Gifted Students' Views on Homework and Screen Addiction Problems with COZE/KOZA Model

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Abstract

This study examines the views of gifted students on homework and screen addiction. Pupils emphasised that giving homework over the internet increases the time spent in front of the screen and that this situation has negative effects. In the project study conducted using the KOZA/COZE model, students suggested that homework should be done at school and under the supervision of a teacher. This solution will reduce students' screen addiction and ensure that homework is completed more efficiently and effectively. This solution, which is similar to the suggestions in the literature, is an important guide for the arrangements to be made in the education system.

Keywords: Gifted students, screen addiction and the KOZA/COZE model.

Introduction

Gifted students are individuals who demonstrate superior performance compared to their peers in general intelligence, creativity, leadership, artistic talent, or special academic areas. These students usually display distinctive characteristics at an early age. For example, early speech, early literacy, a large vocabulary and the ability to solve complex problems are typical characteristics of gifted children. They also tend to be curious, questioning and have an insatiable desire to learn. Gifted children can excel not only in academics but also in areas such as art, music, leadership and psychomotor skills. These students usually have independent study skills and are quite talented at self-learning. In addition, gifted children may be more emotionally sensitive and develop a deeper awareness of the world around them. These characteristics lead to differentiated educational needs in both their academic and social lives (Ataman, 1982; Çağlar, 1972; Sak, 2011).

Another important characteristic of gifted students is their creative thinking and problem solving skills. These students have a talent for finding unconventional solutions, developing different

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perspectives and solving complex problems. Gifted children also tend to show leadership qualities. They excel in group work, enjoy taking responsibility and have a natural ability to lead others. However, these pupils may sometimes find it difficult to get along with their peers because their interests and thinking levels are different from those of their peers. This can lead to social isolation. Gifted students may also be more emotionally intense and sensitive to the problems of the world. These characteristics require a special approach to their education. These characteristics of gifted children require that educational programmes are designed to support both their academic and social-emotional development (Renzulli, 1986; Gallagher, 1976; Sak, 2011).

KOZA is an original learning and project development environment designed to support the project production processes of gifted students (Bülbül, 2024). This model is designed to reveal students' creative potential and develop their deep thinking skills. KOZA's working mechanism is based on four basic stages: Poke, Create, Contrast and Agree. These stages guide students to systematically develop a project idea from start to finish. The first stage, "Catch" a problem (inquiry), is a discovery process in which students try to find a problem by examining sources and discussing their own experiences. In this stage, students, with the guidance of a mentor, search for a problem or an idea that will form the basis of their projects, using various materials and their memories. The second stage, "Occurrence" of solutions, is a brainstorming process in which students seek solutions to the problem they have identified. In this stage, students formulate possible solutions with the help of tools such as guiding commands on the wall and stimulating questions on the table. The third stage, "Zeal" with your partner for the most logical solution, is the stage where students critically evaluate their proposed solutions and identify their weaknesses. In this stage, students try to find the most reasonable and meaningful solution by criticising each other's ideas. The final stage, "Engage" with your partner to execute the chosen solution, is the stage where students make a plan on how to implement the solution they have identified and reach an agreement by sharing the work. This process allows students to develop critical thinking, collaboration and project management skills. These stages of KOZA/COZE facilitate students' systematic development of their ideas and project production, similar to Hegel's 'thesis-antithesis-synthesis' dialectic. This model allows students to acquire project production skills at an early age and to flex these skills to move on to more complex projects in the future (Bülbül, 2024).

In this study, a project study was conducted at KOZA with two gifted BİLSEM students. During the exploratory phase, the two students identified the situation of "assigning homework online" as a problem and wanted to develop an idea for solving this problem.

Literature

Homework has been discussed for many years as an important part of the educational process. Homework is given to students to reinforce the information they learn at school, to develop a sense of

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responsibility and to increase their academic success. However, particularly with the technological developments brought about by the digital age, the impact of homework on students has begun to be re-evaluated. In this study, we will examine the research that has been conducted on the subject and the findings in the literature, focusing on the thesis that homework increases students' screen addiction.

