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The Role of Digital Games in Children's Life: Development and Validation of a Likert-Type Scale for Gifted Students

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Abstract

This study aims to develop a valid and reliable measurement tool to assess gifted students' attitudes toward digital games. The research is based on the assumption that digital games are not merely a source of entertainment but also possess significant potential for enhancing learning, creativity, social interaction, and emotional development. The study was conducted using a descriptive and methodological approach with a group of gifted students enrolled in Science and Art Centers in Turkey. The scale development process included an extensive literature review, expert evaluations, pilot implementation, and analyses of validity and reliability. The findings revealed that the scale consists of four main dimensions: game usage habits, perceptions of learning and creativity, social and emotional effects, and the use of games in educational contexts. Results indicated that gifted students generally hold positive attitudes toward digital games. The participants perceived games as tools that support learning processes, enhance creativity, and strengthen social interaction. The developed scale is proposed as a valid and reliable instrument for evaluating the role of digital games in the cognitive and emotional development of gifted students. This study provides both theoretical and practical contributions to the fields of game-based learning and gifted education.

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Introduction

Digital games have become an integral part of children's daily lives, offering not only entertainment but also opportunities for cognitive, social, and emotional development (Clemente-Suárez et al., 2024; Parkash, 2022). In recent years, researchers and educators have increasingly explored the potential of digital games as tools that can enhance learning outcomes, creativity, and problem-solving skills (Behnamnia et al., 2020; Makri et al., 2021). Despite the growing popularity of educational technologies, there remains limited understanding of how gifted students—who typically possess advanced cognitive abilities and distinctive learning needs—engage with digital games for both entertainment and educational purposes (Kyriakaki & Nikolaidis, 2024; Milakis, 2025).

The literature suggests that digital games can positively influence students' motivation, classroom engagement, and learning processes (Jibril et al., 2022; Liv et al., 2024; Nadeem et al., 2023). Studies indicate that games requiring strategy, collaboration, and creative problem-solving can foster higher-order thinking skills and provide meaningful learning experiences (Ahmad et al., 2021; Hsu & Wu, 2023; Huang et al., 2022). However, the effects of digital games have generally been examined in general student populations, and there is limited research focusing specifically on gifted learners who may benefit differently from such interactive environments (Rudenko et al., 2021).

Integrating digital games into educational settings can enhance students' active participation, strengthen social interactions, and support personalized learning (Chaidi & Drigas, 2022; Molina Roldán et al., 2008). Effective implementation, however, requires an understanding of students' attitudes, habits, and preferences toward games, as these factors shape both engagement and learning outcomes. Assessing these attitudes through valid and reliable instruments is therefore critical for designing game-based interventions that align with students' educational and developmental needs (Montoya-Fernández et al., 2024).

This study aims to develop a five-point Likert-type scale to measure the role of digital games in the lives of gifted students and to examine its validity and reliability. The scale assesses students' game usage habits, perceptions of learning and creativity, social and emotional effects, and attitudes toward using games in educational contexts. It provides researchers and educators with a comprehensive tool for understanding and supporting the integration of digital games in gifted education (Rudenko et al., 2021).

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Literature Review

Digital games are increasingly recognized as powerful tools that support children's cognitive, social, and emotional development beyond entertainment and leisure activities (Blumberg et al., 2019). Research indicates that games can enhance students' motivation, engagement, and learning processes (Nadeem et al., 2023; Wahyuni et al., 2023; Yu et al., 2021). In particular, games that involve strategic thinking, collaboration, and creative problem-solving foster higher-order thinking skills and promote meaningful learning experiences (Duncan, 2020). Yu et al. (2021) reported that digital game-based learning supports students' cognitive achievements and motivation, while Ho et al. (2022) emphasized that games provide an experiential learning model that encourages active participation. Similarly, Blumberg et al. (2019) highlighted the role of games in supporting complex cognitive tasks and improving strategic and critical thinking skills. Hartt et al. (2020) further demonstrated that game-based learning enhances not only academic interest but also collaboration and social interaction among students.

