Fen Bilimleri Dersinde Yaratıcı Drama: Vücudumuzdaki Sistemler ve Sağlığı Ünitesi Örnek Ders Planları

Creative Drama in Science Class: Sample Lesson Plans for the Systems in Our Body and Health Unit

Yazar Bilgisi/ Author Information

Aysel Nagehan AHISHALI

Milli Eğitim Bakanlığı, Antalya/Türkiye, aysel.nagehan@gmail.com

Tülin TÜMTÜRK

Öğr. Gör., Akdeniz Üniversitesi, Antalya/Türkiye, tulinyilmaz@akdeniz.edu.tr

Ayşe Gül NASIRCILAR

Doç. Dr., Akdeniz Üniversitesi, Antalya/Türkiye, nasircilar@akdeniz.edu.tr

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Özet

Öğrencilere 21. yüzyıl becerilerinin kazandırılmasında oldukça etkin bir rolü olan fen bilimleri dersi içeriğinde soyut kavramlar barındırmaktadır. Bu özelliği nedeni ile çoğu öğrenci için fen bilimleri dersi anlaşılması güç ve zor bir ders haline gelmektedir. Soyut kavramların somutlaştırılması ve günlük hayatla ilişkilendirilmesi açısından oldukça etkili bir yöntem olan yaratıcı drama, öğrencilerin eğlenerek öğrenmesine olanak vermekte ve birçok öğrenci için sıkıcı geçen fen bilimleri dersini daha eğlenceli hale getirmektedir. Buna karşın öğretmenler yaratıcı drama yönteminin sınıflarda uygulanması konusunda zorluk yaşamaktadır. Bunun en önemli nedenleri arasında etkili ders planlarının yetersiz olması yer almaktadır. Bu nedenle fen bilimleri dersini yaratıcı drama yöntemiyle zenginleştirmek için etkili planlar yapılması gerekmektedir. Öğretmenlerin bu yöntemi daha sıklıkla kullanabilmesini teşvik etmek amacıyla bu araştırmada 6. sınıf Vücudumuzdaki Sistemler ve Sağlığı Ünitesinde kullanılmak üzere uzman görüşüyle geçerliliği sağlanmış örnek ders planları hazırlanmıştır. Araştırmada nitel araştırma yöntemlerinden doküman analizi kullanılmıştır. Tarama yoluyla ulaşılan yaratıcı drama tekniklerinden ve yaratıcı dramanın üç aşamasından ilki olan Isınma-Hazırlık bölümlerinde kullanılan oyunlardan Vücudumuzdaki Sistemler ve Sağlığı Ünitesine uygun olanlar seçilmiştir. Çalışma sonucunda "Denetleyici ve Düzenleyici Sistemler" için 13, "Duyu Organları" için 12 ve "Sistemlerin Sağlığı" için 13 adet olmak üzere toplamda 38 adet ders planı hazırlanmış ve bu çalışmada 5 ders planı örnek olarak sunulmuştur.

Anahtar Kelimeler: *Ders planı, Vücudumuzdaki sistemler,Yaratıcı drama yöntemi*

Abstract

Science, which plays a very effective role for students in gaining 21st-century skills, contains abstract concepts in its content. Because of this feature, science has been a challenging course for most students. *Creative drama*, a highly effective method for making abstract concepts concrete and relating them to everyday life, is used by teachers to help students learn through engaging and enjoyable activities, making science lessons more interactive and interesting. However, teachers find it difficult to implement creative drama in the classroom. One of the main reasons for this is the lack of effective lesson plans. Therefore, effective plans should be prepared to enrich the science course with the creative drama method. In order to encourage teachers towards creative drama method, this study proposes sample lesson plans that are validated by experts. These plans have been specifically prepared for use in the Systems in Our Body and Health Unit. Complementary analysis has been used as a qualitative research method in this study. As the first stage of a three-stage process for creating drama, games related to the warm-up and preparation stage have been reviewed and suitable ones selected for the lesson plans in the 'Our Body and Health' Unit. A total of 38 lesson plans were prepared as a result of the study, including 13 for 'Control and Regulatory Systems', 12 for 'Sensory Organs', and 13 for 'System Health'. Three of these lesson plans are presented as examples in this study.

