysis.

From a qualitative-hermeneutic standpoint, validity is ensured through the cultivation of trustful relationships, the opportunity to validate textualities, narratives, and practices with the participating collective, and the ability to observe the phenomenon under study in its entirety, rather than in isolated aspects. In this regard, data triangulation for verification (Arias, 2022) was essential. Accordingly, the analysis follows a symbolic-interactionist approach, whereby participants co-construct their situated knowledge through interaction in small groups.

Results

This section presents the findings of the study in accordance with the research questions.

Educational actors involved in curriculum evaluation processes

The results indicate the participation of six categories of evaluative actors, some operating collectively and others individually.

- Management Team (MT): Administration, technical leadership, responsible for school coexistence, and coordination of the school integration project (PIE).
- Head of pedagogical-technical unit (UTP): Teacher responsible for supporting the management of teaching and learning at the school.
- Pedagogical-Technical Team: UTP leadership and class teachers with management responsibilities, such as coordination of departments, school cycles, or grade levels.
- Teaching assistant: Class teacher without management responsibilities at the school.
- Class teacher.
- Student.

Table 3 presents the frequency with which these educational actors engage in the various practices employed by each school to evaluate the curriculum. Specifically, it enumerates the number of practices in which each actor is afforded the opportunity to contribute to decision-making concerning teaching and learning processes.

Table 3 indicates that, in the majority of cases, the management team, UTP leadership, and classroom teachers participate as educational agents in curriculum management. It should be noted that none of the practices involved the individual presence of the

headteacher as an evaluative agent, but their value judgments were instead always developed as part of a collective, specifically within the management team. In contrast, peer teachers were considered participants in curriculum evaluation in only 50% of the cases. Finally, only one school (F) allowed student participation in this process.

Table 4 summarises the involvement of these actors across a total of 13 curriculum assessment practices. It is important to mention that it is possible for more than one evaluative agent to participate in one practice. For example, in the practice “Pedagogical support for teachers”, which is carried out by seven schools, all educational agents participate except for the students.

Table 4 shows that curriculum evaluation carried out in 100% of the participating schools involves the practices of “Review of and feedback on evaluations designed by teachers” and “Implementation of diagnostic evaluations”. On the other hand, the practices carried out least frequently are “Application of an instrument that allows the student’s viewpoint to be recorded” and “Review of records in class register.”

Only two practices have been identified that involve a greater number of agents than value judgments, namely “Pedagogical support for teachers” and “Technical advice and professional pedagogical dialogues”. The curriculum evaluation practices that concentrate the value judgments within the management team or UTP heads, and which do not include the participation of class teachers, are “Observation of teachers in the classroom”, “Pedagogical evaluation meetings of the management team”, and “Support and evaluation of new teachers”. In contrast, the evaluation practices that show greater participation from class teachers in issuing judgments are “Implementation of diagnostic evaluations” and “Institutional evaluation and planning period”.

Regarding the agents who have the greatest participation in the 13 systematised evaluation practices, a hierarchical perspective prevails in the assessments. The technical team is present in 77% of them, the management team in 70%, and the head of UTP in 61%. Agents with less presence are class teachers (38% participation) and students, who are present in only one practice (7%).

Participation of educational actors in curriculum evaluation according to school performance category and type of administration

With respect to the funding of the school, an analysis is presented on the level of participation of educational agents in curriculum evaluation (Figure 1). The level of participation is also described according to the categorisation of the schools (Figure 2).

Table 3.*Participation of educational actors in curriculum evaluation practices within their respective schools*

School	School funding	Performance category	Management team	Head of UTP	Technical-pedagogical team	Teaching assistant	Teacher	Student
A	Public	High		X	X		X	
B	Public	Medium	X			X	X	
C	Public	Medium-low	X	X			X	
D	Public	Medium-low	X	X	X	X	X	
E	Municipal	High	X	X	X	X	X	
F	Municipal	Medium	X		X		X	X
G	Municipal	Medium-low	X	X	X	X	X	
H	Municipal	Insufficient	X	X		X	X	
I	Subsidised private	High	X	X	X		X	
J	Subsidised private	Medium	X		X		X	
K	Subsidised private	Medium-low	X	X		X	X	
L	Subsidised private	Insufficient	X	X			X	

Table 4.*Agents evaluating the curriculum in schools*

Evaluative Practice	No. of schools that carry out the practice	Management team	Head of UTP	Technical-pedagogical team	Teaching assistant	Teacher	Student
1. Verification and monitoring of annual planning	6	1	3	2	0	0	0
2. Pedagogical support for teachers	7	3	2	2	2	1	0
3. Observation of teachers in the classroom	4	3	1	0	0	0	0
4. Pedagogical evaluation meetings of the management team	2	2	0	0	0	0	0
5. Review of and feedback on teacher-designed evaluations	12	0	9	2	2	1	0
6. Technical advice and professional pedagogical dialogues	10	3	1	5	4	1	0
7. Peer evaluation and planning	4	1	0	2	4	0	0
8. Implementation of diagnostic evaluations	12	5	2	1	0	12	0
9. Institutional evaluation and planning period	6	5	0	2	0	4	0
10. Application of an instrument that allows the student's viewpoint to be recorded	1	0	0	1	0	0	1
11. Review of records in class register	1	0	0	1	0	0	0
12. Triangulation of the Annual Plan, class register and student evaluations.	3	0	2	1	0	0	0
13. Support and evaluation of new teachers	2	1	1	0	0	0	0
Number of practices by agent		9 of 13	8 of 13	10 of 13	4 of 13	5 of 13	1 of 13

Figure 2.

Number of practices and type of educational agents in curriculum evaluation according to type of school administration

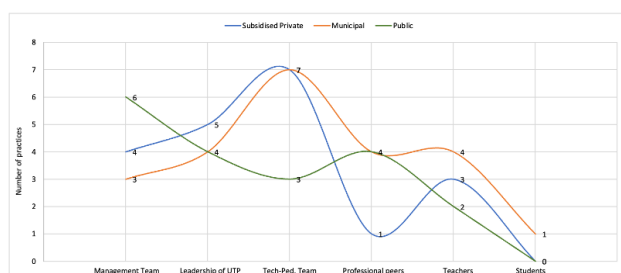


Figure 2 illustrates that the pedagogical-technical team exhibits the highest participation in curriculum evaluation, which is particularly prevalent in subsidised private and municipal schools. Notably, only one municipal school includes student participation in curriculum evaluation. It is also apparent that peer professionals are more actively engaged in municipal and public schools compared with subsidised private schools. Public schools demonstrate a balanced involvement of the UTP leadership, the pedagogical-technical team, and peer teachers; nevertheless, the participation of class teachers is comparatively lower. Moreover, public schools stand out due to the marked involvement of the management team in this evaluation process.

Figure 3.

Number of practices and type of educational agents in curriculum evaluation according to school performance category

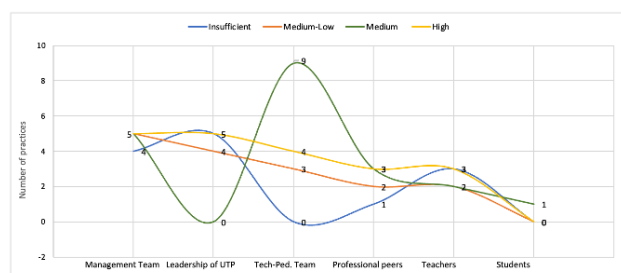


Figure 3 illustrates that schools categorised as High, Medium-low, and Insufficient concentrate curriculum evaluation in the management team and UTP leadership. It is evident that schools categorised as having Medium performance focus evaluation practices on the pedagogical-technical and management teams, while schools categorized as Insufficient centre evaluation on the UTP leadership and the management team because they lack a formal structure for the pedagogical-technical team. It is notable that the involvement of teachers is equally low. Finally, schools with High performance demonstrate more evenly distributed participation of the different agents.

Nature of relationships established in the curriculum evaluation process

To gain a deeper understanding of educational actors' involvement in curriculum evaluation, this section presents representative narratives drawn from focus groups, aimed at examining the relational dynamics underpinning decision-making. The analysis is structured around two emergent categories that shine light on the inherent tensions in evaluative practices within schools: (a) assessment linked to hierarchical roles, and (b) democratisation of evaluative practice.

a. Category "Evaluation linked to hierarchical roles"

The narratives reveal that curriculum evaluation practices are primarily carried out by agents who hold a management position at the school. In this respect, the participants believe that the assessment and feedback process must necessarily be conducted by individuals who have positions in the school's management teams:

"The evaluative materials designed by the teachers need to be sent to the pedagogical coordinators for feedback. As a team, we approve these materials for use once they have been reviewed" (Member of MT, Subsidised Private School in Medium performance category).

Regarding the justification for members of the management teams to review evaluative materials, these agents state that the purpose of this process is formative and associated with ensuring the validity of the instruments:

"We don't carry out the review and feedback of lesson plans and evaluative instruments from a punitive perspective; on the contrary, it's an effective practice that contributes to the construct validity of the instruments, because, even though we're teachers, we make mistakes in the design of our pedagogical materials" (Member of MT, Public School in Medium-low performance category).

This view is shared by a group of class teachers, who express the importance of the value judgments issued by school authorities:

"Feedback from the management team is crucial because it enriches the review of all the materials we build and everything we do" (Class teacher, Municipal School in High performance category).

Similarly, they emphasise the importance of receiving relevant feedback on teaching performance from a much more dialogical perspective:

"They observed my class and told me everything was fine, that there was nothing to improve ... but I think they should have given me some suggestions. That's why there needs to be more conversation when providing feedback on the class, to calmly discuss what is being evaluated" (Class teacher, Subsidised Private School in Medium-low performance category).

On the other hand, another group of teachers expresses the need for recognition and participation in curriculum evaluation processes. This perspective is related to the possibility of building a more profound understanding of both their professional practice and the purpose of assessment:

"If we're not involved in the evaluation processes and the management teams make decisions behind closed doors only to tell us what to do afterwards, we don't really develop any learning. It's different when they consider you and invite you to think about how we can do it together" (Class teacher, Public School in Medium-low performance category).