Aims and Functions of Homework

Homework is given to students to repeat, reinforce and correct the information they have learned in school (Cooper, 2001; Özben, 2006). Homework helps students to develop their independent working skills, gain a sense of responsibility and increase their academic success (Büyüktokatlı, 2009). In addition, homework strengthens school-family cooperation by ensuring that families are involved in the educational process of their children (Epstein & Van Voorhis, 2001). However, in addition to these positive effects of homework, there are also concerns that homework increases students' screen addiction, especially with the widespread use of digital devices. A large proportion of homework is now done on computers, tablets or smartphones, significantly increasing the amount of time students spend in front of screens.

Homework and Screen Addiction

The technological possibilities of the digital age have changed the way homework is done. In particular, it has become common for students to do their homework on digital platforms. This has led to an increase in the amount of time students spend in front of screens, and the risk of screen addiction (Dursun, 2021). Doing homework in digital environments leads to students not only completing their homework, but also spending time with social media, games and other digital content.

Studies have shown that the amount of time spent in front of screens has increased, especially among primary and secondary school students, and that this situation has a negative impact on students' physical, mental and social development (Yuladur, 2009; Türkoğlu et al., 2014). Doing homework in digital environments causes students to face problems such as distraction, sleep disturbance and eye fatigue (Şora, 2020). In addition, doing homework on digital platforms increases the tendency of students to copy their homework or use content they find ready on the Internet (Akbaba & Tüzemen, 2015).

Negative Effects of Homework on Students

In addition to increasing students' screen addiction, homework has other negative effects. In particular, excessive homework and homework that is not appropriate to the student's level reduces students' motivation and decreases their desire to do homework (Yuladur, 2009). In addition, family control over homework and students receiving help from their families while doing homework can lead to family conflicts (Türkoğlu et al., 2014).

Homework is also seen to have a negative impact on students' social lives. In particular, a heavy homework load limits students' time to participate in social activities, which hinders the development of students' social skills (Bağlama, 2022). In addition, homework reduces students' time for rest and recreation, which increases students' stress levels, and this negatively affects students' academic performance (Cooper, 2001).

Digitalisation of Homework and Screen Addiction

The digitalisation of homework has increased the amount of time students spend in front of screens, and with it the risk of screen addiction. Especially during the pandemic period, it has become common for students to do their homework on digital platforms, which has significantly increased the time students spend in front of the screen (Dursun, 2021). Doing homework in digital environments means that students not only complete their homework, but also spend time with social media, games and other digital content.

Studies have shown that the amount of time spent in front of screens has increased, especially among primary and secondary school students, and that this situation has a negative impact on students' physical, mental and social development (Yuladur, 2009; Türkoğlu et al., 2014). Doing homework in digital environments causes students to experience problems such as distraction, sleep disorders and eye strain (Şora, 2020). In addition, doing homework on digital platforms increases the tendency of students to copy their homework or use content they find ready on the Internet (Akbaba & Tüzemen, 2015).

Findings and Recommendations From the Literature Review

Homework is given to students to increase their academic success and reinforce their learning. However, the technological possibilities of the digital age have led to concerns that homework is increasing students' screen addiction. Doing homework in digital environments increases the amount of time students spend in front of screens, which has a negative impact on their physical, mental and social development.

In this context, the following five basic suggestions can be made to prevent homework from increasing students' screen addiction:

1- Quality and quantity of homework: Care should be taken to ensure that homework is appropriate to the student's level and meaningful. The amount of homework should be arranged so as not to increase the amount of time students spend in front of the screen.

2- Control of digital homework: When homework is done in digital environments, the time students spend in front of the screen should be controlled. Teachers should develop methods to prevent students from being distracted while doing homework on digital platforms.

3-The role of families: Families should support students with homework and control the time students spend in front of the screen while doing homework in digital environments.

4- Alternative homework methods: Homework should be encouraged to be done not only in digital environments but also by traditional methods. Especially for primary school students, handwritten homework will reduce the time students spend in front of the screen.

