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Full Length Research Paper

Students' views about hidden curriculum practices in science class#

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ABSTRACT

The main objective of this research is to reveal the 5th-grade students' views about the hidden curriculum practices carried out in the science course. The research has been arranged according to qualitative design. The "Interview" technique has been used to determine students ' views on hidden curriculum practices in the science course, and the descriptive analysis approach has been used in analysing the qualitative data that had been collected. The study group of the research consists of 25 randomly selected 5th-grade students at Mavikent Secondary School in the centre of Isparta in the 2018-2019 academic year. As a result of the research, it has been observed that students' attitudes towards hidden program practices were positive. With this research, it is thought that as long as the hidden curriculum practices consummate the missing parts of the official program, it will give more effective results in gaining the targeted results in educational activities.

Keywords: Hidden curriculum, student attitudes, science lesson.

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INTRODUCTION

In the ever-evolving and dynamic global landscape, nations are engaged in a competitive race with each other, striving to elevate both their economic and social living standards. Within countries, both governmental and private institutions are actively engaged in various domains of work to stay competitive and advance their positions. In this context, education occupies a prominent role as a key area of focus (Gündoğdu, 2020). Consequently, nations require structured and systematic programs to effectively manage and execute their educational endeavors. In our country as well, the educational curriculum to be implemented in schools is determined by the Ministry of National Education (MONE). The officially prescribed curriculum, consisting of objectives and subjects outlined by the MEB, is referred to as the formal curriculum. Subsequently, during the implementation phase, the MEB maintains control and oversight over this curriculum (Yıldırım, 2015). Despite the uniform application of the same official curriculum in both public and private schools, variations in the degree of achievement of the intended objectives within the official curriculum have been observed (Adıay, 2011). Among the multiple reasons for these discrepancies across schools, one contributing factor is the concept of the hidden curriculum.

Alongside the explicit, planned formal curriculum applied in educational institutions, the hidden curriculum, termed the hidden curriculum, encompasses the effects on students stemming from their social experiences, societal relationships, the attitudes, values, and beliefs of the educational institution's administrative unit, the implementers of the formal curriculum, namely the teachers, as well as the expectations and desires of parents (Beydoğan, 2012; Gün, 2018). A review of the literature reveals that this concept is denoted by various terms such as "hidden curriculum," "covert curriculum," "undisclosed curriculum," "hidden syllabus," and "non-written curriculum" (Yüksel, 2005). The hidden curriculum

is composed of all knowledge, ideas, and practices — planned or spontaneous — that emerge within the teaching-learning process, extending beyond the explicitly stated aims and activities outlined in the formal curriculum (Gündüz, 2017). This covert curriculum often operates without being explicitly articulated, sometimes even without verbal expression, but conveyed through gestures, facial expressions, and eye contact. Due to its adaptability to diverse educational contexts, this concept has piqued the interest of many researchers, leading to extensive investigations (Akbulut, 2011).

The hidden curriculum that emerges through factors involving school administration, classroom environment, teachers, and students within educational institutions where teaching and learning activities take place holds a distinct significance in the realm of education. This hidden curriculum, in conjunction with the formal curriculum implemented in all educational institutions, exerts an influence on students' academic achievements, as well as their interest in and attitudes toward their subjects (Demir, 2018). Unfortunately, the hidden curriculum, despite its potent capacity to impact students and the quality of education, is not effectively harnessed by educators (Alsubaie, 2015). Considering the positive implications of the hidden curriculum, educational researchers emphasize the insufficient attention given to it within the educational activities conducted in schools (Kuş, 2009).

Planning educational activities solely based on the official curriculum can have negative implications for the teaching and learning process. With the diversification of methods and techniques used in science education, the educational process should not be confined to the boundaries of the formal curriculum. Learning should not be limited to the activities and methods stipulated in the official curriculum alone; it should also encompass hidden curriculum practices that contribute to the construction of knowledge, thereby enhancing the educational process. Taking into consideration factors such as the hidden curriculum can facilitate the achievement of objectives in the teaching and learning process.