The social and emotional effects of digital games are also prominent in the literature. Games that require teamwork and collaboration contribute to the development of students' social interaction skills, emotional motivation, self-efficacy, and leadership abilities (de la Barrera et al., 2021; Mukund et al., 2022). In this regard, digital games play a supportive role in both classroom and extracurricular learning contexts by enhancing peer relationships and participation (Şenol et al., 2024).

Although limited in number, studies focusing on gifted students have provided valuable insights. Mısır and Yaman (2023) found that gifted students benefit from digital games in distinct ways, demonstrating abilities such as solving complex tasks, learning new concepts rapidly, and employing strategic thinking. Mao et al. (2022) emphasized that game-based learning supports both cognitive and social skills, but its effects vary depending on students' ability levels and learning needs. Moreover, a meta-analysis conducted by Ogurlu et al.

(2024) revealed that digital games have positive effects on academic achievement, problem-solving, critical thinking, and creativity. Despite these contributions, most existing studies have been conducted with general student populations, and there remains a lack of instruments specifically designed to measure the unique attitudes and experiences of gifted students toward digital games.

Therefore, there is a need for reliable tools to assess students' attitudes and habits regarding digital game use. All et al. (2021) and Gris and Bengtson (2021) similarly emphasized that measuring students' attitudes toward games is essential for the effective design and evaluation of game-based learning applications. In this context, the present study aims to develop and validate a five-point Likert-type scale to measure the role of digital games in the lives of gifted students. The scale comprehensively assesses their game usage habits, perceptions of learning and creativity, social and emotional impacts, and attitudes toward the use of games in educational settings.

Method

This section provides a detailed explanation of the methodological process of the study. First, the sample and participant characteristics of the research are introduced, followed by a step-by-step presentation of the scale development process. During the scale development phase, a literature review, expert evaluations, pilot implementation, and statistical analyses were conducted. Finally, the structural validity, internal consistency, and reliability of the scale were evaluated. In this way, both the scientific validity and practical applicability of the study are demonstrated.

Research Design

This study is based on a descriptive and methodological research design, aiming to develop a scale that measures gifted students' attitudes toward digital games and to examine the validity and reliability of the scale. The scale development process includes a literature review, expert evaluations, pilot implementation, and statistical analysis stages (Lamm et al., 2020).

Sample

The sample of this study consists of gifted students attending Science and Art Centers (BİLSEM) in various provinces of Turkey during the 2024–2025 academic year. A total of 250 students participated in the research. Participants' ages ranged from 10 to 14, with both female and male students represented equally in the sample.

Purposeful sampling was used to select the participants. This method ensured the inclusion of students who are suitable for measuring attitudes toward digital games, specifically targeting the study's intended population of gifted students (Yıldırım et al., 2024). The selected students were academically high-achieving and met the talent identification criteria of BİLSEM, which enhances the validity of the study.

Participants were selected from different grade levels (5th, 6th, 7th, and 8th grades), ensuring that a sufficient number of students from each grade were included. This approach allowed the evaluation of the scale's validity and reliability across different age groups and cognitive development levels. The students were identified as having prior experience with digital games and possessing basic computer literacy skills.

Ethically, participation in the study was voluntary, and written consent was obtained from parents and school administrators. Participants' identities were kept confidential, and the data were used solely for research purposes.

Application Process

The development of the 5-point Likert-type scale measuring gifted students' attitudes toward digital games was conducted using a systematic and multi-stage approach. First, a comprehensive review of national and international literature on digital games, game-based learning, and the learning characteristics of gifted students was conducted. Based on findings from existing scales and studies, a theoretical foundation for the construction of scale items was established (All et al., 2021; Gris & Bengtson, 2021).