5-Make homework fun: Designing homework in a way that attracts students' attention and makes it fun will increase students' desire to do homework and reduce screen addiction (Öztürk Çoşan, 2018).

In the literature, homework is assigned to increase students' academic success, but especially with the technological opportunities brought by the digital age, there is a concern that homework will increase students' screen addiction. Therefore, it is very important that homework is organised in a way that does not increase the amount of time students spend in front of screens and is designed in a way that does not negatively affect students' physical, mental and social development.

Methodology

This section outlines the methodological approach employed in investigating gifted students' perspectives on homework and screen addiction, with a particular focus on the use of the KOZA (COZE) model as an instructional and project-development framework. The method comprises the research design, participant selection, setting and materials, data collection procedures, data analysis strategies, and ethical considerations. By detailing each stage of the process, this section aims to ensure clarity, replicability, and a thorough understanding of how the study's findings were derived.

Research Design

A qualitative case study design was adopted to capture the nuanced views of two gifted students participating in a project-based learning experience using the KOZA (COZE) model. Qualitative inquiry was considered appropriate given the exploratory nature of the study, which sought to unearth students' viewpoints on homework practices and their relationship to increased screen time. The KOZA (COZE) model's emphasis on creativity, problem identification, and collaborative solution-finding provided a structured yet flexible framework for data generation.

The study was carried out in four consecutive stages—mirroring the KOZA (COZE) phases of Catch, Occurrence, Zeal, and Engage—each of which generated specific data points. This process facilitated the in-depth exploration of participants' problem-solving journeys, capturing the evolution of their thoughts regarding homework and screen addiction.

Participants and Sampling

The study involved two students (aged 11 and 12), both identified as gifted through standard intelligence and aptitude assessments administered at BİLSEM (Science and Art Center). These learners

were purposively selected due to their distinct educational needs and demonstrated capacity for advanced cognitive processing, attributes that aligned well with the requirements of the KOZA (COZE) approach. Key inclusion criteria encompassed: enrollment at BİLSEM (ensuring they had previously been assessed as gifted), willingness to engage in a creative, open-ended project and Parental consent for participation in the research.

While the sample size was small, it allowed for a detailed, immersive exploration of each student's experiences, cognitive processes, and emotional reactions related to homework and screen use. In line with qualitative methodology, the richness of participants' insights was prioritized over breadth of sample size.

Setting and Materials

Data collection took place in a dedicated KOZA project room at a BİLSEM facility. This room was designed to stimulate creativity and collaborative problem-solving. Several key materials and resources were used:

KOZA (COZE) Resources

Visual Stimuli: Boards with diverse pictures, question prompts, and stimulus words intended to provoke critical and creative thinking.

KOZA Protocol Guides: Worksheets and brief guidelines explaining each stage (Catch, Occurrence, Zeal, Engage) and corresponding strategies for idea generation.

Print and Digital Resources

Books and Magazines: Provided for additional brainstorming support and to help learners discover real-world examples relevant to the problem at hand.

Digital Devices: Students occasionally used tablets or computers for research, though their usage was minimized in keeping with the project's central concern about screen addiction.

Recording Instruments

Audio Recorder: Used to capture verbal exchanges, brainstorming discussions, and final reflections.

Field Notes and Observation Checklists: Maintained by the researcher to document behaviors, interactions, and emotional responses.

The environment was carefully prepared to ensure a quiet, distraction-free setting that facilitated creative engagement yet allowed the researcher to observe and record participant interactions unobtrusively.

Procedure

The procedure was carried out in alignment with the KOZA (COZE) model's four stages. The entire project spanned approximately four weeks, with sessions scheduled after regular BİLSEM classes.

Catch (Problem Identification and Inquiry)

Orientation: The two gifted students were introduced to the KOZA (COZE) framework. They explored wall-mounted images and written prompts.