In the context of science education, incorporating hidden curriculum practices serves the fundamental purpose of enriching or altering learning pathways, increasing interest in science, and elevating students' science achievement. Within the framework of these hidden curriculum practices, science education offers students the opportunity to explore and apply various aspects of science. An essential factor closely associated with students' academic achievement in science education is their attitude toward science (ÇamlıbelÇakmak, 2006). The foundation of students' attitudes toward science begins to form when they are introduced to science subjects for the first time (Ataş, 2013). While various factors influence students' attitudes toward science, teachers organizing engaging activities in science classes can significantly contribute to fostering a positive attitude toward science (Gündüz and Kale, 2019). In other words, through hidden curriculum practices involving captivating activities, students can develop a positive attitude toward science.

It is thought that if hidden curriculum applications are included in the science lesson, students will participate more actively in the lesson. If the hidden curriculum applications are arranged in a way that will attract the attention of the students and arouse curiosity, the success of the students will increase directly. Every activity that will attract the attention of the student in the educational environment can also affect the attitudes and success of the student. In this context, hidden curriculum applications will both entertain and make the student active. Official curriculum practices in lessons are not always in such a way that the teacher can take the initiative. Since the hidden curriculum will create an environment of freedom for the teacher, it will be easier for the teacher to directly create the environments that will provide the interest and participation of the student. Thus, it is aimed to raise awareness by drawing attention to some hidden curriculum practices that can be done in science lessons.

For these reasons, the fundamental aim of this study is to elucidate the perspectives of 5th-grade students regarding hidden curriculum practices conducted in science education classes. Upon achieving this objective, emphasis will be placed on highlighting the impact of hidden curriculum practices, underscoring the need for teachers to incorporate more practical applications in their science education classes. Despite the existence of diverse studies concerning hidden curriculum practices in the literature, there is a notable lack of research conducted in this specific context. Thus, this study will guide future research endeavors in this area. To achieve this overarching goal, the following sub-objectives have been formulated:

- What are students' opinions regarding the perceived utility of activities related to hidden curriculum practices carried out throughout the academic term?
- How do students perceive changes in their interests and attitudes as a result of hidden curriculum practices?
- What are students' viewpoints regarding the continuation of science education classes in this manner?

By addressing these sub-objectives, the study aims to shed light on students' perceptions of hidden curriculum practices in science education and, in turn, advocate for increased practical applications by teachers in science classrooms. This research will not only contribute to the existing body of knowledge but also serve as a guide for future investigations in this underexplored area.

METHOD

This research has been organized according to a qualitative research design. Qualitative research is defined as an investigation that employs qualitative data collection

methods such as observation, interviews, and document analysis, aiming to present perceptions and events realistically and holistically within their natural context (Yıldırım and Şimşek, 2013). Within the realm of qualitative research designs, a case study design has been utilized. Balcı (2013) defines case studies as methods used to deeply examine one or more incidents, environments, programs, social groups, or interconnected systems. Case studies are employed to elucidate and explore the details constituting an event, to identify or evaluate possible explanations for an event, or to assess value (Balcı, 2013; Büyüköztürk, Kılıç Çakmak, Akgün, Karadeniz, and Demirel, 2014).

Study group

The research was conducted during the fall semester of the 2018-2019 school year at Mavikent Middle School, located in the city center of Isparta, Turkey. The study group consisted of 25 5th-grade students, comprising 12 boys and 13 girls. The reason why the study group was chosen from this school is that the researcher works in this school. For this reason, an easily accessible sample was chosen.

Data collection process

First and foremost, all necessary legal permissions were obtained to conduct the research. In the initial phase of the study, the objectives of the 5th-grade science curriculum for the fall semester were examined, and hidden curriculum practices that could enhance students' understanding of these objectives beyond the formal curriculum were identified. Subsequently, the following steps were followed:

• Hidden curriculum practices that could influence students' attitudes toward science education were determined. In determining this situation, activities that would attract students' attention and issues that would increase their active participation in the course were taken into consideration.
• Alignment of the identified hidden curriculum practices with the curriculum objectives was established. Different activities were designed by looking at the achievements in the Science course curriculum and it was tried to determine which applications the student could achieve the same gains by doing, other than the applications recommended in the official curriculum.
• A "student interview form" was prepared by the researcher for subsequent use.
• Hidden curriculum practices were implemented within the science education classes for the study group students. Throughout the term, the study group students were engaged in various activities as part of the hidden curriculum, which included the following:

- Keeping a science journal
- Compiling a science glossary
- Creating science puzzles
- "Who Am I?" activity
- Lunar observation
- Solar observation
- Preparing a science magazine
- Fruit clock activity
- Illusion presentation
- Origami activity
- Telling jokes activity
- Getting to know my friend better activity
- Demonstrating virtuous behaviors
- Local and out-of-town trips
- "I like science because..." / "I dislike science because..." activity
- Participating in science festivals in our city

• In the final stage, the perspectives of the study group students regarding the hidden curriculum practices were assessed using the "student interview form."

Data collection and analysis

In this research, a "student interview form" was developed by the researchers to gather data regarding the study group students' opinions on hidden curriculum practices. Prior to formulating the interview questions, a literature review was conducted. The prepared interview questions were presented to three academic experts in the field of education within the university's faculty. Necessary adjustments were made based on their feedback, resulting in the final version of the student interview form.

The interview form consists of three semi-structured open-ended questions. Since the study only tried to reveal general impressions, three questions were deemed sufficient. Through interviews, unobservable data such as experiences, attitudes, thoughts, perceptions, interpretations, intentions, and reactions are aimed to be identified. The questions posed through interviews were designed to facilitate students' comfortable, honest, and uninhibited expression of their thoughts, without constraint.

Descriptive analysis was employed for analysing the qualitative data collected in the study. The purpose of using descriptive analysis is to determine the current situation by reflecting the students' views as they are. Descriptive analysis is commonly used in studies where the conceptual framework has been predetermined. In the scope of this study, the collected data were summarized and interpreted according to pre-determined categories. Descriptive analysis involves organizing and interpreting the data obtained from individuals interviewed to present a coherent understanding to other researchers. Accordingly,

the data from the student interview form were first described in a logical and comprehensible manner, and these descriptions were subsequently interpreted.

To ensure the reliability of the research, the opinions of three experts were consulted. By determining the number of agreements and disagreements in these consultations, the reliability of the research was calculated using Miles and Huberman's (1994) formula for reliability (Reliability = Agreement / Agreement + Disagreement). In qualitative studies, achieving a reliability level of 90% or above between expert and researcher evaluations ensures a desired level of reliability. In the specific reliability study conducted for this research, a consensus (reliability) rate of 93% was achieved. Regarding validity, providing a detailed description of the collected data and explaining how the researcher arrived at the conclusions are important criteria for establishing validity (Yıldırım and Şimşek, 2005).

FINDINGS

Three questions were posed to the students regarding the hidden curriculum practices, and these questions were addressed in line with the sub-objectives. The interviews encompassed students' thoughts on the hidden curriculum activities, the extent to which these activities influenced their interest and attitudes toward science education and their perspectives on continuing to teach science with these activities. The results of the analysis conducted for each question are outlined below:

Students' opinions on the beneficial nature of hidden curriculum activities throughout the term

All 25 students in the study group responded to this question. Without exception, students expressed that they had a lot of fun, did not get bored, and enjoyed the activities. This observation suggests that these activities had a positive impact on both students' academic achievements and their interest and attitudes toward the subject. The responses of the students to this question are as follows:

Findings indicating enjoyment

Student 1: "Yes. Because it's very enjoyable. We learn without getting bored."
Student 3: "I think it's great; I'm not bored in class. I eagerly await science class."
Student 4: "Yes. We learn in an enjoyable way without getting bored."
Student 5: "Yes. We're both learning and having fun."
Student 6: "I think it's useful because the activities are very fun."
Student 7: "Yes. Because I have a lot of fun doing this."
Student 8: "Yes. It's useful; without these activities, school would be boring."
Student 9: "It's useful because we both have fun and learn."
Student 11: "I find it useful. Thanks to these, our classes are very enjoyable."
Student 13: "Yes. Because it's a lot of fun."
Student 14: "I find it useful. Because our classes are very enjoyable."
Student 20: "Yes. Because science lessons have become even more enjoyable."
Student 21: "I definitely find it useful. Because the activities are very fun."
Student 22: "Yes. We both have fun and learn."
Student 23: "Yes. We learn new things without getting bored."
Student 24: "Yes. We're having enjoyable science classes."
Student 25: "Yes. It's very enjoyable to both have fun and learn new things."