"We perceive classroom support as supervision by the school management, but I believe it should be more enjoyable and led by teachers of the same subject. I've been observed once or twice this year, but it really makes you nervous" (Class teacher, Municipal School in High performance category).

The results in this category reveal that the different educational actors involved in curriculum evaluation are aware of the vertical nature of this process. Similarly, they recognise the need for feedback from an external agent, which could be members of the management team and professional peers. Furthermore, the narratives show various stances regarding the evaluative role of members of the management team. While one group of teachers values and considers the feedback and constant monitoring of their work by these agents to be appropriate, another group of teachers explicitly expresses the need to move towards more participatory and democratic evaluation practices in their schools.

b. Category "Democratisation of evaluative practice"

In this category, narratives are provided that reveal processes of resignification regarding the meaning attributed to evaluation by different agents. Specifically, these narratives illustrate a process of reflection and awareness regarding the need to reassess the underlying rationale of the assessment of teacher performance, primarily conducted through classroom observation:

"Classroom observation was focused on scrutinising the lesson using a somewhat secretive checklist. However, the practices didn't improve, so we realised there was a need to provide feedback with criteria constructed alongside the teachers Following that collaborative process, we realised that we should never conduct that type of classroom inspection again" (Member of MT, Public School in Medium performance category).

From this transformative perspective, certain schools stand out for involving teachers in curriculum evaluation as a horizontal practice that is closely linked to teaching and learning processes:

"We've come to realise that our role as the management team is to create an appropriate context and conditions for teachers and students to carry out their activities. However, it's primarily the professionals in the classroom who should make curriculum decisions" (Member of MT, Public School in Medium performance category).

Likewise, some management teams stand out for making sustained efforts to shape democratic scenarios for curriculum management where professional learning is intertwined with evaluation processes:

"In school, we work by subject ... all the teachers in the Maths department reach agreements on how to work on the curriculum, so feedback isn't solely the responsibility of the head of the UTP, but rather a responsibility shared by all the teachers" (Class teacher, Municipal School in High performance category).

Along the same lines, teachers acknowledge the opportunities for peer collaboration they have during the teacher performance assessment process mediated by the classroom support practice:

"Classroom support has been beneficial for me. Collaborating with my colleagues by observing their classes has allowed me to reflect on my own practice and identify areas for improvement. So, there is a connection between teachers and coherence in learning" (Class teacher, Municipal School in High performance category).

The positive view of teachers regarding taking a leading role in curriculum evaluation provides clear guidance for pedagogical leadership, as it fosters professional learning environments within the school. In this regard, shared practices of curriculum evaluation are seen as an opportunity to reflect on teaching and learning processes, while also enabling teachers and school leadership teams to make timely decisions that address the everyday challenges encountered in the classroom.

Discussion and Conclusions

The importance of pedagogical leadership has led to this research into curriculum evaluation practices, as they constitute a bridge between the actions of school management and teaching and learning processes (Villagra, 2020). In the same vein, it is evident that educational agents within school settings have varying levels of involvement in curriculum evaluation processes. It is particularly noteworthy that teachers and students, as key actors in the educational process, have fewer opportunities to express value judgments and make decisions about the educational process, resulting in a limited diversity of perspectives in the assessment practice. In this regard, Ríos-Muñoz and Herrera-Araya (2021) contend that assessment should aim to empower both teachers and students by fostering collaborative evaluation practices to

enhance learning. In other words, assessment in schools should adopt more collaborative perspectives (Elmore, 2010; Santos-Guerra, 2013, 2014). Therefore, the findings of this study do not aim to diminish the significance of the evaluative role of management teams, but rather contribute to reflection on the need to increase the participation of various stakeholders within the educational community. As argued by Barba-Martín and Hortigüela (2022), granting learners a voice and more control over the assessment process is intended to foster shared and dialogic assessment, without implying the transfer of all evaluative judgment from one party to another.

Viewed through the lens of assessment as a form of learning, it is clear that class teachers recognise the significance of their involvement in curriculum evaluation for their professional learning. Moreover, they broadly appreciate the opportunities for critical dialogue and collaborative work facilitated by instances of performance feedback. In this context, research by Tuytens and Devos (2014) suggests that teacher involvement in planning assessment fosters a deeper understanding of its purpose, thus perceiving it as a fairer and more beneficial process. Similarly, a study conducted by Aravena-Kenigs et al. (2023) finds that teacher participation in the design of assessment tools for their own performance leads to increased receptiveness to learning and contributes to the enhancement of professional confidence.

The results of this study reveal the existence of assessment practices that are led by professionals from the technical-pedagogical units (UTPs), who are considered expert teachers, with responsibilities for pedagogical management that sometimes manifest as control and monitoring of teaching and learning. According to a study by Aravena and Quiroga (2018), this practice is commonly established in the technical-pedagogical unit in the Chilean educational context because the management focuses on managerial tasks and delegates responsibilities related to learning to the leaders of the UTP. This research also found that headteachers and UTP heads have differing understandings of learning and teaching, a factor that hinders the construction of a learning culture. Consequently, a pedagogical leadership approach should create the conditions necessary to foster the ongoing co-construction of the curriculum within the school, grounded in the authentic and legitimate participation of all members of the educational community (Rojas, 2019; Bolívar, 2019; Villagra y Torres, 2023).

Within this framework, the findings of this study show that such assessments are usually carried out based on hierarchical logics and are generally implemented by individuals holding management positions within the school. From this perspective, the first challenge that emerges, as highlighted by

Santos-Guerra (2013), is how to foster democracy in schools that have a hierarchical structure where the most important decisions are taken by the authority. The democratisation of assessment in schools is a key challenge for pedagogical leadership, requiring a clear intention to involve all educational agents in decision-making to achieve a shared vision of learning and pedagogy.

In light of these findings, it is crucial for the analysis to consider the standpoint of educational policies, which in recent years have driven several initiatives aimed at reinforcing the pedagogical role of school leadership. In this regard, it is necessary to examine the coherence of curriculum evaluation practices with the guidelines of educational policy that emphasize the formative function of assessment. However, entrenched traditional beliefs within school culture shape the evolution of practices for guiding teaching and learning processes through an approach of assessment-as-learning. As Santos-Guerra (2020) warns, many assessment practices are developed based on a superficial understanding of the guiding principles of policy. Therefore, research is required on leadership practices in the Latin American educational context, as it has a social and political history that could explain the way schools are led (Seashore, 2017).

A superficial understanding of assessment can be counterproductive in leading teaching and learning processes, as the formative purpose is influenced by how the curriculum is assessed and by whom. In this regard, the results suggest that curriculum evaluation tends to be implicitly associated with hierarchical roles, thus highlighting the need to progress towards more democratic and participatory scenarios within the school. Considering these findings, the challenge for management teams lies in transitioning towards democratic evaluative practices that foster dialogue and question what is done to facilitate learning (Santos-Guerra, 2020), with a particular focus on providing teachers and students with real opportunities for participation as key agents in the educational process (Maureira & Garay, 2019).

Regarding the scope of this study, it is important to highlight the identification of critical issues that schools encounter in the curriculum evaluation process. These issues could potentially be addressed through educational policy, particularly by providing specific guidelines to foster the genuine involvement of all members of the educational community from a perspective of pedagogical leadership. It should be noted that the study has certain limitations, due to the small number of schools included in the case studies. Therefore, it is recommended that future studies expand both the quantity and variety of participating schools.

Similarly, future research is proposed to examine the meanings that teachers construct regarding the assessment experience in schools, linking evaluative agents (the individuals who evaluate), evaluative procedures (how evaluation is conducted), and the evaluative criteria (what is evaluated), with the aim of broadening understanding of curriculum evaluation practices and the factors that facilitate or hinder its development.

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Family Involvement in Early Reading and Writing: A Needs Analysis Based on Stakeholder Perspectives

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Abstract

This study aims to reveal the multidimensional structure of family involvement in early reading and writing education and the needs that arise within this scope, based on the views of teachers, families, and field experts. In the study, the exploratory sequential design of mixed-methods research was adopted; the findings from interviews with stakeholders were supported by data obtained from 490 classroom teachers through a survey. The data obtained were analysed based on thematic analysis and descriptive statistics. The findings from the interviews revealed that all stakeholders considered family involvement to be a fundamental and indispensable element of the early reading and writing process. Furthermore, it was emphasised that this process should be supported not only through traditional forms of involvement but also through systematic family information meetings and home- and classroom-based involvement methods. It was found that teachers and families experienced similar difficulties, especially at the beginning of the early reading and writing process, and had common needs in terms of information meetings and family involvement. According to the survey findings, families need to be informed about issues such as developmental processes, effective communication and fine motor skills development, and are expected to support their children in areas such as fine motor skills development, reading comprehension and legible writing. Stakeholder views indicate that family involvement processes based on home and classroom settings can be carried out in a more conscious and sustainable manner when families are informed based on their needs. In this context, it has been observed that needs-based, programmed, and systematic family involvement processes have the potential to increase student achievement.

Keywords:

Early Reading and Writing, Family Involvement, Needs Assessment, Mixed-Methods Research



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Introduction

A child's first experiences with language take place within the family. As Vygotsky (1978) emphasised, cognitive schemas shaped by social interactions within the family gradually structure the individual's inner world, paving the way for higher-level skills. Language is undoubtedly at the forefront of these critical skills.

Language is acquired through social means in the family environment. Children exposed to auditory input gradually develop listening skills, followed by speaking skills through observation, imitation, and reinforcement processes. Children who acquire comprehension and expression skills to the extent provided by their families, by interacting with reading and writing materials while modelling their parents, also reinforce early reading and writing skills such as phonological awareness, word awareness, and letter knowledge (Carter, Chard, & Pool, 2009). Similarly, Cole and Engestrom (1993) exemplify that language is socio-culturally constructed within the family through reading skills. According to them, cognitive functions in the reading process do not originate solely from the individual's personal qualities; they are shaped by the influence of social actors in their environment, such as family, teachers, and friends. Language and literacy skills, which are socially shaped by family support and opportunities, continue to develop through the early reading and writing process. Early reading and writing instruction is critical in this process.