Brainstorming: Students perused magazines, books, and other prompts, noting challenges that resonated with them. Through discussion, they converged on the central problem: *"Giving homework online increases screen time and fosters screen addiction."*

Initial Interviews: After the students agreed upon the problem, semi-structured interviews were conducted to document their personal experiences and motivations.

Occurrence (Solution Generation)

Brainstorming Session: Students used the question prompts on tables and walls (e.g., "Change the format," "Expand," "Fix," etc.) to generate potential solutions. They wrote their ideas on a large whiteboard.

Guided Brainwriting: Each student offered individual suggestions, then responded to each other's ideas. The researcher encouraged them to "push" their thinking beyond conventional solutions, especially focusing on balancing academic needs with screen-time reduction.

Zeal (Critical Discussion and Elimination of Ideas)

Collaborative Critique: Students were instructed to evaluate each idea logically and respectfully, referencing real-life constraints such as homework requirements, teacher availability, and school resources.

Elimination Process: Ideas that lacked practicality or contravened resource limitations were crossed out on the whiteboard. The final consensus emerged from sustained dialogue and reflection.

Audio Recording: Throughout this phase, an audio recorder captured the students' points of agreement, disagreements, and rationales for discarding certain ideas.

Engage (Implementation Planning and Agreement)

Action Plan: Once the optimal solution—completing homework at school under teacher supervision—was identified, students collaboratively planned how this method could be presented to peers and potentially to school administrators.

Reflective Discussion: The session concluded with a meta-reflection on the entire process. Students discussed how using KOZA (COZE) influenced their problem-solving and shaped their view on homework tasks.

Data Collection

Data collection encompassed multiple qualitative tools to provide a rich, triangulated understanding:

Semi-Structured Interviews: Conducted at three points—pre, mid, and post-study—to capture evolving perspectives on screen addiction and homework practices. Interview protocols included open-ended questions about students' experiences, challenges, and feelings regarding the digital completion of homework.

Audio and Video Recordings: Primary data derived from participants' dialogues during each KOZA (COZE) session.

Researcher Field Notes: Real-time observations documented affective responses, group dynamics, body language, and incidental remarks that might not surface in formal interviews.

Artifacts: Photographs of whiteboard writings, outlines of proposed solutions, and any visual materials the students produced.

This multi-layered approach to data collection supported credibility by allowing cross-verification among different data sources.

Data Analysis

Qualitative content analysis was employed to interpret the collected data:

Transcription: Audio recordings were transcribed verbatim to ensure accurate representation of student dialogue.

Initial Coding: The researcher carefully read through the transcripts, coding segments of text that reflected attitudes toward homework, experiences of screen usage, or references to the KOZA (COZE) model.

Category Generation: Codes that shared conceptual similarities were grouped into categories such as time management, motivation, teacher supervision, and peer collaboration.

Theme Development: Higher-order themes emerged once categories were further organized and refined. For instance, "Balancing Digital vs. Traditional Homework Methods" and "Teacher Support as a Mitigating Factor for Screen Addiction" captured recurring threads across multiple data sources.

Triangulation: Observational data, interview excerpts, and artifacts were compared for consistency, with any discrepancies prompting deeper re-examination to ensure coherent thematic interpretation.

Throughout this iterative analysis, the researcher drew upon the theoretical underpinnings of creative problem-solving and gifted education to interpret the students' viewpoints accurately. Reflexivity was maintained by keeping a research journal and openly acknowledging the researcher's own assumptions about digital technology and homework practices.

Findings

Solving the Identified Problem in KOZA

After explaining the working principles of KOZA to the students, the project production process began. After looking at the pictures on the board (Figure 1), the students browsed through magazines, books and encyclopaedias and many topics came up but were not selected because they could not be understood. The problem agreed upon in the poke step was identified as "giving homework online".