Keywords: *Creative drama method, Lesson plans, Systems in our body*

INTRODUCTION

In today's world, where science and technology are continuously evolving and advancing, an education system has been adopted that emphasizes uncovering students' competencies and skills. Rather than transmitting rote knowledge, this system prioritizes students' construction and internalization of knowledge. The new education system aims to develop scientific thinking, research skills, and problem-solving habits, while also developing 21st-century skills such as discussion, critical thinking, generating new ideas, collaboration, and communication among students (Kahyaoğlu et al., 2010; Uçak & Erdem, 2020). In addition to contributing to the development of 21st-century skills such as collaboration, teamwork, communication, respect for diversity, and openness to criticism, creativity in education is also critically important for product development efforts that support the economic stability of countries (Trilling & Fadel, 2009). In this context, creative drama practices not only enhance individuals' creativity but also facilitate the concretization of abstract concepts and the transfer of knowledge learned in class to real-life situations (Bertiz, 2005; Şahin & Yağbasan, 2012).

The presence of abstract concepts in the content of science courses, which aim to make sense of fundamental scientific concepts and are closely intertwined with everyday life, makes it difficult for individuals to comprehend science. This situation leads to students becoming bored with the course and experiencing academic failure (Sağırlı & Gürdal, 2013; Efe et al., 2021). In today's world, where science and technology are evolving at an extraordinary pace, it is inevitable that societies unable to keep up with these advancements will remain in a passive, consumer role, becoming markets for developed countries and consequently subject to economic exploitation (Önalan, 2020; Ahıshalı, 2021). Consequently, science education is becoming increasingly important, and it becomes a necessity to encourage individuals to develop a positive attitude toward science courses and to pursue careers in science-related fields in the future (Sağırlı & Gürdal, 2013).

Traditional methods and techniques used in lessons are often perceived by students as monotonous, unengaging, ineffective, and it is doomed to be forgotten (Dadük, 2018; Dadük & Dede, 2020; Önalan, 2020). At this point, the creative drama method, which enhances student engagement and promotes retention (Bertiz, 2019), emerges as a powerful alternative (Tümtürk, 2019; Rochovská & Švábová, 2023) to traditional methods, offering significant benefits that enable us to adapt to the demands of the millennial era (Dursun, 2021). All studies related to drama in science education are

based on experiential learning, active participation, and benefiting from the productive nature of drama (Bertiz, 2019). Creative drama not only contributes to making science lessons more concrete and engaging, but also enhances students' accurate understanding of scientific concepts and the relationships between them, while facilitating better retention of the learned material (Sağırlı & Gürdal, 2013; Efe et al., 2021).

In the creative drama method, teachers who assume the role of leaders (Karadağ et al., 2008) need to prepare effective and accurate lesson plans. However, one of the challenges teachers face when using the creative drama method is the lesson planning process, which is essential for effective implementation. Research on the use of creative drama in education has predominantly concentrated on the effectiveness of the drama process. The availability of well-structured, ready-to-use lesson plans would significantly contribute to the wider adoption of this method in classroom settings. Even if these plans are not implemented exactly as written, the activities they contain can be adapted to various subject areas. Furthermore, such resources can provide valuable guidance for teachers in developing their own lesson plans and contribute significantly to their professional development.

The aim of the research is to develop sample lesson plans for science teachers by utilizing the creative drama method and its techniques. The research seeks to answer the following objectives:

Objectives of the Research

Which of the learning outcomes in the 6th-grade science curriculum for the 'Systems in Our Body and Health' unit can be structured in a way that is suitable for the creative drama method?

How can creative drama techniques be integrated into sample lesson plans based on the learning outcomes in the unit 'Systems in Our Body and Health'?

METHOD

Research Model

A qualitative research method has been used in this study. Qualitative research focuses on gaining deeper insights and constructing meaning about a particular topic, with the aim of bringing about changes in individuals' lives (Merriam, 2018). In qualitative research, the research process is flexible and may vary depending on the event, phenomenon, or situation under investigation (Yıldırım & Şimşek, 2018).

In this study, the document analysis pattern from qualitative research methods has been used. The term "document" refers to a broad range of materials, including written, visual, physical, and digital sources. Using documents as data is not different from observation or interviews (Merriam, 2018). Furthermore, document analysis can be employed to analyze educational resources such as textbooks, teacher and student handbooks, lesson and unit plans, and program (curriculum) guidelines (Kıral, 2020; Yıldırım & Şimşek, 2018). Documents can also be produced by the researcher: Documents created by the researcher are produced either by the researcher themselves or by the participants after the research has commenced (Merriam, 2018). In the creative drama method, it is essential for participants to communicate with the group, share past experiences, and take part in creative tasks as social actors (Siyahlı, 2019). This research was planned within the scope of the product development approach of qualitative research designs. During the research process, sample lesson plans were developed and structured through content analysis based on textbooks, teaching programmes and creative drama techniques in line with the learning outcomes of the 6th grade unit on Systems in Our Body and Health. The sample plans presented in this study were developed through document analysis of the topics and concepts found in the textbook (Çiğdem et al., 2018), MEB (2018) Curriculum, and the Education Informatics Network (EBA), as well as the techniques and activities used in the creative drama method and are presented as examples for teachers.