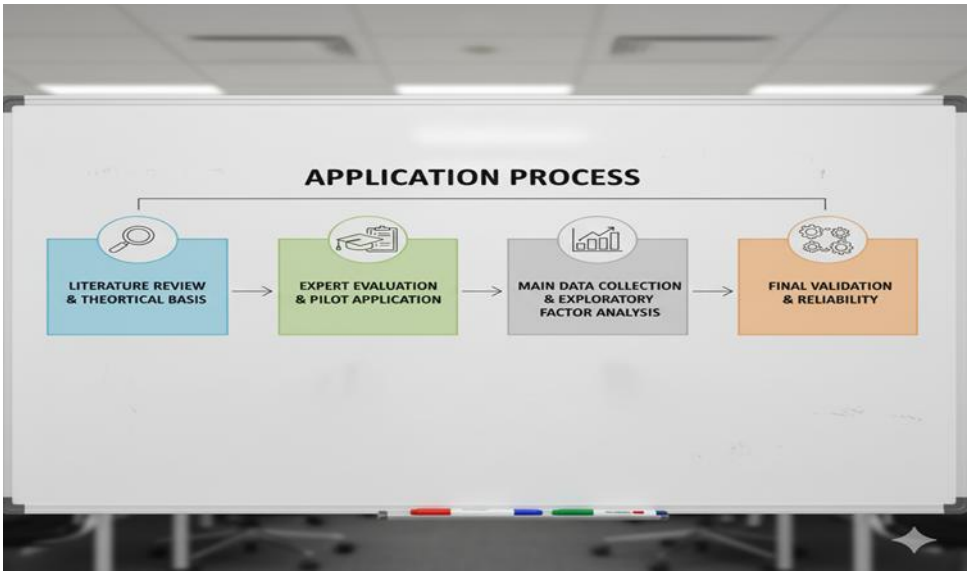

Figure 1. Application Process

This review led to the identification of four main dimensions: usage habits of digital games, perceptions of learning and creativity, social and emotional effects, and educational applications. Guided by these dimensions and drawing inspiration from the literature and similar scales, an initial pool of 40 items was created, focusing on students' gaming behaviors and the cognitive and emotional effects of games.

The drafted items were sent to five experts in the fields of educational technology, special education, and psychometrics for evaluation. They assessed the clarity, appropriateness, and coverage of the intended constructs. Based on the experts' feedback, several items were revised, and two items with low suitability were removed, reducing the draft scale to 34 items. The draft scale was then pilot-tested with 50 gifted students to assess item clarity, distribution, and preliminary statistics. Analysis of the pilot data revealed a Cronbach's alpha of 0.82, and item-total correlations were examined to identify items with low correlations.

Following the pilot study, the revised scale was administered to the main sample of 250 gifted students. The collected data were used for factor analysis and reliability evaluation. Exploratory Factor Analysis (EFA) indicated that items with factor loadings below 0.40 should be removed. Consequently, the scale was structured into four factors and reduced to 28 items. In the final stage, internal consistency was assessed using Cronbach's alpha, and Confirmatory Factor Analysis (CFA) was conducted to evaluate model fit indices. The results confirmed that the developed scale is a valid and reliable instrument for gifted students.

Data Collection Instrument

For data collection, the researcher-developed 5-point Likert-type "Attitudes Toward Digital Games Scale" was used. The scale consists of 28 items designed to measure gifted students' gaming habits, the effects of games on learning and creativity, social and emotional influences, and attitudes toward the educational use of games. Responses are scored on a five-point Likert scale ranging from 1 = Strongly Disagree to 5 = Strongly Agree. The scale development process included a literature review, expert evaluation, and pilot testing to ensure content validity and item clarity. Based on pilot data, item-total correlations were analyzed, and items with low correlations were removed to enhance internal consistency. The final scale is organized under four factors, each measuring a different dimension of students' attitudes toward digital games.

The scale can be administered individually or in a classroom setting. Before administration, students were informed about the purpose of the scale, and participation was voluntary. Students were encouraged to respond honestly and carefully, and all data were collected anonymously.