Figure 1

Students Examining the Board in the First Step (Catch a Problem)

In the "create" stage, which is the stage of generating solutions using the brainstorming technique within the framework of the identified problem, the students first examined the board. All the boards in KOZA are designed to stimulate related and unrelated areas of the brain with different visuals (Figure-2). The commands on the wall and the question patterns on the table guide them in producing solutions. In addition, students can fill in their forms or write on the board if they wish.
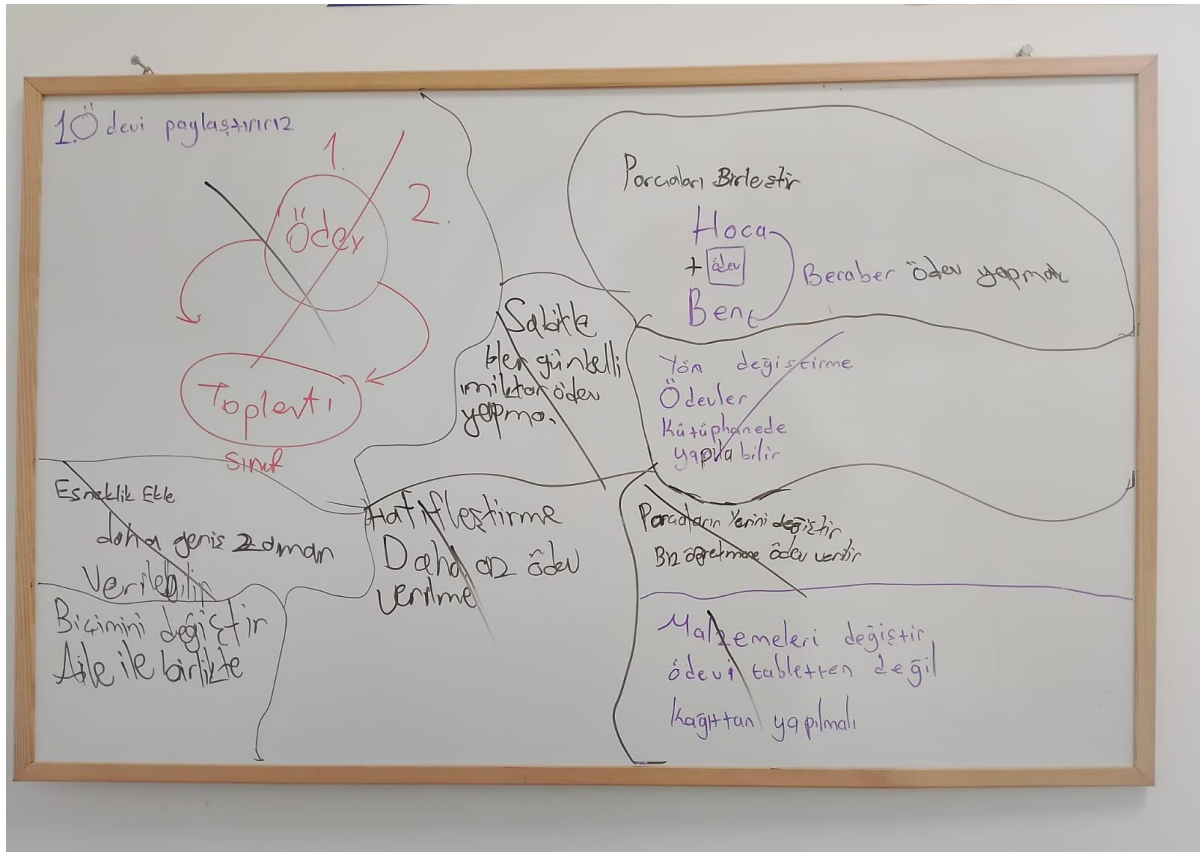
Figure 2

Pupils Producing Solutions to Their Problems (Occurrence of Solutions)