Data Source of the Research

In this research, 38 creative drama-based sample lesson plans were used as the data source.The researcher created these lesson plans, taking into account the learning outcomes of the 'Systems in Our Body and Health' unit in the 6th-grade science curriculum. The lesson plans were prepared based on the 2018 MEB Science Curriculum, the textbook, EBA content and creative drama literature.

Materials Used in the Research

In the study, the 6th grade textbook related to the "Systems in Our Body and Health" unit (Çiğdem et al., 2018), MEB (2018) curriculum, and the resources related to the unit available on the Education Informatics Network website were consulted. In addition, authentic documents related to the topics within the unit (Siyahlı, 2019) were consulted, along with materials such as videos, texts, songs, organ models, playdough, and waste materials (Ahıshalı, 2021).

Data Collection and Analysis

Creative drama techniques and application stages were examined through a literature review (Serin, 2005) and, after consulting with expert drama instructors on topics appropriate for the learning outcomes and subjects of the unit 'Systems in Our Body and Health,' they were determined and presented in accordance with the principles of science education.

FINDINGS

Within the scope of this research, lesson plans were developed with the aim of teaching the 6th grade unit "Systems in Our Body and Health" through techniques of the creative drama method.

Creative drama is a method including activities and materials related to drama (Siyahlı, 2019). This section includes the findings related to the sub-problems; the topics of the lesson plans, the techniques used, and examples from the developed lesson plans.

Table 1 presents the topics and concepts of the sample lesson plans that were prepared.

Table 1

The Topics and Concepts Included in the Sample Lesson Plans

Sample Lesson Plans No.:	Topics of the Sample Lesson Plans	Duration (min.)
1.	The nervous system, parts of the nervous system, central and peripheral nervous system.	50 + 5
2.	The nervous system, parts of the nervous system, central and peripheral nervous system.	70 + 5
3.	The brain, coordinates functioning of the systems.	50 + 5
4.	The cerebellum, coordinates functioning of the systems.	35 + 5
5.	The spinal bulb, coordinates functioning of the systems.	35 + 5
6.	The spinal cord and reflexes: innate and acquired reflexes.	75 + 5
7.	The nervous system: its components, central and peripheral nervous system, senses of vision and hearing, stimulus-response mechanism in the brain and spinal cord, coordinated functioning of the systems.	75 + 5
8.	Endocrine glands and hormones.	70 + 5
9.	Health of endocrine glands; pituitary glands, growth hormone, gigantism, dwarfism.	85 + 5
10.	Endocrine glands; adrenal glands, andrenaline, coordinated functioning of the systems.	65 + 5
11.	Endocrine glands; pancreas, insulin, glucagon.	30 + 5
12.	Endocrine glands; thyroid gland, goiter.	55 + 5
13.	The transition from chilhood to adolescence, adolescent health.	90 + 5
14.	Sensory organs.	60 + 5
15.	Sensory organs; organ of vision, process of vision, parts of the eye, hearing.	60 + 5
16.	Sensory organs; eye health, visual impairment.	55 + 5

Table 1 (continued)

The Topics and Concepts Included in the Sample Lesson Plans

Sample Lesson Plans No.:	Topics of the Sample Lesson Plans	Duration (min.)
17.	Sensory organs; eye health, myopia, cataract.	70 + 5
18.	Sensory organs; eye health, color blindness.	90 + 5
19.	Sensory organs; structure of ear and hearing.	45 + 5
20.	Sensory organs; ear health and eye health, hearing aids.	90 + 5
21.	Sensory organs; organ of smell, nose.	55 + 5
22.	Sensory organs; gustatory organ, tongue.	85 + 5
23.	Sensory organs; relationship between smell and taste, nose and tongue health, Covid-19.	50 + 5
24.	Sensory organs; skin.	50 + 5
25.	Sensory organs; skin, skin health, dermatoscope.	90 + 5
26.	Health of endocrine glands; diabets (diabetes mellitus), blood sugar.	70 + 5
27.	Health of the central nervous system, Alzheimer`s.	45 + 5
28.	Health of the musculoskeletal system.	75 + 5
29.	Health of the nervous system; spinal cord, musculoskeletal system health, coordinated functioning of the systems, SMA.	80 + 5
30.	Health of the digestive system.	75 + 5
31.	Health of the circulatory system; organ donation.	50 + 5
32.	Health of the respiratory system; Covid-19.	90 + 5
33.	Health of the excretory system; hand hygniene, dialysis.	75 + 5
34.	Alcohol and tobacco addiction, coordinated functioning of the systems.	45 + 5
35.	Conscious use of medication.	50 + 5
36.	Green Crescent.	45 + 5
37.	First aid.	60 + 5
38.	Organ donation and organ transplantation.	90 + 5