Findings indicating effectiveness

Student 2: "Yes. Because we learn new things when our teacher takes us to different places."
Student 10: "I find it useful. Because I learn new things."
Student 12: "Yes. We gained new knowledge at science fairs."
Student 15: "Yes. Because it helps us learn more easily."
Student 16: "Yes. Because we're more successful in our classes."
Student 17: "Useful. Because we learn more effectively through different activities."
Student 18: "Yes. We really like the activities our teacher assigns."
Student 19: "Yes. Because it's useful for our lessons."

In accordance with the findings derived from the responses in the student interview form regarding the question "Do you find the activities assigned by the researcher in the science class beneficial throughout the term? Why?", all students expressed that they found the hidden curriculum activities conducted under the researcher's guidance beneficial. They stated that the classes were enjoyable and that they didn't feel bored. Upon examining the students' responses to the question, it becomes evident that they were very pleased while engaging in the activities, had fun, and learned new information without getting bored during the lessons. These findings strongly indicate the utility of hidden curriculum practices. This situation serves as an indicator that the students perceived the activities within the hidden curriculum as beneficial.

Changes in students' interests and attitudes resulting from hidden curriculum practices

All 25 students in the study group responded to this question. Among the students, some expressed that they previously had a limited interest in the science subject, yet their perspective shifted positively due to the activities conducted during the class. Conversely, a portion of the students mentioned that they already held a favourable view of science, but their enthusiasm for the subject grew even stronger as a result of the activities within the science lessons. These observations collectively indicate that hidden curriculum practices have played a significant role in enhancing students' interest and attitudes toward the science class. The verbatim responses of the students to this question are presented below.

Increased interest findings

Student 2: "My interest in science lessons has increased."
Student 7: "No change at all. I was already curious about science. My curiosity continues."
Student 8: "Science lessons used to be very boring, but not anymore."
Student 10: "My interest in science has grown, and I never get bored in class."
Student 13: "My interest in science has increased even more. I now love the subject even more."
Student 19: "It has changed a lot. My interest in science has grown. I love science much more now."

Enhanced enjoyment of the subject

Student 1: "I used to dislike science in elementary school, but now I love it."
Student 3: "I already liked science. Now, science has become my favourite subject."
Student 4: "I used to dislike science in 3rd and 4th grade, but now I love it."
Student 5: "I didn't use to like science much, but now I love it."
Student 6: "I didn't like science in 4th grade, but it's my favourite subject now."
Student 9: "I didn't really like science before, but now I love it."
Student 11: "I didn't like science much before, but now I love it."
Student 12: "I didn't like science in elementary school, but now I love it."
Student 14: "I used to love science, and now I love it even more."
Student 15: "I'm loving science more and more each day."
Student 16: "I loved science in elementary school, and now it's still one of my favourite subjects."
Student 17: "I used to like science, and now I like it even more."
Student 18: "I didn't like science before. Now I can't wait for science lessons."
Student 21: "I didn't like science as much as I do now."
Student 22: "No change at all. I still love science lessons."
Student 20: "No change at all. I already loved science lessons."
Student 23: "I love science lessons much more now than in elementary school."
Student 24: "I now love science lessons even more."
Student 25: "I used to like science very little. Now I love it a lot."

Based on the findings obtained from the responses in the student interview form regarding the question "How did your interest in and attitude towards the field of natural sciences change throughout the semester? Why?" it can be inferred that certain students, influenced by the conducted activities, transitioned from having no prior affinity for natural science courses to developing a profound fondness for them. Additionally, several students expressed that while they already enjoyed the natural science course, their fondness has intensified over time. Conversely, a few students maintained that their interest in and attitude towards the field of natural sciences remained unchanged, asserting that they already possessed a strong affection for these courses. In conclusion, it can be stated that the majority of students experienced a positive shift in their interest and attitude, aligning with the desired direction.