The main goal of early reading and writing teaching is to develop the comprehension and expression dimensions of language and, based on basic language skills such as listening and speaking, to equip students with critical reading and writing skills that they will use throughout their lives (Çelenk, 2006). In other words, early reading and writing lessons lay the foundation for the academic, cognitive, social, and cultural skills that individuals will benefit from throughout their lives. For this reason, the acquisition of basic reading and writing skills should never be left to chance. It is particularly important that what is learned in early reading and writing lessons is not limited to classroom activities but is reinforced by the influence of social environments outside of school. This necessity makes it imperative for families to involve in the early reading and writing process.

Considering that first-grade primary school students have very short attention spans, reading and writing activities carried out in the classroom must also be continued at home in order to ensure lasting learning (Çelenk, 2003; Taymaz, 2000; Tok, Tok and Mazi, 2008). The existence of the "Sound-Based Sentence Method" applied in Türkiye is another determining factor that requires family involvement. The Sound-Based Sentence Method has been designed in line with the constructivist approach. This approach is based on the student's readiness level and aims to generate functional, innovative, and original learning experiences in the classroom (MEB, 2005). Families are undoubtedly the ones who can inform the school and teachers about the readiness level of first-grade primary school students and support them in bringing this level to a state suitable for learning. In schools, parallel to the basic characteristics of

the early reading and writing process, families can be provided with educational skills related to "preparation for early reading and writing, perceiving sounds, forming syllables from sounds, forming words from syllables, and forming sentences and texts from words." Families who acquire these skills can engage with their children one-on-one during the reading and writing processes, organising shared activities based on imitation, repetition, and creativity. In this way, the skills acquired in groups at school can be supported at home in a personalised manner in line with the child's needs, expectations and individual performance (Lonigan and Whitehurst, 1998, cited in McMahon, 2010). Thus, families can both support the teaching process and make important contributions to the creation of a successful school life (Özbaş, 2013).

Numerous studies have shown that the child's immediate environment plays a more effective role than school-related factors in literacy success (McMahon, 2010; Power, 1992). The studies by Fan and Chen (2001), Ferguson (2011, cited in Bronfenbrenner, 2006b) and Au (2000) reveal that family involvement in early reading and writing has a much greater impact on academic achievement than the family's social status, size and parents' educational level. Furthermore, family involvement has been found to be crucial in the acquisition and improvement of literacy skills (Kayser, 2006; Lerner, 2000; Li, 2003), the development of children's written language skills (Evans, Shaw, & Bell, 2000; Griffin and Morrison, 1997; Rush, 1999) and improving reading comprehension levels (Leseman and deJong, 1998).

In addition, studies have shown that family involvement in reading, especially at home, positively affects reading achievement, language comprehension, and expressive language skills (Gest et al., 2004, cited in Clark, 2007a; 2007b), as well as increasing children's interest in reading, their attitudes towards it, and their involvement in class (Rowe, 1991, cited in Clark, 2007a; Clark, 2007b).

Families can be involved in the early reading and writing process as teaching assistants or as part of school organisations based on cooperation and effective communication, just as they do in other subjects. In addition, guided families serve as role models for literacy from the preschool period onwards, provide home-based authentic contexts for oral and written language development, and thus make important contributions to their children's literacy development (Gül, 2007).

Children whose parents read to them four to seven times a week demonstrate a more positive attitude towards reading and are more successful in this area (Ramotowski and Trepanier, 1977, cited in Salıcı Ahioğlu, 2006). Children whose families discuss books they read together achieve higher reading success

and have a broader conceptual vocabulary (Silvern, 1985). Moreover, children with high reading success and comprehensive conceptual knowledge generally come from families with more reading materials. Children whose parents serve as role models for reading and encourage them in this direction show a more pronounced increase in reading achievement and rapid progress in performance (Hansen, 1969, cited in Salıcı Ahioğlu, 2006). Furthermore, it is believed that families who not only take on the role of role models but also adopt supportive, school-contributing, and decision-making roles positively influence literacy skills. The supportive role of the family means creating a home environment that encourages the child to learn sounds and letters, having high but realistic expectations about the child's success and future performance, and actively participating in the process in line with these expectations.

Family involvement in early reading and writing, despite its critical importance and necessity, is influenced by numerous factors that affect the quality and frequency of involvement and, in some cases, even hinder the process. One such factor is parents' beliefs about reading and writing. In particular, parents' beliefs about the importance of reading and writing and their attitudes towards it directly determine the quality and duration of involvement (Özen Altinkaynak and Akman, 2016). Families who believe in the importance of reading and writing skills in academic and social life involve more intensively in the process both at home and in the classroom and spend quality time with their children. When democratic, consistent, and determined family structures are added to these beliefs and attitudes, the effect inevitably increases (Şahin and Tuğrul, 2019). Another important factor that affects family structure, parents' beliefs and attitudes, and, naturally, involvement in early reading and writing is the level of education. It is known that families with a high level of education have more positive attitudes towards reading and writing and involve more effectively in the learning process (Akin, 2016; Erbasan and Erbasan, 2020; Fitzgerald, Spiegel and Cunninham, 1991). Another factor related to beliefs, attitudes, and educational level is the knowledge and experiences of families regarding the early reading and writing process. The more knowledge and experience families have about the primary literacy method used, the more confident they feel about participating and the more they take advantage of opportunities to involve (Carter, Chard, & Pool, 2009; Sağırılı, 2022). For this reason, it is crucial for teachers to take on a leadership role in the involvement process and build positive and sustainable school-family relationships. In this way, families' knowledge and experience regarding early reading and writing can be increased. George (2009) states that this role of the teacher has a positive effect on language skills, especially reading.

The materials available to children at home and an appropriate working environment are among the other determining factors that influence the process. The richer the reading and writing environment and opportunities available at home, the greater the desire of parents and children to spend time together. Epstein and Van Voorhis (2001) show that daily or weekly reading and writing involvement materials increase families' interest in involvement and improve children's reading and writing skills. Additionally, reading sessions in which parents act as role model readers increase children's interest in the involvement process and positively impact their literacy performance (Cassidy, 2004; Livingston and Wirt, 2003; Şahin and Tuğrul, 2019; Weigel, Martin, and Bennett, 2006). In addition to all these factors, it is also possible to encounter obstacles that may hinder the process.

As mentioned above, the educational level of the family directly affects the process of involvement in early reading and writing. A low level of education and, as a result, the family's lack of interest in the process not only negatively affects involvement but also disrupts communication between the family and the teacher (Özcan and Özcan, 2016). Parents who do not have a democratic, consistent, and determined family structure may behave in a domineering manner towards their children, lacking empathy. This unhealthy relationship between the family and the child also affects the process of involvement in early reading and writing; children who fail are scolded, their inadequacies are pointed out, they are humiliated by being compared to others, and they may be alienated from the entire process (Başar, Göncü & Baran, 2021; Sağırılı, 2022; Uslu, 2014). As seen, if families lack knowledge and experience regarding primary reading and writing methods, techniques, and processes, an involvement process that supports classroom learning in the desired direction cannot be established. In fact, misguided and incorrect teaching attempts by families can lead to inconsistencies with classroom learning, causing confusion among students (Başar et al., 2015; Başar and Tanış Gündüz, 2020; Erbasan and Erbasan, 2020; Sağırılı, 2022). Examples of this include attempting to teach sounds too early, emphasising letter names instead of sounds, and incorrectly showing letter forms. In order to ensure quality family involvement in early reading and writing, teachers must contend with other social barriers such as poverty, single parenthood, illiterate parents, and differences in native languages. Such problematic situations can negate the positive effects of the family involvement plan and create negative effects on the child's linguistic development due to a stressful lifestyle (Browne, 1996; Kucer, 2004, cited in Gül, 2007).

In order for stakeholders to benefit maximally from involvement in early reading and writing, they must go

through a carefully planned process and activities. The aforementioned activity processes must be prepared by taking into account the factors that determine the quality of involvement and the needs of stakeholders.

Families' awareness of their own literacy skills, overcoming misconceptions and prejudices, understanding teachers' expectations of themselves and their children, and most importantly, getting to know their children deeply can only be achieved through planned, systematic, and multifaceted involvement processes that involve families in the teaching process in line with their needs, rather than through family education and school-family communication activities alone. Thanks to this approach, families are informed and educated about the early reading and writing process, and planned and systematic involvement can be achieved through home- and classroom-based activities developed according to needs. However, despite the aforementioned ideal expectations, there has been no mention of family involvement in early reading and writing in Turkish language teaching programmes from the past to the present. Furthermore, the absence of family involvement programmes and activities that have been developed based on needs, tested, and evaluated for effectiveness in the early reading and writing literature clearly highlights a significant need in this area.

This study, conducted by considering the needs identified in the literature, aims to identify the family involvement needs related to early reading and writing.

Method

Research Design

This study covers the part on "determining needs and setting goals" from the front section of a doctoral thesis on the contribution of family involvement programmes to early reading and writing skills.