Table 1 presents the topics, key concepts, and durations of the sample lesson plans developed for the 6th-grade "Body Systems and Health" unit, designed to enhance students' conceptual understanding and health awareness. The plans cover a broad range of subjects—from the nervous system, brain, and spinal cord to endocrine glands, hormones, sensory organs, and the musculoskeletal system—and integrate creative drama techniques and activities to promote active participation (Siyahlı, 2019). Concepts were examined using EBA and the course textbook, with sample lesson plans developed for most, ensuring conceptual coherence and supporting systematic learning. Overall, the table provides a clear overview of topic diversity and the learning opportunities offered through creative drama, reinforcing the study's methodological rigor.

In Table 2, the durations suggested as lesson hours for 3 topics belonging to the ' Systems in Our Body and Health' unit in MEB (2018) curriculum are shown.

Table 2

The Duration Allocated for the Topics of the 'Systems in Our Body and Health' Unit in MEB (2018) Science Curriculum.

Topic Titles of the 'Systems in Our Body and Health' Unit in MEB (2018) Science Curriculum	Recommended Time (class hours)
Regulatory and Control Systems	11 class hours
Sensory Organs	4 class hours
Health of the Systems	3 class hours

Table 3

Recommended Duration for the Sample Lesson Plans in the 'Systems in Our Body and Health' Unit

Topic Categories	Number of Sample Lesson Plans	Lesson Plan Numbers by Topic	Activity Duration	Stretching Duration	Total Duration
Regulatory and Control Systems	13	1–13	19 h 25 min	1 h 25 min	21 h 10 min
Sense Organs	12	14–25	20 h 0 min	1 h 20 min	21 h 20 min
Health of the Systems	13	26–38	21 h 10 min	1 h 25 min	22 h 35 min

When Table 2 and Table 3 are compared, a noticeable difference emerges between the duration recommended in the curriculum and the duration suggested in the sample lesson plans, particularly in the topics of Sensory Organs and Health of the Systems.

Table 4 presents the difference between the number of class hours recommended in the curriculum (MEB, 2018) and the duration proposed in the sample lesson plans.

Table 4

The Difference Between the Suggested Time in the Sample Plans and the Suggested Time in the Curriculum

Topic Categories	Recommended Duration in Curriculum	Total Duration in Sample Lesson Plans	Difference
Regulatory and Control Systems	11 class hours	21 h 10 min	10 h 10 min
Sense Organs	4 class hours	21 h 20 min	17 h 20 min
Health of the Systems	3 class hours	22 h 35 min	19 h 35 min

In Table 4, it is observed that the greatest difference in duration between the sample suggestions and MEB (2018) curriculum appears in the topic Health of the Systems.

Table 5 presents the instructional techniques employed in the sample lesson plans.

Table 5

Instructional Techniques Used in the Sample Lesson Plans

The Sample Lesson Plan No.:	Techniques Used
1.	Improvisation, role playing, dull image, headline, station, modeling of concepts in science.
2.	Improvisation, role playing, pantomime, station, headline, modeling of concepts in science.
3.	Improvisation, role playing, modeling of concepts in science.
4.	Improvisation, role playing, modeling of concepts in science.
5.	Improvisation, role playing, narrative technique, dramatization, modeling of concepts in science.
6.	Improvisation, role playing, pantomime, dramatization, modeling of concepts in science.
7.	Improvisation, role playing, dramatization, headline, modeling of concepts in science.
8.	Improvisation, role playing, dramatization, modeling of concepts in science, small group discussion.
9.	Improvisation, role playing, pantomime, writing in role, modeling of concepts in science.
10.	Improvisation, role playing, pantomime, fluid sculpture, modeling of concepts in science, headline.
11.	Improvisation, role playing, headline, dramatization, modeling of concepts in science.
12.	Improvisation, role playing.
13..	Improvisation, role playing, teacher in role, hot seat.