Views of students on the continued implementation of the natural sciences course

All students have responded to this question. The entirety of the students have expressed a desire for the natural sciences courses to continue being taught through hidden program activities. In their justifications, they have indicated that the classes are enjoyable and they do not experience any boredom during the natural sciences lessons. The responses provided by the students to the aforementioned question are as follows:

Findings indicating enjoyment

Student 2: Yes. The classes are very enjoyable.
Student 3: I would like that. Because the classes are very enjoyable and pleasant.
Student 4: Yes, of course, I would like that. Because our classes are proceeding in a very enjoyable manner.
Student 5: Yes, I would really like it. Because we have a lot of fun during the natural sciences lessons.
Student 6: Yes, I would like it. Because the natural sciences class is proceeding in a very enjoyable manner.
Student 7: Yes. We process our lessons in a very

enjoyable manner.
Student 8: Yes. Because our classes are not boring.
Student 9: I would like it. Because we both study and have fun.
Student 10: I would like it. Because we never get bored while studying.
Student 13: Yes. We always have enjoyable classes.
Student 14: Yes. Because we never get bored.
Student 15: Yes. Because the activities our teacher organizes are very enjoyable.
Student 16: Yes, I would like it to continue in the same way. Because it's very enjoyable.
Student 17: Yes. Because the activities we do are very enjoyable.
Student 19: Yes. Because our classes are very enjoyable.
Student 20: Yes. The natural sciences course has become even more enjoyable.
Student 21: Yes. Our classes are never boring.
Student 23: Yes. Because we cover the lessons without getting bored.
Student 24: I would really like it. Our classes are very enjoyable.
Student 25: I would really like it. Because the activities in our classes are very enjoyable.

Findings indicating effectiveness

Student 1: Yes, I would like that. Because the classes are proceeding very well.
Student 11: Yes, I would like that. Because our classes are progressing very well.
Student 12: I would like it. Because our classes are progressing very well.
Student 17: Yes. Because the activities are very well-done.
Student 22: Yes. Because I don't want our class to ever end.

Based on the responses provided by students in the student interview form regarding the question "Would you like the natural sciences course to be taught in this manner? Why?" the findings reveal that students find the implementation of the natural sciences course through hidden program activities to be beneficial. This is due to their belief that they both have fun and achieve effective learning outcomes through this approach.

DISCUSSION AND CONCLUSION

The objective of this research was to uncover student perspectives on hidden program implementations spanning five months throughout the fall semester within the domain of natural sciences. The following general conclusions have been drawn:

The natural sciences course is often regarded by a majority of students as potentially biased and challenging. However, the science teachers employ captivating activities to engender an affection for this subject and contribute to the positive transformation of students' attitudes. These captivating activities are primarily embodied by hidden program implementations that, in a way, complement the official curriculum. Given the inherent flexibility of the hidden program, not being explicitly defined in writing and affording teachers creative latitude, it has been observed to yield more effective outcomes than the formal curriculum on several occasions (Yaygın and Dindar 2010; Doğanay, 2007; Tuncel, 2008; Sarı, 2007; Yüksel, 2005).

Hidden program implementations, whose efficacy escalates in tandem with the instructor's proficiency (Ada, Baysal, and Korucu, 2005; MentişTaş, 2004), are also perceived from the student's standpoint as enjoyable, intriguing, curiosity-provoking, and conducing to better academic achievements. Within the ambit of this study, students have articulated that hidden program implementations conducted throughout the fall semester in the natural sciences course have rendered the class more entertaining, fostered a positive enhancement of their interest and attitudes towards the subject, and left them with favourable impressions. The positive nature of students' responses and their fondness for these implementations underscore the favorable impact of hidden program approaches on students' attitudes toward the subject (Akbulut, 2011; ElitokKesici, 2010; Sarı, 2007).

As a result of hidden program implementations, students expressing a positive shift in their interest and attitudes towards the natural sciences course, stating that they have begun to enjoy the subject more, and perceiving an increase in their sense of curiosity, highlight the necessity of incorporating hidden program activities in lessons (Başar, 2011; Yüksel, 2005). The success of a student who is genuinely interested in the subject and remains engaged will inevitably increase over time. In this context, it can be anticipated that when hidden program implementations complement the formal curriculum, more effective outcomes will emerge.