Pupils mentioned the difficulty of finding homework on the internet and admitted that they were immersed in games and videos after doing homework on the tablet. Two science and art students diagnosed as gifted wrote different solutions on the whiteboard (Figure 3). In the following lines, the statements in brackets after the suggestion are the commands written on the wall and table. First, they suggested that the homework should be shared. This way they will spend less time in front of the screen. Then they suggested meetings where they would explain the other parts to each other in a meeting (Break the homework). Then they suggested that the homework should be a fixed amount (Fix). It was also thought that more time could be given (Expand). It was suggested that it should be done with the family (Change the format). It was also suggested that there should be less homework (Make it easier). It was stated that homework could be done in libraries (Change direction). Homework could be given on paper rather than on screen (Change the material). It was stated that students could give homework to the teacher (Connect the pieces). There was laughter at this funny suggestion. Inspired by the questions on the table, they said, "Our mother can give us homework, she doesn't want us to use tablets" (Who). Finally, they thought of doing their homework at school with the teacher. The reason for this idea was the satisfaction they had with the homework they did together after classes in the make-up classes held after the Covid-19 pandemic.

Figure 3

Some of the Ideas Produced by the Students

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The colours of the whiteboard pens used by the students have no meaning and the picture in Figure-3 was formed because they wanted to cross out the ideas they eliminated in the contrast stage. The idea they did not draw was the idea they agreed on. The third stage, the contrast stage, started with the students looking at the board for about 1 minute (Figure 4).

Figure 4

The Stage Where Students Eliminate Each Other's Ideas and Choose the Most Appropriate One (Zeal With Your Partner About Solutions).

The conversation was restarted by reminding the students that they should criticise and refute each other's ideas politely and logically. The students eliminated the ideas they had noted one by one, giving their reasons, and finally proposed and agreed on a solution that did not appear in the literature review (Table 1). When Table 1 was examined, there were more different and more numerous suggestions than those mentioned in the literature. The solution that was understood was to do the homework at school and under the supervision of the teacher (Figure 5).

Table 1

Table Showing the Literature, Their Own Suggestions and Reasons for Elimination Regarding the Identified Problem

Literature Suggestion	Students' Suggestion	Reason for Elimination
A. Quality and quantity of homework	Easier	If there is enough time, the student forgets more.
B. Control of digital homework	Fix	Homework piles up when there is a holiday.
C. Role of the family	Change the format	Our family may have other things to do
D. Alternative homework methods	Change the material	The school cannot always make photocopies
E. Make homework fun	Combine the pieces	The teacher learns what we need to learn
	Expand	
	Tear the homework apart	Our other friend may not understand
	Who	Our mother may not know the lesson
	Change direction	A tablet can be taken to the library, but her mother sees it at home
Solution: Let's do the homework from the last lesson with our teacher and our friends.		

Figure 5

Students Celebrating the Agreed Solution (Engage to Execute the Chosen Solution)

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Discussion and Conclusions

This study explored the views of gifted students on homework and screen addiction. Pupils stated that the assignment of homework over the internet increased the time spent in front of the screen and that this situation had a negative impact on their physical, mental and social development. In the project study, which was conducted using the KOZA (COZE) model, students suggested that homework should be done at school and under the supervision of a teacher. This solution will reduce students' screen addiction and ensure that homework is completed more efficiently and effectively.

There are concerns in the literature that homework is given to increase students' academic success, but that digitalisation increases screen addiction. The solutions suggested by the students in this study are similar to those suggested in the literature, but offer a more innovative and applicable approach. In particular, the suggestion that homework should be done at school will enable students to both complete their homework in a more disciplined manner and reduce the time they spend in front of the screen.

As a result, the views of gifted students on homework and screen addiction are an important guide to what needs to be done in the education system. By taking into account factors such as the quality and quantity of homework, the control of digital homework, the role of families, alternative homework methods and making homework fun, a homework system can be developed that will reduce students' screen addiction and increase their academic success. In this context, implementing the solutions suggested by the students will make the work of both students and teachers easier and create a healthier learning environment.

Research and Publication Ethics
In this study, all rules specified in the "Directive on Scientific Research and Publication Ethics of Higher Education Institutions" were followed. None of the actions specified under the second section of the Directive, "Actions Contrary to Scientific Research and Publication Ethics", have been carried out.)

Disclosure Statements
1. Contribution rate statement of researchers: First Author 100%
2. No potential conflict of interest was reported by the authors.

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