Table 5 (continued)

Instructional Techniques Used in the Sample Lesson Plans

The Sample Lesson Plan No.:	Techniques Used
14.	Improvisation, role playing, modeling of concepts in science, headline.
15.	Improvisation, role playing, small group discussion, dramatization, modeling of concepts in science, headline.
16.	Improvisation, role playing, simultaneous improvisation, role reversal, large group discussion, headline.
17.	Improvisation, role playing, simultaneous improvisation, role reversal, large group discussion, headline.
18.	Improvisation, role playing, large group discussion, headline.
19.	Dramatization, split screen, improvisation, role playing, station, modeling of concepts in science.
20.	Improvisation, role playing, pantomime, large group discussion, brainstorming.
21.	Whole group improvisation, role playing, dramatization, modeling of concepts in science.
22.	Whole group improvisation, role playing, pantomime, modeling of concepts in science, headline, poetry writing.
23.	Improvisation, role playing, headline.
24.	Improvisation, role playing, whole group improvisation, modeling of concepts in science, station.
25.	Improvisation, role playing, split screen, pantomime, headline.
26.	Improvisation, role playing, split screen.
27.	Gossip circle, improvisation, role playing, group sculptures, large group discussion.
28.	Improvisation, role playing, headline.
29.	Improvisation, role playing, headline.
30.	Improvisation, role playing, simultaneous improvisation, role reversal, six thinking hats.
31.	Improvisation, role playing, simultaneous improvisation.
32.	Improvisation, role playing, pantomime, split screen, headline techniques, narrative.
33.	Improvisation, role playing, simultaneous improvisation, inner monologue.
34.	Improvisation, role playing, modeling of concepts in science, hot seat.
35.	Improvisation, role playing, modeling of concepts in science, hot seat.
36.	Improvisation, role-playing, role cards, headline.
37.	Improvisation, role-playing, headline.
38.	Improvisation, role-playing, writing in role, six thinking hats..

As observed in Table 5, among the techniques inherent to drama, improvisation and role-playing are the most frequently employed. Table 5 illustrates the distribution of

creative drama techniques utilized in the sample lesson plans developed for the unit *"Systems in Our Body and Their Health."* Each lesson plan incorporated one or more techniques, with improvisation and role-playing being consistently applied across all plans. Additionally, techniques such as dramatization, pantomime, frozen image, group discussions, modeling of scientific concepts, headline creation, poetry writing, and Six Thinking Hats were employed to provide variety and depth to the lessons. This distribution is intended to accommodate diverse learning styles, enhance lesson interactivity and student participation, and facilitate effective learning of the topics through creative drama. Furthermore, the table highlights which techniques were predominantly applied in specific lesson plans and demonstrates how the combination of certain techniques served to enrich the instructional process. Table 6 presents the frequency of use of these techniques.

Table 6

The Frequency of Techniques Utilized in the Sample Lesson Plans

Techniques	Frequency	Techniques	Frequency
Improvisation	38	Six thinking hats	2
Role playing	38	Small group discussion	2
Modeling of concepts in science	19	Writing in role	2
Headline	18	Dull image	1
Pantomime	8	Inner monologue	1
Dramatization	8	Leader role	1
Simultaneous improvisation	5	Group sculptures / Table creation	1
Large group discussion	5	Role cards	1
Split screen	4	Brainstorming	1
Station	4	Poetry writing	2
Hot seat	3	Fluid sculpture	1
Role reversal	3	Narration	1
Whole group improvisation	3	Gossip circle	1

As seen in Table 6, the techniques of improvisation and role-playing were used 38 times, while the technique of conceptual modeling in science was used 19 times. The next most frequently used technique, the headline technique, appeared 18 times in the sample lesson plans. The techniques of pantomime and dramatization were each used 8 times; simultaneous improvisation and whole group discussion were each used 5 times; and the techniques of split screen and station work were each used 4 times.

Below are some of the sample lesson plans prepared.

Lesson Plan 3.

Class: 6

Recommended Time: 50 minutes + 5 minutes

Number of the Participants: 12

Location: Drama room or classroom.

Subject: Science.

Topic: The brain, coordinated functioning of the systems.

Learning Outcomes: F.6.6.1.1. Explains the functions of the nervous system, including the central and peripheral nervous systems, using models. F.6.6.1.5. Discusses the impact of regulatory and control systems on the coordinated and systematic functioning of the other body systems (MEB, 2018).

Methods and Techniques: Creative drama method; improvisation, role-playing, techniques for modeling concepts in science.

Materyaller: Music player, pre-prepared song 'Rose Mystery' from Anjelika Akbar's *Bach a L'Orientale* album (originally Johann Sebastian Bach's Little Prelude in C Minor, Bwv 999) (Hunlu, 2010), Akbar (2002), Spotify/ YouTube Music/ Deezer/ YouTube/ Apple Music, 3 dramatic situations, 12 pencils, 3 blank A4 papers.

A. Preparation

Prior to the lesson: In the absence of a dedicated drama room, the desks in the classroom should be rearranged, and cushions should be provided. The classroom/drama room should be cleaned and adequately ventilated to ensure readiness. The temperature, colors, and lighting within the classroom/drama room should be monitored and adjusted. Necessary materials should be procured.