The fact that some students who previously disliked the natural sciences course have expressed a newfound affection for it due to the conducted activities, while others who already liked the course now like it even more, and a few students have maintained their initial interest and love for the subject, underscores that hidden program activities have positively influenced students' attitudes towards the natural sciences course.

Research has also indicated that activities conducted within the scope of hidden program implementations, despite not being part of the formal curriculum, can yield effective results in the enhancement of students' values and attitudes (Beydoğan, 2012; Doğanay and Sarı, 2004; Uygun, 2013; Yurtseven, 2019).

Upon a comprehensive evaluation of the research results, taking into consideration the responses to the interview questions provided by the study group students,

it is evident that students have developed a strong affinity for the natural sciences course that includes hidden program implementations. They have reported not experiencing boredom during the classes and have expressed that the lessons are engagingly conducted. Moreover, they have conveyed their desire for the continuation of such practices. This scenario underscores that hidden program implementations have indeed positively influenced students' interest and attitudes toward the subject (Akbulut, 2011; ElitokKesici, 2010; Mariani, 1999; Sarı, 2007; Tuncel, 2008; Yüksel, 2007).

Suggestions

• This study is limited to the science course only. It is expected that the active participation of the students in the lesson will increase if it is done in other lessons.
• Since hidden curriculum practices provide the opportunity for the teacher to plan the lesson on her own, the activities can be enriched according to the feedback from the students.
• Since hidden curriculum practices are in some cases more effective than the official curriculum, this should be taken into account when preparing the curriculum and some freedoms should be provided to teachers.

Ethical statement

Scientific rules, ethics and citation rules were followed during the writing process of the study titled “Students’ views about hidden curriculum practices in science class”.

No falsification was made on the collected data and this study was not sent to any other academic publication medium for evaluation.

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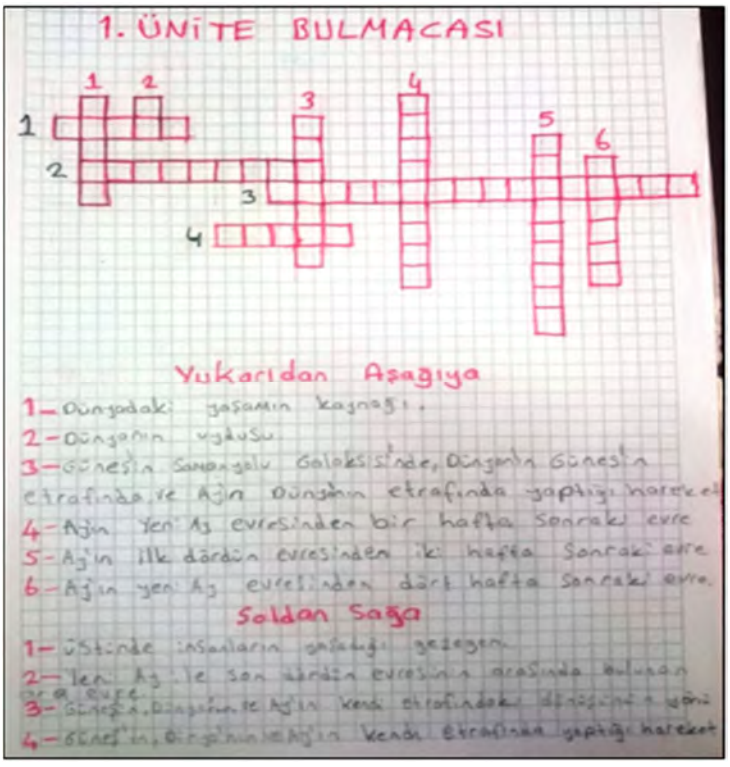
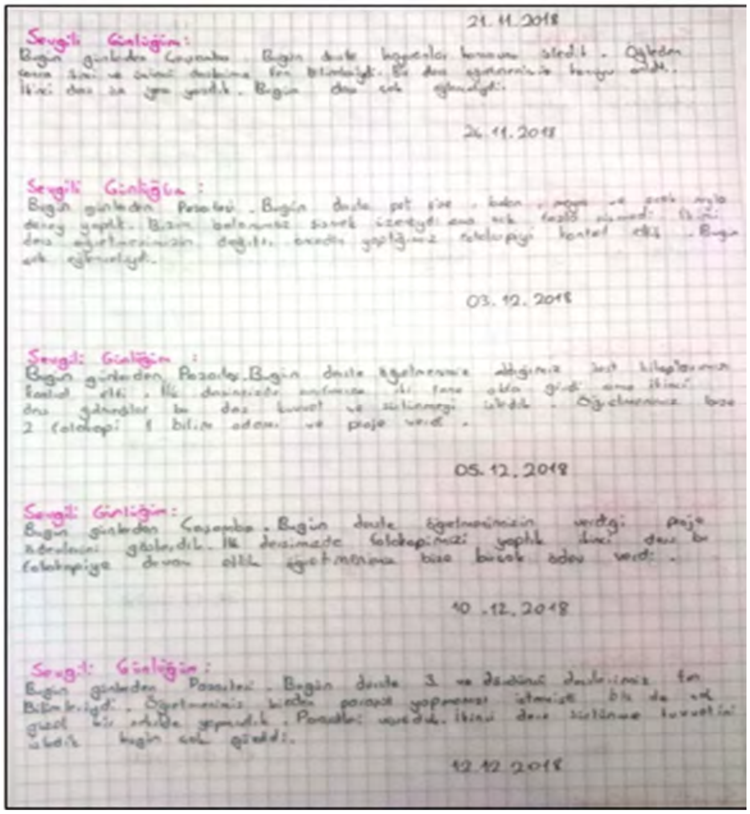
APPENDIX