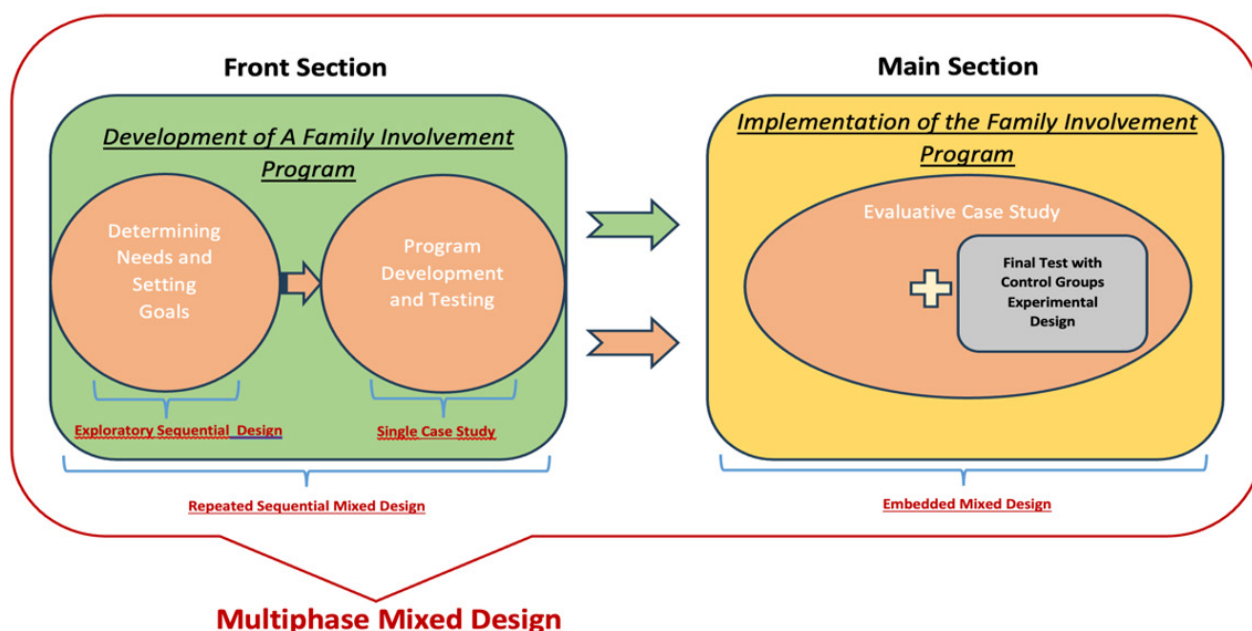
The "determining needs and setting goals" part of the study was conducted in accordance with the exploratory sequential design of mixed-methods research. This design refers to a sequential mixed design pattern that begins with qualitative processes to discover variables that are decisive in the quantitative process or to develop quantitative data collection tools, and continues with quantitative processes (Creswell and Plano Clark, 2015; Greene, Caracelli, and Graham, 1989). Using this pattern, the study first identified stakeholders' expectations and needs regarding family involvement through qualitative methods, developed a closed-ended needs assessment survey based on these findings, and listed the final needs for family involvement in early reading with the support of quantitative findings obtained from the survey.

Participants

In the qualitative phase of the exploratory sequential design, semi-structured individual interviews and focus group discussions were conducted with stakeholders, including classroom teachers, parents of first-grade primary school students, and field experts.

Figure 1.

The Place of the "Determining Needs and Setting Goals" Part in the Research Design



The classroom teachers who involved in the semi-structured individual interviews were selected based on the criterion of teaching first grade in upper, middle, and lower socio-economic neighbourhoods. In this way, three teachers were selected from upper socio-economic schools, four from middle socio-economic schools, and one from a lower socio-economic school. The demographic information of the teachers is presented in Table 1.

Table 1.
Demographic Information of Classroom Teachers Participating in the Interviews

Code Name	Years of Professional Experience	First-Grade Teaching Experience	Cities Where Assigned	School
Muzaffer	18	Five times	Muş, Ağrı, Eskişehir	A
Metin	15	Four times	Bingöl, Eskişehir	A
Hülya	5	First time	Konya, Eskişehir	A
Zeycan	2	Five times	Eskişehir	B
Yetkin	26	Six times	Ankara, Van, Eskişehir	B
Sinem	18	Five times	Erzurum, Diyarbakır, Bolu, Eskişehir	B
Haydar	16	Three time	Van, Niğde, Eskişehir	B
Gülsüm	11	Three time	İstanbul, Eskişehir	C

The parents who will involve in the focus group discussion were also selected according to the criteria sampling. The demographic information of six parents who volunteered to involve from a lower socio-economic school is presented in Table 2. A lower socio-economic school was selected to take into account the reflections of limited environment and insufficient learning opportunities and to identify as many needs as possible related to involvement within this scope.

Table 2.
Demographic Information of Parents Participating in the Interview

Code Name	Employment Status	Number of Children	Student's Gender
Hacer	Not Working	2	Male
Tülay	Not working	1	Male
Melahat	Working	1	Male
Sümbül	Not working	2	Female
Zeynep	Not working	2	Male
Pelin	Not working	2	Male

The last stakeholder group whose views were sought regarding family involvement was field experts. In determining the experts, criteria and appropriate

sampling methods were used. Five academics from three different state universities who met the criteria of having conducted research in the field of early reading and writing, having teaching experience in early reading and writing, and having taught early reading and writing at the undergraduate level were reached. Among the field experts who volunteered to involve, one is an associate professor, three are associate professors, and one is a professor.

"Teacher Opinions on Family Involvement in Early Reading and Writing Questionnaire Form," developed based on the findings from the interviews, was distributed online to classroom teachers working across Turkey using the snowball sampling method, and a total of 490 teachers completed the form.

The majority of teachers participating in the study were women (80%). When looking at the educational background of the participants, it was found that 80% were graduates of the Faculty of Education, 11.3% had a master's degree, and 2% had a doctoral degree. In terms of professional seniority, 22% of teachers have 12–15 years of experience, while 17.3% have 16–19 years of experience. Additionally, a significant portion of participants have taught first-grade students four times (17%) and five times (17%) so far. When examining the geographical locations of the institutions where the teachers work, it was determined that 53% are located in city centres and 31% in districts. In terms of socio-economic level, 57% of the schools where teachers work have medium socio-economic characteristics, while 33.3% have low socio-economic characteristics.

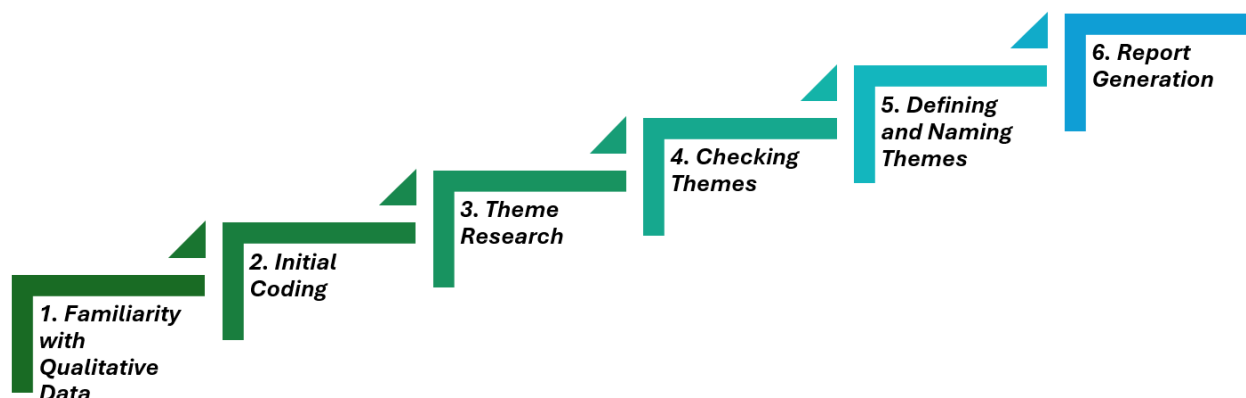
Data Collection Tools and Techniques

In this study, semi-structured individual interview forms, a focus group interview form, and a questionnaire consisting of closed and open-ended questions were used.

A draft teacher form consisting of seven semi-structured questions and a draft expert interview form consisting of six semi-structured questions were presented to six experts. Based on their feedback, the forms were reviewed and revised, and their final versions, including follow-up questions, were finalised.

A draft focus group interview form consisting of six questions was also presented to six experts to reveal families' views and experiences regarding early reading and writing. The final version included seven main questions and various probing questions.

Based on the findings from these interviews, notes from literature reviews, and the outcomes of Turkish language teaching programmes, a draft list of needs for family involvement in early reading and writing was created. Based on these lists, the question pools for the survey were created, and it was decided that the

Figure 2.*Braun and Clarke's (2006) Thematic Analysis Stages*

survey would consist of three sections: a) demographic information, b) needs related to informing families, and c) needs related to family support.

In the first stage, a draft form consisting of Likert-type closed-ended items and three open-ended questions was prepared. This form was submitted to three subject matter experts for evaluation in terms of content, structure, and face validity. Various revisions were made to the form based on the feedback received from the experts. This form, created in Microsoft Word format, was then transferred to the SurveyMonkey platform and reviewed by field experts for feasibility. Subsequently, a pilot application was conducted with 10 classroom teachers using the online version of the form. The teachers who were involved in the pilot study evaluated whether the survey questions were clear and understandable and filled out the "pilot application feedback form" accordingly. Based on the teacher feedback obtained at this stage, the form was reviewed once again, and the necessary adjustments were made to finalise it. The final survey form consists of: a) Demographic Information (seven items structured with a classification scale), b) Needs for Informing Families (17 Likert-type questions and one open-ended question) and c) Needs for Family Support (12 Likert-type questions and two open-ended questions).

The closed-ended items of the "Teachers' Opinions on Family Involvement in Early Reading and Writing Survey Form," which consists of a total of 39 questions, are rated on a seven-point Likert scale. On this scale, "1" is considered "unimportant," while "7" is considered "very important." Additionally, in the online version of the survey, if a participant assigns a score of "1" to any question, the system automatically prompts an open-ended question: "Please explain why you consider it insignificant."

Data Collection Process

Individual interviews and focus group discussions conducted to identify family involvement needs were

carried out face-to-face and recorded using audio recording devices.

The questionnaire form, developed based on qualitative findings in accordance with an exploratory mixed design, was distributed to classroom teachers working in different parts of Turkey using snowball sampling and the SurveyMonkey application. In line with the findings obtained from the questionnaire, the validity of the items included in the draft list of needs was also verified through a wider group of participants (sample).

Data Analysis

Semi-structured individual interviews and focus group interviews were analysed using thematic analysis, depending on the size of the data sets and the researcher's desire to explore different conceptual relationships and conduct in-depth analyses. Braun and Clarke's (2006) thematic analysis stages were used in the process. These stages are shown in Figure 2.

In the thematic analysis process, written transcripts of the video and audio recordings of the interviews were prepared. In the first stage, i.e., the "familiarisation with qualitative data" stage, the transcripts were read repeatedly to gain a deep understanding and internalise the data. In the second stage, concepts, situations, and relationships appropriate to the analysis objective of the research were identified, and the coding process was carried out. The coding process was based on selecting and classifying meaningful units. In the third stage, the coded data was reviewed in detail, codes that did not serve the purpose of the research were eliminated, some codes with similar content were combined, and codes with meaningful relationships were grouped and clustered. In the fourth stage, the clusters were checked again, and those that were unrelated were separated; some new subgroups were identified within certain clusters, or it was observed that an existing cluster encompassed other clusters. In this context, new arrangements were made between the clusters. In the fifth stage, the

themes and sub-themes were finalised and defined with names appropriate to their content. In the final stage, the “report creation” process, the findings of the study were begun to be written alongside other analysis results.