Activity 1 (5 minutes): Participants/students gather in a circle. They count 1-2-3-4-5-6 up to 6. After the participant who says '6', they go back to 1. Six groups of 2 people

each are formed, with those who say the same number in the same group. Participants are asked whether they are uncomfortable closing their eyes. If no one is uncomfortable, they dance with one partner closing their eyes. The partner with open eyes directs the partner with closed eyes. At the leader's command, the open-eyed partner closes his/her eyes, the closed-eyed partner opens his/her eyes, and the open-eyed partner directs the closed-eyed partner (Karaduman, 2018).

Activity 2 (10 minutes): Participants sit in a circle. One of them says a word that evokes the central nervous system organ, the brain. The others take turns, from left to right or right to left, saying words that evoke the previous word. Those who say the same words are eliminated (Yeşil, 2019).

B. Dramatization

Activity 3 (20 minutes): While sitting in a circle, participants count off sequentially: 1–2–3. After the participant who says "3," the count restarts from 1. Participants who say the same number form a group, resulting in three groups of four members each. The groups are given 5 minutes to prepare a short enactment based on the following dramatic scenarios:

Group 1: One participant takes the role of the brain, and another plays the patient. The patient's blood pressure rises, and they develop a high fever. The brain attempts to regulate body temperature and blood pressure.

Group 2: One participant is a brain. One participant becomes a hungry and thirsty person. One participant becomes hungry and one participant becomes thirsty. The hungry and thirsty participant sees a person eating. It is up to the group to decide how the improvisation takes place after that. It is explained that the brain regulates hunger and thirst.

Group 3: One participant takes the role of the brain. The other three participants represent the sense of sight, the sense of smell, and the ability to think.

The improvisations are observed.

Intermediate Evaluation: While walking, the brain coordinates the act of seeing and thinking about a substance that emits a smell.

C. Evaluation

Activity 4 (10 minutes): Participants, working in their original groups, are asked to draw an incomplete diagram illustrating how the brain influences the functioning of

the body. The station technique is used. Groups rotate and collaboratively complete each other's diagrams.

Activity 5 (5 minutes): A verbal evaluation is conducted. Participants are asked to reflect on and share what they felt and thought during the workshop.

Lesson plan 10.

Class: 6

Recommended Time: 65 minutes + 5 minutes

Number of the Participants: 12

Location: Drama room or classroom.

Subject: Science.

Topic: Endocrine glands; adrenal glands, adrenaline, coordination of body systems.

Learning outcomes: F.6.6.1.2. Recognizes the importance of endocrine glands for the human body. F.6.6.1.5. Discusses the impact of the regulatory and control systems on the coordination and proper functioning of other body systems (MEB, 2018).

Methods and Techniques: Creative drama method; improvisation, role-playing, pantomime, whole group improvisation, fluid sculpture, modeling of conceptes in science, headline.

Materials: Music player, pre-selected song *"Akın's Adrenaline"* (Akın, 2009) via Spotify/YouTube, 1 rope, 12 pencils, 3 A4-size sheets of paper.

A. Preparation/Warm-up

Before the lesson: If a drama room is not available, desks in the classroom should be pushed aside, cushions should be brought in, and the space should be arranged accordingly. The cleanliness, ventilation, and temperature of the classroom or drama room should be checked. Attention should also be paid to the colors in the room and the lighting. All materials must be prepared in advance.

Activity 1 (5 minutes): Participants are divided into two teams. The pre-selected song *"Adrenalin"* by Akın is played. A tug-of-war game is organized: one team pulls one end of the rope, while the other team pulls the opposite end. The team that successfully pulls the other toward their side wins the game (Bal, 2020)

Intermediate Evaluation: During the tug-of-war game, participants are asked whether they felt excited, and which endocrine gland and hormone were responsible for that response.

Activity 2 (5 minutes): The leader asks participants to walk freely around the classroom. The following guided instructions are given: You wake up in the morning. You smell toasted bread, and the scent is transmitted to your brain, making you feel happy. While having breakfast, you realize you might miss your school bus. You start to feel excited and begin running quickly. In this situation, your heart beats faster and urges you to move rapidly. Now, run as if you are late.

Intermediate Evaluation: The leader asks participants: "How does your body coordinate the 'fight or flight' response in situations that cause fear or panic?" Participants are also asked to name the hormone responsible for the excitement, identify the gland that secretes it, and describe what physical responses occur in the body when experiencing such excitement.

B. Dramatization

Activity 3 (20 minutes): Participants gather in a circle and count off sequentially from 1 to 4. After the participant who says "4," the count restarts at 1. Those with the same number form a group, resulting in four groups of three members each. Each group is given 5 minutes to prepare an improvisation based on a personal experience that caused them excitement. The improvisations are then performed and observed.