Examples of hidden program applications

Example 1

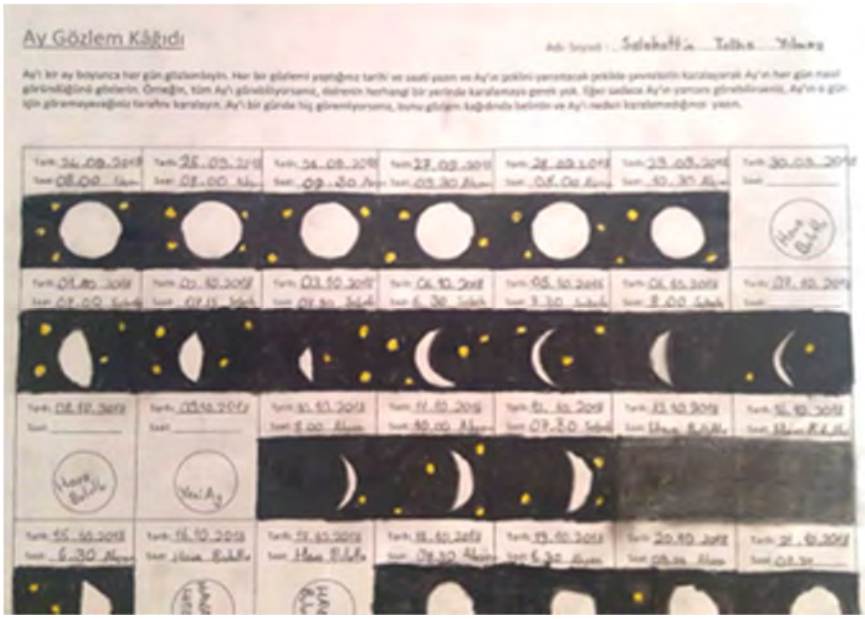


Example 2

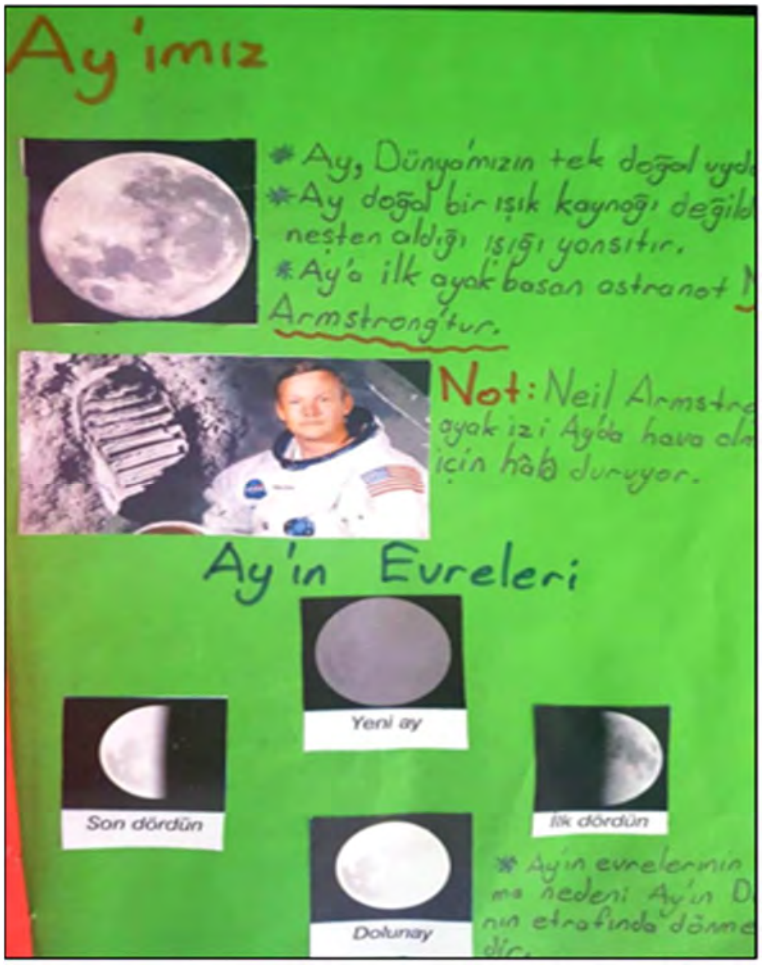


Example 3