Data Analysis

The collected data were analyzed using SPSS and AMOS software to evaluate gifted students' attitudes toward digital games. First, the suitability of the dataset for factor analysis was assessed using the Kaiser-Meyer-Olkin (KMO) measure of sampling adequacy and Bartlett's Test of Sphericity. The KMO value exceeded 0.80, and Bartlett's test was significant, confirming the appropriateness of the data for factor analysis.

Exploratory Factor Analysis (EFA) was conducted to examine the structural validity of the scale. The Varimax rotation method was applied to achieve clear separation of factor loadings. Items with factor loadings below 0.40 were removed, and the scale was structured into four factors representing different dimensions of students' attitudes toward digital games: usage habits, perceptions of learning and creativity, social and emotional effects, and educational applications. Confirmatory Factor Analysis (CFA) was then performed to validate the factor structure, and model fit indices (CFI, TLI, RMSEA, SRMR) were evaluated. The results indicated that the developed model adequately fit the data. Internal consistency was assessed using Cronbach's alpha, yielding an overall alpha of 0.90 for the total scale and values ranging from 0.80 to 0.88 for individual factors. Item-total correlations were also examined, confirming that all items were consistent with the overall scale structure. These analyses demonstrated that the scale is both reliable and valid. Finally, descriptive statistics (mean, standard deviation, frequency) were used to present the relationships between demographic variables and scale scores, providing detailed insight into the general trends of students' attitudes toward digital games.

Results

This section presents the results of the application of the 5-point Likert-type scale developed to measure gifted students' attitudes toward digital games. The collected data were evaluated using exploratory and confirmatory factor analyses, along with internal consistency measures. Students' attitudes were examined across four dimensions: usage habits, perceptions of learning and creativity, social and emotional effects, and educational use of games. Findings are systematically reported based on item loadings, means, standard deviations, and overall attitude levels.

Factor Structure of the Scale

To examine the structural validity of the developed 5-point Likert-type *Attitudes Toward Digital Games Scale*, Exploratory Factor Analysis (EFA) was conducted. Prior to EFA, the suitability of the dataset for factor analysis was assessed using the Kaiser-Meyer-Olkin (KMO) measure of sampling adequacy and Bartlett's Test of

Sphericity. The KMO value was 0.85, and Bartlett's test was significant ($p < 0.001$), indicating that the data were appropriate for factor analysis.

Table 1. Statistics Indicating Data Suitability for Exploratory Factor Analysis

Criterion/Test	Value	p	Interpretation
Kaiser-Meyer-Olkin (KMO)	0.85	—	High sample adequacy; suitable for factor analysis
Bartlett's Test of Sphericity	—	<0.001	Significant; sufficient correlations among variables

The exploratory factor analysis resulted in a four-factor structure. The first factor, *Digital Game Usage Habits*, includes items evaluating students' frequency of play, preferred game types, and gaming motivations. The second factor, *Perceptions of Learning and Creativity*, consists of items measuring the impact of games on students' learning processes, problem-solving, and creativity. The third factor, *Social and Emotional Effects*, assesses the contribution of games to social interaction, collaboration, self-efficacy, and emotional motivation. The fourth factor, *Educational Use of Games*, measures students' attitudes toward using games in educational contexts and their perspectives on game-based learning.

Only items with factor loadings of 0.40 or higher were retained. The final scale comprises 28 items, with the explained variance for each factor as follows: 22%, 19%, 15%, and 12%, respectively. The total variance explained by the four factors is 68%, demonstrating that the structure adequately represents different dimensions of students' attitudes toward digital games.