Activity 4 (20 minutes): Participants remain in the same groups. However, this game will be played as a whole group activity. Participants are given 10 minutes to prepare. During a moment of excitement:

1. group how skeletal and muscular systems works,

2. group how the respiratory system works,

3. group how the circulatory system works,

4. group how the digestive system works, each group will create a fluid sculpture that illustrates how these systems work. The combination of all sculptures will collectively represent the human organism.

First, the participant who feels ready stands up. The participant begins the moving sculpture with gestures, short phrases, and words. Then the other participants join in, each representing a different organ. The sculpture must remain on stage and in motion

for a sufficient amount of time. The participant who started ends the fluid sculpture after a few minutes, and the entire group follows him/her (Adıgüzel, 2019).

Activity 5 (10 minutes): Within the same groups, participants will try to write song lyrics that include the terms "adrenal glands" and "adrenaline."

Activity 6 (5 minutes): A verbal evaluation will be conducted. Participants will be asked to reflect on and share what they felt and thought during the workshop.

Limitation: The human body is not limited to four systems. In the human body, regulatory and control systems, respiratory, circulatory, excretory, digestive, musculoskeletal, and reproductive systems work together in coordination.

Lesson plan 13.

Class: 6.

Recommended Time: 90 minutes + 5 minutes

Number of the Participants: 12.

Location: Drama room or classroom.

Subject: Science.

Topic: Transition from childhood to adolescence and adolescent health.

Learning outcomes: F.6.6.1.3. Explains the physical and psychological changes that occur during the transition from childhood to adolescence. F.6.6.1.4. Discusses, based on research data, what can be done to go through adolescence in a healthy way (MEB, 2018).

Methods and Techniques: Creative drama method; improvisation, role-playing, teacher in role, hot seat techniques.

Materials: Music player, pre-selected song *"Believer"* by Imagine Dragons (Imagine Dragons, 2017), Spotify / Deezer / Apple Music / YouTube access, information cards, one chair, dramatic situations.

A. Preparation/Warm-up

Before the lesson:

If there is no drama room, desks in the classroom should be moved to the sides, and cushions should be brought in. The classroom or drama room should be cleaned and ventilated to ensure it is ready. The temperature, colors, and lighting of the room

should be checked and adjusted as necessary. All required materials should be prepared in advance.

Activity 1 (5 minutes): Participants begin walking freely around the space. The song *"Believer"* by Imagine Dragons is played. They walk and dance freely in rhythm with the music.

Activity 2 (10 minutes): Participants are divided into two groups: boys and girls. The teacher/leader distributes cards evenly, each card describing a change that occurs during adolescence, some specific to boys, some to girls, and some common to both. Participants read their cards. The changes related to girls remain with the girls, those related to boys stay with the boys, and the cards describing changes common to both genders are handed back to the teacher (EBA).

B. Dramatization

Activity 3 (20 minutes): The class is divided into two groups. The boys create a dramatization about the physical changes that occur in boys during adolescence, while the girls prepare a dramatization about the physical changes that occur in girls during adolescence.

Activity 4 (20 minutes): Participants gather in a circle and count off as 1-2-3 to form three groups of four. The leader assigns the following dramatic situations to each group. The first group receives a scenario about physical changes experienced by girls, the second group focuses on physical changes in boys, and the third group addresses emotional changes common to both genders. From Tümtürk (2019):

To the first group: "Esin's breasts have developed earlier than those of her peers. She feels as though everyone is looking at her, so she walks and sits with her head down. Her family has noticed this behavior and is worried she might develop poor posture. How should they talk to her about it?" – For girls.

To the second group: "Bartu gets on a minibus. He wants to get off, but the driver misses his stop. He doesn't speak up because his voice is deep and awkward, and he feels embarrassed." – For boys.

To the third group: "Özgür has a large pimple on his face. He feels like a unicorn, the Hunchback of Notre Dame. He doesn't want to go to school, but there is an exam that day. What will happen?" – Common to both girls and boys.

Activity 5 (20 minutes): The same groups continue studying. The following dramatic situation is given to the groups regarding emotional changes seen during adolescence:

12-year-old Ufuk is at the table with his family. While his father is talking, he suddenly starts crying and shouting. He doesn't want to eat. His family is worried and doesn't understand why he is acting this way. – Common for both girls and boys.

C. Evaluation

Activity 6 (10 minutes): The leader takes on the role of a psychologist and sits in the hot seat. The students ask questions related to the topic.

Activity 7 (5 minutes): A verbal evaluation will be conducted. Participants will be asked to reflect on what they thought and felt during the workshop.