In the analysis of quantitative data obtained through the questionnaire, descriptive statistical methods were utilised. Descriptive statistics involve techniques such as frequency, percentage, measures of central tendency, measures of variability, and correlation coefficients to describe the characteristics of a sample and present them in an organised manner (Büyükoztürk, Çokluk, and Köklü, 2014; Salkind, 2013). In this context, the analysis yielded the mode, percentage, and frequency values. The qualitative data obtained from the three open-ended questions in the survey were evaluated using descriptive analysis methods. The primary reason for choosing descriptive analysis methods was that the open-ended questions had a single, clear purpose and the data set obtained from these questions was limited.

Ethical Considerations

An ethical committee report was obtained from the Anadolu University Research and Publication Ethics Committee prior to conducting the research. Immediately thereafter, an application was made to the Eskişehir Provincial Directorate of National Education, and the necessary permission for data collection was obtained.

All participants who took part in the interviews and completed the questionnaire expressed their consent through voluntary involvement forms. No information that could reveal the identities or personal details of the participants was included in any part of the study, and code names were used where necessary.

Findings

The findings are presented thematically, separated according to the participating stakeholders, and linked where deemed necessary.

Findings Based on Teacher Opinions

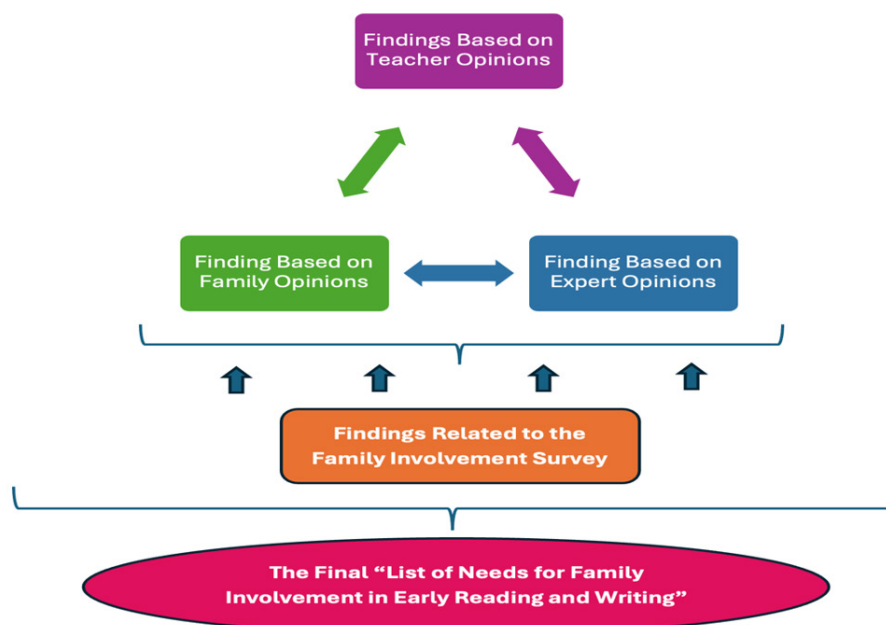
Class teachers’ views on family involvement are grouped under five themes: a) teachers’ perception of family involvement, b) the family involvement process, c) information about involvement, d) general measures related to family involvement, and e) teachers’ training needs regarding involvement.

Teachers’ Perception of Family Involvement

Teachers generally stated that family involvement is an important process, that it has a positive effect on the teaching-learning process, and that family involvement develops students’ sense of responsibility and self-confidence in relation to learning to read and write. According to them, while family involvement provides significant support to teachers, when it becomes overly controlling, it can lead to psychological stress among students, resulting in more harm than benefit. Teachers emphasised that this process should be carried out in a collaborative, coordinated and instantaneous manner. Considering that this stage is the initial stage of reading and writing instruction, they stated that involvement is indispensable. They have stated that if the related skills are not supported in the desired direction at home, the desired results cannot be achieved, emphasising that early reading and writing learning continues at home. Teacher Sinem expresses her views in this regard as follows: “I think the family is very important. Homework, encouraging reading, supporting their work... The family must always be there for the child.

Figure 3.

The Relational Diagram of the Findings



Otherwise, we achieve our goal later... If the child does not receive enough support from the family, they cannot make good progress on their own and with what the teacher shows them at school." (p. 1)

They have pointed out that the educational level, social environment, and socio-economic conditions of the family directly determine family involvement, and that families with better socio-economic and socio-cultural conditions show more willing involvement in the early reading and writing process. However, almost all teachers have emphasised that they have a participatory parent profile. Yetkin Teacher stated, "My parents repeat the reading and writing homework given by the teacher with their children at home, cooperate with the teacher, and make sure they do their homework" (p. 1), reducing family involvement in early reading and writing to doing homework, but emphasised in later conversations that involvement should be controlled, continuous, and more effective.

Family Involvement Process

Classroom teachers generally stated that families involved by reading stories and creating stories with pictures, asking comprehension questions, providing feedback and corrections, evaluating their children's reading and writing performance, doing practice and repetition homework with their children, and ensuring that letters were written correctly and in the right direction. It is noteworthy that one of the teachers mentioned that they visited families to monitor their involvement and observe the involvement process, but also emphasised that they did not fully understand how an ideal involvement process should be implemented and what it should entail.

Teacher Metin stated that he sought home-based involvement methods, within which families could be involved in the reading and writing development process and make process-based assessments: "This year, I had the parents purchase workbooks, and they did the activities at home. We followed up every week, assessed the children individually, and they were able to involve in the development process to some extent..." (p.3).

Class teachers emphasised the importance of family communication channels in ensuring coordinated and instant communication with families, and stated that they used WhatsApp and closed Facebook groups, phone calls, and individual and group parent meetings to communicate with families in general. In particular, teachers Metin and Hülya requested that families share videos of their involvement in closed groups in order to effectively monitor family involvement and motivate families to involve in the process. From the teachers' views, it is understood that they have not had much experience with class-

based family involvement and that, in general, class-based family involvement takes place in the form of observing lessons during the preparation stage for reading and writing.

In the interviews, it was emphasised that most of the unwanted and incorrect involvement attempts hindered rather than supported the teachers' work. Teachers mentioned that the individualistic and competitive nature of involvement undermined the process. According to them, parents' hastiness in working on sound groups, making students memorise words, teaching letters instead of sounds, thereby confusing students, ignoring and reinforcing incorrect pen-holding habits, causing illegible writing, failing to provide effective feedback and corrections, and writing in incorrect letter forms disrupt the involvement process. Teacher Muzaffer expressed that the impatience of parents, or in other words, their desire for their children to be ahead of other students, leads to unconscious and uncontrolled interventions in the early reading and writing process, which in turn disrupts the coordination between the classroom and the home, as follows: "There is a mindset that 'my child will read faster, mine will be ahead'. They try to act as teachers themselves, and then we end up singing from different hymn sheets. The child gets confused. This individualistic approach disrupts class unity." (p.2)

Teachers have indicated that they need families to involve in many aspects and activities of early reading and writing. In general, they need families to support teaching through sound and legible writing, to practise reading aloud and to model this behaviour, practice penmanship, practise feeling the sounds in words, provide feedback and evaluation on students' activities, act as role model readers, engage in game-based activities with their children, and use reward systems during activities. In addition, they want families to use notebooks effectively and regularly and monitor this habit, do paired line work, write numbers correctly, engage in joint activities aimed at developing fine motor skills, and provide support, especially in the stages of sound perception and reading. Teachers emphasise the importance of activities such as using scissors, playing with play dough, and making letters out of dough for the development of fine motor skills, paired reading methods for fluent reading, and activities such as forming words and sentences from syllables drawn from a tombola, and sentences from words, using 5W1H questions to understand what has been read, and colouring activities involving words containing a specific letter to develop letter awareness. Some teachers, however, emphasised the importance of active family support during the critical and challenging stages of early reading and writing, particularly in the stages of perceiving sounds and blending sounds to form syllables. For

example, Teacher Handan stated that family support is important and indispensable in the first two sound groups for all sounds to be heard, easily distinguished, and phonological strategies to be developed: "Combining sounds, reaching syllables... In order to understand that logic, the family's contribution is essential in the first two sound groups" (p. 2).

Although many teachers stated that family involvement based on the classroom is important, they pointed out that it is not easy for all families to involve at the same time due to spatial constraints and emphasised that classroom-based involvement can be achieved through the individual involvement of families within certain periods. In this context, they have indicated that it would be beneficial for families to involve in class-based activities through drama and play activities, sentence writing competitions, and providing feedback and corrections to writing activities by moving between rows. Some teachers have particularly emphasised the necessity of class-based involvement during the family information process and especially in the preparation for reading and writing and the teaching of the first group sounds. They stated that observing the lesson would internalise the stages of the Sound-Based Sentence Method, improve the quality of home-based involvement, and contribute to the coordination of classroom and home-based activities. Teachers also stated that classroom-based involvement should be limited and suggested that involvement activities should be related to life and freed from monotony.

Information Regarding Involvement

Teachers emphasised that informing families about how involvement should be carried out and what should be taken into consideration is as important as the involvement activities themselves. When the data was analysed, it was found that teachers did not provide specific and detailed information and that they provided general information at meetings at the beginning of the term or through individual meetings. In general, teachers informed parents about the differences between teaching through sounds and letters, the stages of the Sound-Based Sentence Method, the use of writing notebooks, how activities would be evaluated, the sharing of activity guidelines, and supporting pen-holding skills. Emphasising the critical importance of the first weeks in terms of informing parents, Teacher Muzaffer said, "In the first week, I draw up a roadmap for parents and distribute it. I explain to them one by one which letters we will teach and what they should pay attention to." (p. 2)

Despite all this information, teachers believe that parents need to be informed about the stages and functioning of the Sound-Based Sentence Method, how sounds are combined, the teaching plan, how to dictate writing, effective and meaningful ways of

reading, and how to write letter forms correctly and in the right direction. They have emphasised that these information meetings should be conducted in person or online by an expert using visuals, practical examples, and case studies. Teacher Muzaffer also stated that he provided small guidebooklets to participants at the parent meeting to inform them. "In the sound-based method, the family teacher must listen completely and ask questions about anything they do not understand. They must clearly understand what to do to avoid disrupting the process." (p. 1) Sinem Teacher also emphasised the importance of families actively and consistently participating in information meetings, as otherwise, misinformation would do more harm than good to their efforts to involve.