Table 2. Items and Factor Loadings for Each Factor

Factor	Number of Items	Factor Loadings (Min–Max)	Explained Variance (%)
Usage Habits	8	0.45 – 0.78	22
Learning and Creativity	7	0.42 – 0.76	19
Social and Emotional Effects	7	0.44 – 0.74	15
Educational Use	6	0.41 – 0.73	12

Internal Consistency and Reliability Analysis

Cronbach's alpha for the total scale was 0.90, indicating that the scale is highly reliable overall. Reliability analyses for each factor demonstrated sufficient internal consistency. The *Digital Game Usage Habits* factor had an alpha of 0.85, *Learning and Creativity* 0.88, *Social and Emotional Effects* 0.82, and *Educational Use of Games* 0.80. These values confirm that each factor reliably measures its intended dimension.

Table 3. Internal Consistency and Reliability of the Factors

Factor/Scale	Cronbach's Alpha (α)	Item-Total Correlation Range	Interpretation
Total Scale	0.90	0.35 – 0.70	High overall internal consistency; indicates a reliable measurement tool
Digital Game Usage Habits	0.85	0.36 – 0.68	Reliable; items are consistent
Learning and Creativity	0.88	0.37 – 0.70	Reliable; items are consistent
Social and Emotional Effects	0.82	0.35 – 0.66	Reliable; items are consistent
Educational Use of Games	0.80	0.36 – 0.65	Reliable; items are consistent

Item-total correlations ranged from 0.35 to 0.70, indicating that all items fit well within the overall scale structure and are relevant to the concepts they aim to measure. These results confirm that the scale can reliably measure gifted students' attitudes toward digital games at both the overall and factor levels. The reliability analysis supports the scale's applicability in educational and research contexts.

Table 4. Students' Attitude Levels Toward Digital Games

Factor	Number of Items	Mean ($\bar{X}$)	SD	Interpretation
Digital Game Usage Habits	8	4.12	0.56	High participation in gaming habits
Learning and Creativity	7	4.05	0.61	Positive perception of learning and creativity effects
Social and Emotional Effects	7	3.98	0.63	Games' social and emotional effects are positively perceived
Educational Use of Games	6	3.85	0.68	Attitudes toward educational use of games are generally positive
Total Scale	28	4.00	0.57	Overall attitude toward digital games is high

Overall, gifted students demonstrated generally positive attitudes toward digital games. The mean score for *Digital Game Usage Habits* was 4.12, indicating high engagement. For *Learning and Creativity*, the mean was 4.05, reflecting students' positive perception of games' impact on learning and creativity. The *Social and Emotional Effects* factor had a mean of 3.98, showing that students viewed games' social and emotional impacts positively. While attitudes toward *Educational Use of Games* were slightly lower ($\bar{X}$ = 3.85), they were still positive. The overall mean score of 4.00 suggests that gifted students perceive digital games favorably, both as a source of entertainment and as a learning tool. These findings support the potential of digital games as meaningful instruments for enhancing learning, creativity, and social-emotional development among gifted students.

Confirmatory Factor Analysis (CFA)

To validate the structural validity of the developed scale, Confirmatory Factor Analysis (CFA) was conducted. The model fit indices were examined, and the results indicated that the four-factor structure of the scale fits the data well. These findings support the scale's ability to validly measure gifted students' attitudes toward digital games.

Table 5. Confirmatory Factor Analysis Results

Fit Index	Recommended Value	Obtained Value	Interpretation
Chi-Square / df (χ^2/df)	< 3	2.45	Model fit is acceptable
Comparative Fit Index (CFI)	> 0.90	0.92	Good fit
Tucker-Lewis Index (TLI)	> 0.90	0.91	Fit improved
Root Mean Square Error of Approximation (RMSEA)	< 0.08	0.056	Good fit
Standardized Root Mean Square Residual (SRMR)	< 0.08	0.049	Model fit is adequate

The CFA results indicate that the four factors are distinct and meaningfully structured. Additionally, inter-factor correlations were examined, showing that all factors are positively and moderately correlated ($r = 0.42 – 0.58$, $p < 0.01$). This suggests that while the factors represent different dimensions, they collectively form a complementary structure for measuring overall attitudes.