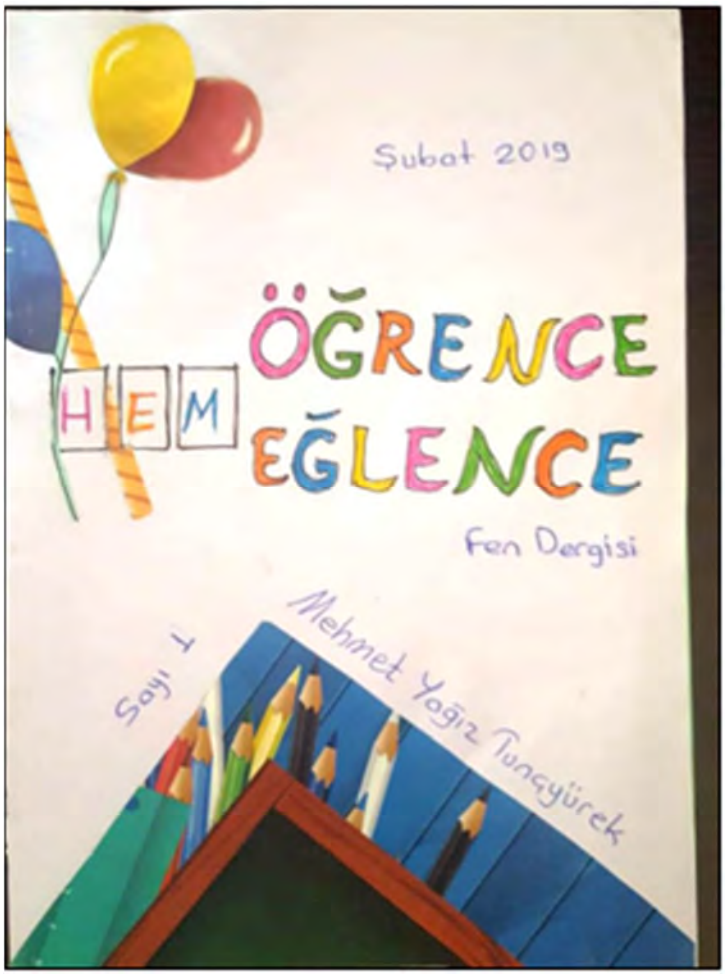
Example 4



Example 5



Example 6


Şubat 2019
HEM
ÖĞRENCE
EĞLENCE
Fen Dergisi
Sayı 1
Mehmet Yağız Tunçyürek

Example 7