Teachers' Educational Needs Regarding Involvement

Teachers have stated that, in addition to informing families about involvement, they themselves need training, particularly on family involvement processes. They have indicated that they would like to receive training on topics and issues such as interpersonal communication, communication with students, and effective communication methods with families from different generations. They have also emphasised that this training should be interactive, practical, and enriched with visuals, similar to family information sessions. In this context, Teacher Zeycan emphasised the need for teachers to be trained in this direction in order to establish communication channels that will break the family shell and eliminate misconceptions about their children, expressing her opinion as follows: "Sometimes parents think they are doing everything right with their children. We need to break these misconceptions without pushing them away. At this point, I believe that we too need to receive training on effective communication with families." (p.2)

General Recommendations Regarding Family Involvement

Many teachers stated that the control mechanism in family involvement is coordination, that teachers and families should progress in parallel, and that involvement should be continuously active throughout the entire early reading and writing process, not just during a specific period. They also recommended that such involvement should not take on a coercive or oppressive dimension. Two teachers, however, deemed it necessary to use printed materials with a guiding nature for involvement and stated that this would enable families to always have the plans and programmes at their disposal.

Findings Based on Family Opinions

Parents' views on involvement are categorised under four themes: a) the role of the family in education, b) involvement experiences, c) involvement needs, and d) recommendations.

The Role of the Family in Education

In general, parents' views on the role of families in education are similar to those of teachers. Like teachers, parents have stated that family involvement is important, indispensable and essential, that it motivates students and makes them feel valued, and that it harmonises school and home life. One of them, Ms. Melahat, expressed her views as follows: "Children are much more successful when they receive individual attention. When their mother and father are with them, children feel more valuable. I saw this in my own child. When we work together, they become motivated and more enthusiastic." (p. 2)

When examining opinions regarding involvement in early reading and writing programmes, it is evident that family involvement is considered important for a successful process and that involvement enhances reading and writing performance. In particular, some participants emphasised the importance and necessity of inter-family cooperation in involvement, highlighting the negative aspects of individualistic and competitive involvement mentioned by teachers.

Involvement Experiences

Parents stated that mothers play a more active role in early reading and writing, while fathers show limited involvement or none at all due to work and fatigue. Parents also emphasised that siblings play an important role in involvement, that such supportive environments motivate their children, and that siblings of similar ages motivate each other academically even if they do not involve. In this context, some parents mentioned that nieces, nephews, and cousins also take an interest in the reading and writing process and play a motivating role.

During the interviews, parents emphasised the difficulties they experienced in relation to involvement in early reading and writing. After coding the data, it was observed that these difficulties were generally related to the difficulties their children experienced in early reading and writing. In this context, parents generally reported difficulties in writing legibly, omitting letters while writing, writing letters incorrectly (in terms of form and direction), writing within the lines, and confusing letters such as "b" and "d" while writing and reading. In addition, they were unable to determine how to involve in situations related to reading skills such as reading from letters, reading by heart, inability to pronounce sounds (especially the pronunciation of consonants and vowels) and omitting suffixes while reading, and therefore experienced difficulties.

Despite all this, parents stated that they tried to involve by providing feedback and corrections on their children's homework, using reinforcements and rewards, trying to help their children find their mistakes, and watching educational videos related to

phonetics together. Additionally, they explained that they involved in reading competitions organised at school, demonstrated class-based involvement, and that this motivated their children.

Some parents recalled the initial reading and writing process based on sentence analysis and stated that they tried to teach their children by teaching them letters first, which confused their children. Ms. Tülay said, "In our time, they taught us letter by letter. I naturally started that way. But when our teacher said that wasn't the way to do it, I found it difficult, to be honest... It confused the child a bit... There may be other parents who think like me. There is a big difference between the old method and the new one..." (p.7), thus highlighting the need for families to be informed about early reading and writing methods. In this regard, it can be said that the parents' need for information and the teachers' views in this direction are in line with each other.

Need for Involvement

When parents' views on their involvement needs were analysed, it was found that almost all needs were related to overcoming difficulties encountered in involvement. In this context, parents want to be informed about how to blend sounds, how to carry out activities for dividing words into syllables, how to combine letters, how to write letters correctly and in the right direction, what to pay attention to, and how to carry out activities related to the use of affixes. Ms. Zeynep, noting that most parents lack knowledge and experience in combining sounds, expressed her concerns that these issues could be overcome with expert support in the following lines: "I don't know exactly how to combine sounds. For example, when I put some letters together, I can't figure out how to read them. If there were an activity or an example, we could do it at home. I'm afraid of doing something wrong when working with my child." (p. 12) Parents also stated that they needed information about their roles in the preparation for reading and writing and what they should pay attention to when communicating with their children.

Parents who mentioned their general information-based needs structured their remaining needs around classroom-based involvement. In this context, parents emphasised that classroom-based involvement could motivate both themselves and their children and increase cooperation and communication between families. They stated that the Sound-Based Sentence Method would be effective in classroom involvement by using games, songs, and poems in the stages of feeling and recognising sounds and writing and reading letters. They also added that participating in writing instruction by evaluating written products would be beneficial in terms of tracking students' development.

Recommendations

Parents reading the introduction section of the involvement consent form ensured they had an understanding of the scope and process of the research. Perhaps as a result of this awareness, parents made suggestions for the development of a programme and plan for involvement in early reading and writing. In this context, some parents, particularly Ms Pelin, suggested that there should be a written document available to them that they could share with their spouses to ensure coordinated involvement. These parents wanted this guide to include practical information and examples of activities; they also considered it necessary to hold interim meetings and evaluations on the progress of family involvement. Ms. Pelin explained her views as follows: "It would be great if we had a booklet at our disposal so that we knew what to do. I would share it with my husband, and we could work together. Especially if there were examples on topics like sound blending and learning through games, we could provide more informed support." (p. 15)

Findings Based on Expert Opinions

The opinions of experts in the field regarding family involvement in early reading and writing are categorised under the following themes: a) the importance of the family in early reading and writing, b) topics that families need to be informed about, c) home and classroom-based involvement methods, and d) general recommendations.

The Importance of the Family in Early Reading and Writing

Experts have emphasised the importance of emotional family support for children starting primary school, stating that the perception of school created in children directly affects their attitudes towards learning. In this context, they have also emphasised the importance of providing high-quality teaching of writing during the same period. Based on these ideas, experts have stated that family attitudes towards early reading and writing are decisive in the process of adapting to school. In particular, it has been noted that the knowledge and experience of parents regarding reading and writing instruction are decisive in the first impressions children develop towards school. Dr. Yılmaz explained that the anxieties experienced by children in their inner world are often shaped by their families' attitudes towards school and literacy, saying, "The parent's trust in the teacher and the school in primary literacy positively affects the child. The family environment is important for the child to be open to learning..." (p. 2). In this context, it has also emerged that it is necessary to identify the concerns, prejudices, misconceptions, and unrealistic expectations of families regarding the process and to take the necessary steps. Similarly, Dr. Eda states, "When starting to read and write, if the parents are

anxious, the child also becomes anxious. It is very important for them to come to school together with a sense of trust and not to reflect their anxiety on the child while doing reading and writing homework. The way to do this is for teachers to understand families and carry out the process in a coordinated manner..." (p. 1), indicating that the way for stakeholders to get through the process with minimal damage is through coordination between the classroom and the home.

Family-teacher coordination has emerged as an important condition for quality early reading and writing instruction. Experts have stated that the family's harmonious cooperation with the teacher during the teaching process has a direct impact on the student's level of success. Dr. Eda emphasised that "if the family does not work in sync with the teacher, the child skips reading and writing exercises. This creates a sense of failure." (p. 2) She emphasises that the lack of coordination has a direct negative impact on learning outcomes. Additionally, expert opinions reveal that home-based early reading and writing activities not being conducted under teacher supervision and in parallel with classroom instruction negatively affect the student's motivation and sense of self-efficacy.

Dr. Hasan, on the other hand, has demonstrated that communication methods and tools used to ensure coordination can cause more harm than good if they are not used carefully and sustainably. Referring to problems encountered in the use of communication tools, he said, "When I write in the WhatsApp group, only five parents read it. Those who read it either misunderstand or continue reading what they already know. The rest stop following what is going on after a while. Teachers should communicate not only by writing but also through visuals and make sure that their messages reach the recipients." (p. 3) With this statement, he emphasised that digital communication channels are not used effectively enough, which makes teacher-parent coordination difficult. Dr. Yılmaz, who emphasises that digital communication channels should not be used solely for homework announcements, stated, "Teachers should not just make announcements; they should guide and raise awareness. Families should learn from teachers how to support reading and writing, and they should learn this step by step." (p. 2)

In this context, it is clear that the class teacher should be more than just a technician who shares homework assignments and related schedules; they should be an orchestra conductor who directs and coordinates the early reading and writing process. All stakeholders have emphasised the need for coordination between classroom and home-based learning, which should be sustained with the support and supervision of the teacher.

Topics That Parents Need to Be Informed About

This theme points to the risk of families making incorrect interventions in the learning process due to a lack of pedagogical knowledge. Like other stakeholders interviewed, experts also stated that families who are not familiar with sound-based teaching methods can negatively affect the process. Dr. Derya said, "For the process to be carried out more effectively, families should be informed about technical issues. If they do not know how to produce sounds or form syllables, they may force their children to learn using incorrect methods." (p. 2) emphasising that incorrect learning is inevitable if families are not informed. Dr. Eda, on the other hand, expressed her thoughts on the confusion between sounds and letters and the rapid teaching of sound groups as follows: "They are moving through the letters too quickly. We should focus on sounds, not letters. What matters is that the sounds can be understood at the end of the process; our goal is not for the child to quickly pronounce words they do not understand, such as ' '. Families who are unaware of this disrupt the process." (p. 5) All these statements reveal that families must be informed about the objectives and stages of the Sound-Based Sentence Method and the nature of free reading in order to involve effectively.