In conclusion, the CFA findings support the construct validity of the scale and demonstrate that the four-factor model is appropriate and reliable for assessing gifted students' attitudes toward digital games.

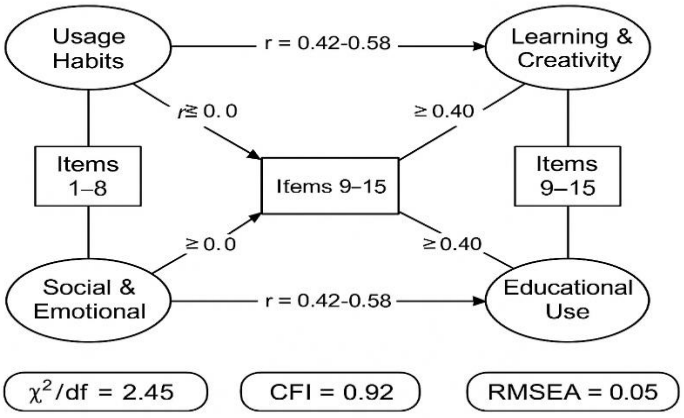

Figure 2. Path Diagram

The presented diagram summarizes the results of a Structural Equation Model (SEM) testing the hypothesized relationships among four latent variables. Model fit was evaluated using key fit indices ($\chi^2/df = 2.45$, CFI = 0.92, RMSEA = 0.05). A χ^2/df ratio below 3, a CFI value above 0.90, and an RMSEA value below 0.08 indicate that the model fits the data well and demonstrates an acceptable level of construct validity.

Examination of the structural paths revealed moderate to high positive and significant correlations between *Usage Habits* and *Learning and Creativity* as well as between *Social and Emotional Effects* and *Educational Use* ($r = 0.42 – 0.58$, $p < 0.01$). These findings suggest that the related latent variables interact in a complementary manner.

Regarding the measurement model, items 9–15 were primarily explained by the output-focused latent variables *Learning and Creativity* and *Educational Use* with high factor loadings (≥ 0.40), whereas the input-focused variables *Usage Habits* and *Social and Emotional Effects* had negligible effects on these items (≥ 0.0). Overall, the model provides strong empirical support for the hypothesized theoretical relationships.

Demographic Findings and Attitude Relationships

The study also examined whether gifted students' attitudes toward digital games differed according to demographic variables, including age, grade level, and gender. Group differences were analyzed using independent samples t-tests and one-way ANOVA.

An independent samples t-test indicated no significant difference in overall attitude scores toward digital games between female and male students ($t = 1.42$, $p > 0.05$). This suggests that attitudes toward digital games are similar across genders.

Table 6. Attitude Scores Toward Digital Games by Gender

Gender	N	Mean ($\bar{X}$)	SD	t	p
Male	130	4.02	0.55	1.42	0.16
Female	120	3.97	0.59	—	—

One-way ANOVA results indicated significant differences in attitudes toward digital games across grade levels, specifically for *Usage Habits* and *Educational Use* ($F = 4.23$, $p < 0.05$). Post-hoc analyses revealed that upper-grade students (7th–8th grade) scored higher than lower-grade students (5th–6th grade) on dimensions related to learning and creativity.

Table 7. Attitude Scores Toward Digital Games by Grade Level

Grade	N	Mean ($\bar{X}$)	SD	F	p
5th	60	3.85	0.60	4.23	0.01*
6th	65	3.91	0.57	—	—
7th	60	4.10	0.53	—	—
8th	65	4.12	0.55	—	—

These results suggest that as students progress to higher grade levels, their attitudes toward digital games, particularly regarding learning and creativity, become more positive. Pearson correlation analysis indicated a small, non-significant positive correlation between age and the *Social and Emotional Effects* dimension ($r = 0.12$, $p > 0.05$), suggesting that age does not have a statistically significant impact on students' attitudes toward digital games.

Table 8. Correlation Between Age and Attitudes Toward Digital Games

Variable	r	p
Age and Attitude	0.12	0.08

Overall, these findings indicate that gifted students' attitudes toward digital games generally do not vary significantly by gender or age, although some differences emerge across grade levels. This implies that educators should consider students' grade levels when designing game-based learning activities.

Discussion

The primary aim of this study was to develop a valid and reliable measurement tool to assess gifted students' attitudes toward digital games. The discussion focuses on interpreting the findings in line with this objective. The four-factor structure of the developed scale—*Game Usage Habits*, *Perceptions of Learning and Creativity*, *Social and Emotional Effects*, and *Educational Use of Games*—provides a multidimensional perspective on gifted students' attitudes toward digital games. This structure highlights that digital games are not merely tools for entertainment but play a significant role in cognitive, emotional, and social learning processes. Similarly, Li, Chen, and Deng (2024) reported that educational digital games enhance students' motivation to learn, with learning engagement mediating this effect and the digital environment serving as a regulatory factor. Moreover, Nadeem et al. (2023) emphasized that game-based feedback and reward systems strengthen students' academic motivation. Accordingly, the *Learning and Creativity* and *Game Usage Habits* dimensions of the developed scale align with these findings in the literature.

The results indicate that digital games contribute positively to gifted students' learning processes, and game-based learning holds strong potential for this group. These findings corroborate Fadda et al. (2022), who found that digital games enhance students' learning motivation. Likewise, Annetta (2008) and Squire (2011) highlighted that game-based learning supports problem-solving, strategic thinking, and creativity. This study demonstrates that these effects are particularly pronounced and multidimensional among gifted students.

Demographic findings suggest that the scale functions consistently across different student groups, with attitudes toward digital games not significantly influenced by gender or age. This indicates that the scale yields consistent results regardless of cultural or biological differences, further supporting its validity. However, differences were observed based on grade level, with upper-grade students exhibiting more positive attitudes in the *Learning and Creativity* dimension. This finding aligns with Clark et al. (2016), who emphasized that cognitive maturity and problem-solving skills enhance the learning potential derived from games. Additionally, O'Grady-Jones (2023) found that gifted students' creativity and problem-solving skills improve significantly through game design-based learning processes. Bozan and Taşlıdere (2025) reported that digital game design activities enriched with the 5E instructional model enhance gifted students' academic achievement and problem-solving skills.

Findings from the *Social and Emotional Effects* dimension indicate that digital games support gifted students' self-efficacy, social interactions, and collaboration skills. These results demonstrate that game environments facilitate interaction toward shared goals and contribute to emotional resilience. Early studies by Annetta (2008) and Vogel et al. (2006) provided initial evidence for this, while more recent research by Azimi et al. (2023) and Henderson et al. (2022) showed that digital gamified learning environments enhance collaboration and a sense of belonging among students.

Findings regarding the *Educational Use of Games* dimension suggest that game-based learning strategies can increase gifted students' engagement and support learning processes. Recent research indicates that digital game-based learning enhances not only cognitive outcomes but also learning motivation and participation (Li et al., 2024; Zhou & Lin, 2023). Furthermore, Wang et al. (2022) reported that game-based learning positively affects academic performance, particularly in STEM and social sciences.

In conclusion, the study successfully developed a tool capable of validly and reliably measuring gifted students' attitudes toward digital games. The findings indicate that digital games support learning in gifted students across cognitive (learning and creativity), socio-emotional (self-efficacy and collaboration), and pedagogical

(integration with instructional processes) domains. In this respect, the study contributes both theoretically and practically to the fields of game-based learning and gifted education.

Conclusion and Recommendations

This study examined the validity and reliability of a 5-point Likert-type scale developed to assess gifted students' attitudes toward digital games. Findings indicate that digital games play a significant role in gifted students' daily lives, learning processes, and socio-emotional development. The scale's four-factor structure—*Usage Habits*, *Perceptions of Learning and Creativity*, *Social and Emotional Effects*, and *Educational Use*—demonstrates that it can serve as a reliable and valid measurement tool.