According to them, the fact that families do not have sufficient knowledge about child development, individual differences and needs causes them to intervene in the process unconsciously. Dr. Eda summarises her views on this subject as follows: "Parents should not compare their children with others, but should try to discover the stage of development they are at and their awareness and differences in relation to language. They should raise awareness about the importance of reading habits. The way to do this is to understand the developmental stage the child is in." (p. 3) It can be said that these views of the experts are parallel to those of classroom teachers.

The experts also emphasised that teachers should adopt an empathetic, constructive and guiding approach when holding information meetings. Dr. Hasan stressed the importance of teachers being supportive rather than judgemental in their relationships with parents: "It is very important for teachers to guide parents without judging or hurting them. Otherwise, parents will disconnect from meetings or online groups, and the teacher's authoritarian attitude will indirectly have a negative impact on reading and writing success..." (p. 3)

Dr. Yilmaz, on the other hand, argued that family education should not only be informative but also interactive and practical: "It is necessary to bring parents into the classroom, have them involve in activities related to the topics they are informed about, and teach them interactively. Simply informing

them is not enough; it does not lead to lasting results without application." (p. 7) According to some experts, this approach can enable the family to become an active participant who learns through experiencing the process.

Home and Classroom-Based Involvement Methods

According to experts, family-supported learning activities carried out in the home environment are of great importance in terms of reinforcing the knowledge and skills students acquire at school. They have stated that these practices should be supportive not only academically but also in terms of psycho-social development. Dr. Eda, in this context, emphasised the impact of making home-based reading and writing activities fun and stated the following: "Reading and writing activities at home should be done like a game, not like a teacher. Let's sing a song, I'll read and you repeat..." (p. 3) This statement highlights the importance of integrating the early reading and writing process into the child's life in a meaningful way.

However, this support process can be detrimental to learning if it is not sufficiently structured. Dr. Hasan stated that families' unconscious interventions can disrupt students' comprehension processes: "They are harming the process with their intention to help. Children move on to the next letter before fully learning the previous one." (p. 2) Most experts believe that this situation can lead to habits that are difficult to reverse, especially in sound-based teaching systems. The relevant findings once again highlight the importance of family information and indicate that involvement should be teacher-controlled and coordinated. In this context, it can be inferred that all stakeholders have similar experiences and thoughts.

Some experts have stated that the presence of parents as observers in the classroom increases families' awareness of the early reading and writing process. According to them, these practices enable families to directly observe the Sound-Based Sentence Method and deepen their pedagogical understanding. Dr. Derya recommended that families be included in the classroom as observers or participants on specific days and at specific times. However, she emphasised that this process must be carefully planned: "If parents are going to help in the classroom, this must be very controlled. We must not make mistakes while trying to do something good." (p. 3) This emphasis highlights the extent to which teacher guidance is decisive in classroom-based involvement.

Dr. Eda, on the other hand, described the transformative effect of classroom-based involvement on the teaching process as follows: "Seeing what we do in class creates change. Many parents said, 'I was doing it wrong with my child.'" (p. 3) This statement shows that it contributes to families redefining their

Table 3.*Descriptive Statistics on Topics on Which Families Need to Be Informed*

Topic Heading	$\bar{X}$	S	Min	Mo
Effective Communication with Children	6.79	0.65	3	7
Areas of Child Development	6.76	0.71	2	7
Children's Developmental Stages	6.68	0.73	2	7
Supporting the Development of Their Children's Fine Motor Skills	6.66	0.68	3	7
How Sounds Are Articulated/Combined	6.43	1.09	1	7
Line Drawing Activities with Children Under the Guidance of the Teacher	6.34	1.02	2	7
Appropriate Reading Distance, Angle, and Location	6.28	0.97	1	7
Proper Sitting Position for Reading and Writing	6.27	1	1	7
Correct Pencil Grip	6.27	1.04	1	7
Writing in Appropriate Size in Line Spacing	6.03	1.15	2	7
Character Form and Direction	6.02	1.34	1	7
Notebook Positioning and Use for Right-handed and Left-handed Students	6.02	1.26	1	7
Providing Home-Based Support for Early Reading and Writing Instruction	6.02	1.37	1	7
Phonics-Based Sentence Method and Stages	5.90	1.35	1	7
Differences Between Sound-Based and Letter-Based Early Reading and Writing Instruction	5.72	1.81	1	7
Classroom-Based Support for Early Reading and Writing Instruction	5.67	1.83	1	7
Number of Movements Required to Write Letters	5.54	1.49	1	7

Table 4.*Descriptive Statistics on Areas Where Families Should Provide Support*

Topic Heading	$\bar{X}$	S	Min	Mo
Supporting Basic Reading Comprehension Skills	6.61	0.74	1	7
Supporting dictation skills	6.54	0.89	1	7
Supporting legible writing skills	6.47	0.95	2	7
Supporting Text Production Skills	6.40	1	1	7
Engaging in activities with their children related to the blending/combining of sounds	6.30	1.17	1	7
Supporting their ability to feel and recognise sounds	6.29	1.23	1	7
Assessing their children's reading and writing performance (providing feedback and corrections, etc.)	6.08	1.34	1	7

supportive roles. Classroom-based involvement strengthens the interaction between the teacher-parent-student triangle by involving not only the child but also the parent in the learning process.

However, it has been noted that if such practices are not sustained and systematised, some parents may develop a tendency to remain mere observers. Therefore, structured observations and practical activities guided by teachers can help families involve more consciously and sustainably in the early reading and writing process.

General Recommendations

Experts have made general recommendations for making family involvement effective in early reading and writing education. These recommendations are, in brief: strengthening teacher-family interaction, raising awareness among families about methods and processes, structuring learning processes through involvement programmes or guides, and developing supportive policies by school management. Three experts, Eda, Derya, and Yilmaz, emphasised that strengthening teacher-family interaction is at the core of all these recommendations. In this context, Eda suggested that family information meetings should be transformed from a one-way transfer of information to a format based on mutual learning: "Parent meetings should not be limited to giving grades. Families should learn from each other, share experiences, and seek solutions" (p. 6). Dr. Yilmaz also argues that the process should not only be based on providing information but also on joint production: "Don't just tell the family about the child's situation; let's think together about what can be done". (p. 9) Dr. Derya, on the other hand, has assigned an important role to administrators in ensuring teacher-family interaction and emphasised that school administrators should encourage teachers to increase family involvement: "Administrators should not leave teachers alone in their relations with parents. Decisions regarding families should be made jointly." (p. 3)

According to experts, in order to improve the quality of family involvement in early reading and writing, the principles of transparency, mutual learning, continuous communication, and constructive guidance should be adopted in home and classroom-based practices. In particular, sample materials to guide home-based practices, plans for classroom-based observations, and family information sessions will facilitate families' conscious and positive contribution to the process. In addition, it is recommended that teachers' skills in establishing relationships with families be developed, that administrators support this process, and that environments conducive to effective family involvement be created.

Findings Related to the Family Involvement Survey

The findings above were used to create a draft list of needs based on notes from literature reviews and the outcomes of Turkish language teaching programmes. The findings of the survey developed based on these drafts are discussed under three headings.

Topics on Which Families Need to Be Informed

Class teachers' views on the topics that families need to be informed about were obtained through 17 Likert-type closed-ended questions. The relevant topic headings and statistical information are presented in Table 3.

When Table 3 is examined, it is observed that teachers place greater importance on informing parents about topics such as developmental processes, effective communication, and fine motor skill development. The fact that the average values are mostly above 6.5 indicates that all items are generally considered important by teachers. The lowest average, 5.53, corresponds to the item "how many movements are required to write letters," revealing that teachers relatively emphasise this technical detail less.

Areas Where Parents Should Provide Support

Classroom teachers' opinions on the areas where parents should provide support and be involved were obtained through 12 Likert-type closed-ended questions. The relevant topic headings and statistical information are presented in Table 4.

When Table 4 is examined, it is observed that family support is expected to contribute to the development of comprehension ($\bar{X} = 6.61$), dictation ($\bar{X} = 6.54$), and legible writing ($\bar{X} = 6.47$) skills. The high average values, similar to those in the informational topics, indicate that all items are generally considered important by teachers. The lowest average score of 6.08 is for the item "evaluating children's reading and writing performance (giving feedback, corrections, etc.)." Teachers' relatively lower scores for this item may stem from concerns that involving families in a technical and critical process such as evaluation may pose certain difficulties.

Teachers' Views on Open-Ended Questions

Teachers' views on informing and involving families were also revealed through open-ended questions in a qualitative context. The results obtained from the descriptive analysis were grouped under the themes of a) raising pedagogical awareness, b) developing home-based practices, and c) improving communication and cooperation opportunities.

Classroom teachers stated that families should view the early reading and writing process as a period of development and avoid making comparisons during this critical period. They emphasised that this can be achieved by raising awareness among families about topics such as areas and stages of development and individual differences. Many teachers emphasised the importance of families understanding children's individual development processes; the phrases "every child learns at their own pace" and "comparisons should not be made" were frequently repeated. This view is consistent with quantitative findings, as the highest scores were given to child development and communication topics.

Within the scope of the home-based applications theme, teachers requested practical contributions at home. In this context, qualitative data shows that expressions such as "creating reading hours at home," "dictation exercises," "writing exercises," and "setting up a library" were prominent. This finding is consistent with the relevant quantitative findings obtained from the survey. In addition, teachers expect families to provide not only academic support but also motivational and emotional support. Family attitudes that positively influence children's attitudes towards learning (patience, encouragement, trust) formed an important theme in the qualitative responses. This supports the high averages in items such as supporting writing habits and legible writing skills.

In the context of improving communication and cooperation opportunities, teachers stated that cooperation with families should be based on order and mutual respect, and that feedback should be constructive. They also predicted that positive communication and cooperation opportunities would increase students' motivation and success in reading and writing.