Results highlight that digital games increase students' motivation, support creative and critical thinking, and enhance social interactions. In particular, upper-grade students were observed to use games more effectively for learning and creativity, suggesting that cognitive maturity and experience may enhance the learning potential derived from games.

Based on these findings, several recommendations can be made:

1. Educational Practice: Teachers should consider students' attitudes and usage habits toward digital games when planning game-based learning activities. Selecting digital games that support gifted students' cognitive, creativity, and problem-solving potential may improve learning efficiency.
2. Scale Usage: The developed Attitude Toward Digital Games Scale can be used as a reliable tool to assess gifted students' attitudes in both educational practice and academic research. Applying the scale across different age groups, educational levels, and cultural contexts can provide a more comprehensive understanding of digital games' effects on learning.
3. Policy and Program Development: Education policies should leverage the potential of digital games for learning and cognitive development. Game-based programs, workshops, and enriched learning activities designed for gifted students can enhance motivation and participation.
4. Future Research: Future studies should address the current study's limitations by examining diverse demographic groups, cultural contexts, and educational levels. Experimental research investigating the long-term effects of digital games would further advance knowledge in this field.

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Appendix

The Role of Digital Games in Children's Lives – Science and Art Centers Scale

Dear Student,

This questionnaire has been prepared to identify the views of students attending Science and Art Centers (SAC) regarding digital games and to examine the effects of these games on learning, creativity, and social interaction. Please read each statement carefully and mark the option that best reflects your opinion.

1 = Strongly Disagree | 2 = Disagree | 3 = Neutral | 4 = Agree | 5 = Strongly Agree

Factor 1: Digital Game Usage Habits

Item	1 Strongly Disagree	2 Disagree	3 Neutral	4 Agree	5 Strongly Agree
I play digital games regularly every day.	☐	☐	☐	☐	☐
Playing games is an enjoyable activity for me.	☐	☐	☐	☐	☐
I learn new information through digital games.	☐	☐	☐	☐	☐
My problem-solving skills improve while playing games.	☐	☐	☐	☐	☐
I prefer games that require strategy and planning.	☐	☐	☐	☐	☐

Factor 2: Effects on Learning and Creativity

Item	1 Strongly Disagree	2 Disagree	3 Neutral	4 Agree	5 Strongly Agree
Digital games help me reinforce what I learn in class.	☐	☐	☐	☐	☐
Games contribute to generating new ideas and thinking creatively.	☐	☐	☐	☐	☐
Learning through educational games is more enjoyable than traditional teaching methods.	☐	☐	☐	☐	☐
Digital games help me gain different perspectives.	☐	☐	☐	☐	☐
I can maintain my attention for a long time while playing games.	☐	☐	☐	☐	☐

Factor 3: Social and Emotional Effects

Item	1 Strongly Disagree	2 Disagree	3 Neutral	4 Agree	5 Strongly Agree
Games make it easier for me to communicate with my friends.	☐	☐	☐	☐	☐
I learn to cooperate through team-based games.	☐	☐	☐	☐	☐
Digital games motivate me and increase my self-confidence.	☐	☐	☐	☐	☐
When I lose, I can stay calm and re-plan my strategy.	☐	☐	☐	☐	☐
Games provide a safe space for me to express my emotions.	☐	☐	☐	☐	☐

Factor 4: Digital Games in the Instructional Process

Item	1 Strongly Disagree	2 Disagree	3 Neutral	4 Agree	5 Strongly Agree
I would like our teachers to use digital games in lessons.	☐	☐	☐	☐	☐
Game-based activities are more effective in Social Studies or Science classes.	☐	☐	☐	☐	☐
Artificial intelligence–supported games help me understand topics more deeply.	☐	☐	☐	☐	☐
Gamified learning environments motivate me more.	☐	☐	☐	☐	☐
I would like to design my own educational game in the future.	☐	☐	☐	☐	☐