It can be said that the quantitative and qualitative findings obtained from the survey generally support the findings of the interviews conducted with stakeholders. In other words, the draft list of needs regarding family involvement in early reading and writing was presented to a wider group of participants to verify its validity. Thus, none of the items on the draft list of needs were removed. When the answers to the open-ended questions "What other topics do you think families need to be informed about?", "Do you think families need to provide support in other areas?" and "Do you have any other thoughts you would like to share?" were analysed, it was concluded that new items needed to be added to the lists.

Conclusion, Discussion, and Recommendations

This study has revealed the multidimensional and indispensable role of family involvement in the early reading and writing process and the related

involvement needs through the views of stakeholders, including classroom teachers, families, and field experts.

The interviews with stakeholders revealed a strong consensus that family involvement is a fundamental, necessary, and even mandatory element in helping students achieve the desired level of reading and writing. Similarly, Epstein (2001) identified family involvement as one of the six fundamental elements that directly contribute to student success. This finding is also consistent with the work of Hoover-Dempsey and Sandler (1997), which is based on their model. Family involvement directly shapes not only student achievement but also children's self-efficacy perceptions regarding the literacy process. This common understanding has highlighted the need to reinforce involvement not only through traditional activities but also through systematic information and structured training. In particular, it has been observed that teachers and families face common difficulties at various stages of the early reading and writing process and have similar needs regarding family involvement. This series of needs clearly reveals the sensitivity of the process and the need for guidance for families. At this point, based on Vygotsky's sociocultural theory, the importance of the social environment, especially the expectations and guiding and supportive role of the family and school environment, in individual learning is once again revealed (Vygotsky, cited in Salıcı Ahioğlu, 2006).

All stakeholder groups emphasised that family involvement is of vital importance in every stage of the literacy process, starting from the initial stages of teaching the first sounds, perceiving and recognising sounds, and writing and reading letters. According to the detailed and in-depth findings obtained from the interviews, the main topics requiring family information and involvement are the characteristics of phonics-based literacy, principles related to sound blending (synchronisation), correct spelling techniques, the ability to construct meaningful and correct sentences, methods that support fluent reading/word recognition, the development of fine motor skills, the correct writing of letter shapes and directions, and the development of legible handwriting. The prominence of these topics shows that literacy instruction is not merely a technical process but also a holistic area of development related to cognitive and psychomotor skills (Whitehurst & Lonigan, 1998, cited in McMahon, 2010). Furthermore, these results directly align with the key findings of Carter, Chard, and Pool's (2009) study on early reading and writing skills. Their research revealed that when skills such as phonemic awareness, spelling, and word awareness are supported in the family environment, learning becomes more enduring. These prominent issues indicate that families need to have sufficient knowledge and skills regarding the process and the

methods and techniques used in order to support literacy education. According to the results obtained, providing families with such knowledge and skills, even at a basic level, will support them in participating more consciously, sustainably, and effectively in home and classroom-based collaborative environments. In this context, Leseman and de Jong (1998) also found that education programmes targeting family involvement increased children's comprehension levels and reading habits, thereby highlighting the necessity of teacher-family cooperation.

In the context of home-based involvement activities, it has been emphasised that, in addition to activities such as interacting with reading and writing materials with their children, organising story-reading sessions, and conducting conversations that reinforce reading and writing skills related to daily life, play-based and family-child interaction-based activities should also be encouraged. Similarly, Lonigan and Whitehurst (1998, cited in McMahon, 2010) found that interactive book reading and conversation activities between parents and their children were decisive in students' language development. Furthermore, research conducted by Hirsh-Pasek and others (2009) found that play-based applications support students' development in areas such as sensory awareness, attention span, and cognitive flexibility, particularly during the preschool and early primary school years.

In terms of the class-based involvement process, the importance of activities such as families attending information meetings organised at school, holding one-to-one meetings with teachers and participating in joint working platforms where they can observe student achievement has been emphasised. Whitehurst and Lonigan's (2001) research also shows that physical involvement in the school environment strengthens teacher-family interaction and positively affects students' literacy development. The stakeholders also emphasised that families can involve in the process by engaging in various activities such as games, role-playing, and role-model reading, especially during the stages of introducing the first sounds and writing and reading the corresponding letters. It was also noted that teachers could provide feedback and corrections to students' performance in writing tasks. Such interactions strengthen both students' motivation and expressive language skills, according to the findings of Gest et al. (2004, cited in Clark, 2007a; 2007b). In addition, it offers important opportunities not only for students but also for families in terms of creating pedagogical awareness and developing a sense of responsibility (Gest et al., 2004, cited in Clark, 2007a; 2007b).

The comprehensive qualitative findings obtained from stakeholder interviews show strong consistency with the quantitative and qualitative findings obtained

from the survey, and the survey results obtained from a much larger group of participants support the interview results. Considering the quantitative survey findings, it has been revealed that teachers place greater importance on informing families about issues such as developmental processes, effective communication, and fine motor development. This result supports the related thoughts of some of the stakeholders interviewed and is parallel to the finding emphasised by Cassidy (2004) that "structured motor skill activities in the home environment improve classroom writing performance."

When quantitative findings related to the topics expected to be supported by families were examined, it was concluded that teachers expected support from families in the context of developing reading comprehension, dictation, and legible writing skills. In general, this result is also parallel to the thoughts of the stakeholders interviewed. In this context, the stakeholders interviewed emphasised the need for home-based involvement, particularly in relation to forming meaningful sentences and comprehension skills. Rowe (1991, cited in Clark, 2007a) also emphasises that comprehension and meaningful writing can be developed not only through teacher guidance but also through support from families at home. Similarly, Clark (2007b) emphasises that children's comprehension and narration skills are strengthened by discussing texts at home.

Qualitative responses from the survey highlight the role of the family in developing children's positive attitudes towards learning (patience, encouragement, motivation, instilling confidence). This situation shows that family involvement cannot be limited to teaching reading and writing; planned involvement in the desired direction will motivate students, increase their self-confidence and positive attitudes towards learning, and thus support their reading and writing journey in all its aspects. The findings of Fan and Chen (2001) also reveal that family support positively affects children's social and academic self-confidence, thereby directly increasing their success. In addition, the findings obtained from survey responses and interviews have revealed the necessity of regular and sustainable cooperation between teachers and families based on mutual respect and constructive feedback. Expectations that this cooperation will increase motivation and success in reading and writing have shown strong consistency between quantitative and qualitative data sets. Furthermore, the results are consistent with the culturally based literacy framework proposed by Au (2000), which states that effective literacy is shaped not only by classroom instruction but also by the attitudes and collaborative contributions of the social environment.

In conclusion, this study demonstrates with concrete findings that planned, programmed, and systematic family involvement processes based on needs are not only desirable but also scientifically grounded, key, and indispensable elements for literacy success. The draft list of needs related to family involvement in early reading and writing was presented to a wide range of participants through a survey, thereby ensuring its validity and scope, and it was agreed that no items should be removed from the list. In this context, the draft list of needs was finalised with a few additions based on the open-ended survey results, and the final "List of Needs for Family Involvement in Early Reading and Writing" is included in the appendix. All of this has revealed common needs and expectations among stakeholders regarding family involvement.

These comprehensive findings emphasise the need for education policymakers and practitioners to encourage family involvement, raise awareness among stakeholders and make them an effective part of the process, particularly in the areas mentioned above, through needs-based, programmed and systematic involvement processes that bring together families, children and teachers. Other requirements and recommendations identified in the findings are outlined below:

- Families' involvement in the early reading and writing process should be organised according to needs; the roles of all relevant parties should be clarified, and this involvement process should be continued on a regular basis.
- Family involvement should be implemented at home and in the classroom under appropriate conditions, and these processes should be reinforced with family information meetings tailored to needs.
- Home-based involvement activities should be distinct from the concept of homework in order to ensure that families and children spend enjoyable and quality time together. In this context, activities that can be done together, are game-oriented, fun, and encourage creativity should be designed.
- Family information meetings should meet the needs of stakeholders and include topics that directly contribute to early reading and writing education.
- Information sessions should be organised to help families better understand their children and develop realistic expectations about them, covering the steps of the Sound-Based Sentence Method, the developmental characteristics of first-grade students, and individual differences.

Information

This study is based on the doctoral thesis research titled "The Contribution of the Family Involvement Program to Elementary Reading and Writing Skills" conducted at Anadolu University, Graduate School.

Ethics Committee Approval Information

This research was conducted with permission granted by the Scientific Research and Publication Ethics Committee of the Faculty of Social and Human Sciences at Anadolu University, dated 17/06/2019 and numbered 48879.

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Appendix

LIST OF NEEDS FOR FAMILY INVOLVEMENT IN EARLY READING AND WRITING		
METHOD INDEPENDENT NEEDS	Communicative and Interactive Needs	Teacher-family interaction based on collaborative, coordinated, and immediate communication
		Informing families about effective communication with their children
		Informing families about motivating, reinforcing, and rewarding children
	Development and Individual Characteristics	Providing education to families about areas of development, stages, and characteristics
		Educating parents about individual differences and their reflections on the early reading and writing process
METHOD-DEPENDENT NEEDS	Information-Related Needs	Informing families about the early reading and writing method and process
		Informing families about the timing of transition to free reading and expectations from children
		Participating in meetings and evaluations regarding the implementation and planning of the process
		Informing families about letter-number forms and legible writing
		Informing families about taking a position on reading and writing
		Informing families about book selection and developing a habit of reading books
		Informing families about fluent reading skills
		Informing families about comprehension skills
	Needs for Activities	Supporting families with game-based reading and writing activities
		Supporting families in providing authentic-based reading and writing activities
	Needs Related to the Development of Reading	Supporting the development of families' reading comprehension skills
		Families supporting the development of fluent reading skills
		Families supporting the development of phonemic awareness
		Families supporting the development of phonemic awareness
		Families modelling reading behaviour
	Needs Related to Writing Development	Supporting the development of fine motor skills
		Families providing support for free and regular drawing activities
		Families providing support for legible writing
		Families supporting the appropriate use of punctuation marks
		Supporting families in developing dictation skills
		Supporting families in developing text writing skills
	Assessment Needs	Families modelling writing
		Providing feedback and corrections on families' reading and writing performance
		Families' assessment of their reading and writing performance