Lesson plan 15.

Class: 6.

Reccomended Time: 60 minutes + 5 minutes

Number of the Participants: 12

Location: Drama room or classroom

Subject: Science.

Topic: Sensory Organs: the organ of vision, the process of seeing, parts of the eye, hearing.

Learning outcomes: F. 6. 6. 2. 1. Explains the structures of sensory organs by demonstrating them on a model (MEB, 2018).

Methods and Techniques: Creative drama method; improvisation and role-playing techniques, small group discussion, dramatization, techniques for modeling of concepts in science, headline.

Materials: Music player, pre-selected song *"Ego"* by Willy William (William, 2016), YouTube / YouTube Music / Spotify / Deezer / Apple Music, pictures of inverted houses, cloth of appropriate size to blindfold (such as a scarf or shawl), text, dry/pastel colored pencils, three sheets of drawing paper (35x50 cm).

A. Preparation/Warm-up

Before the lesson: If there is no drama room, the desks in the classroom should be moved aside, and cushions should be brought in. The classroom or drama room should be cleaned and ventilated to ensure it is ready. The temperature, colors, and lighting in the room should be checked and adjusted as necessary. Materials should be prepared in advance.

Activity 1 (5 minutes): Participants are asked to dance freely to the song *"Ego"* by Willy William.

Activity 2 (10 minutes): Participants are asked if they are uncomfortable with closing their eyes. If no one is uncomfortable, they are invited to play the "Blindman's Bluff" game. The game works as follows: A volunteer is chosen to be "it" (the blindfolded person), or a drawing is held to select the person who will be "it." For this, each participant randomly picks one of 11 blank pieces of paper and one piece of paper labeled "it." The person who draws the paper with "it" written on it becomes the blindfolded "it." The "it" person's eyes are blindfolded so they cannot see. The other participants form a circle around the "it" person. Then, participants make various sounds and clap their hands to try to attract the "it" person toward their voices. During this time, they are instructed to move around the "it" person. Anyone caught by the "it" person becomes the new "it."

Activity 3 (5 minutes): Participants gather in a circle and count off "1-2-3," forming three groups of four. Photos of an upside-down house are distributed to the groups. The following questions are asked: "Why is everything upside down in this house? Why does the image appear inverted in the yellow spot?" The groups are asked to discuss these questions among themselves and share their thoughts with the teacher. During this time, the teacher does not intervene in the groups' discussions.

B. Dramatization

Activity 4 (20 minutes): Participants are given 5 minutes to prepare. The following text is explained: One participant will represent an object/substance that creates an image (the choice of the substance is up to the student), one participant will represent light, one will represent the transparent layer, one will represent the pupil, one will represent the lens, one will represent the yellow spot (macula), one will represent the inverted image, one will represent the blind spot, two participants will represent the optic nerves, one will represent the visual center in the brain, and one will represent the upright image. Participants are asked to select their roles among themselves. The

participant representing the object creating the image will not tell the others what the object is. Instead, they will show the substance only through body language, taking on the form of that object with their body. Finally, the participant representing the visual center in the brain will announce the image. The participants in the light role will demonstrate the reflection of light from the object with their body and/or speech. Thus, the dramatization begins. The participant in the light role will pass through each part of the eye sequentially. As they pass through each part of the eye, the participants in the roles of the transparent layer, pupil, lens, yellow spot (macula), blind spot, optic nerves, and the visual center in the brain will state their roles. In addition, they may improvise by saying different sentences, but they must provide correct information about the eye's parts and the process of vision. The inverted image at the yellow spot and the upright image in the brain's visual center will act out their roles accordingly, such as lying down, sitting, bending down, or even performing a handstand with the leader's help for the inverted image at the yellow spot, and standing on tiptoe or staying upright for the upright image in the visual center. During this time, they may verbally express that they are the inverted or upright image."

C. Evaluation

Activity 5 (10 minutes): Participants are divided into three groups: transparent layer, vascular layer, and retinal layer. Each group will draw the parts of the eye and the structures found in their assigned layer. Since the drawings will be joined together, they should leave space for attaching the sheets. The drawings are then assembled by the participants.

Activity 6 (5 minutes): A verbal evaluation will be conducted. Participants will be asked to reflect on what they thought and felt during the workshop.

Lesson plan 26.

Class: 6.

Recommended Time: 70 minutes + 5 minutes

Number of the Participants: 12.

Location: Drama class or classroom.

Subject: Science.

Topic: Health of the Endocrine Glands: Diabetes (Sugar Disease), Blood Sugar

Learning outcomes: F.6.6.1.2. Recognizes the importance of endocrine glands for the human body. F.6.6.3.1. Discusses, based on research data, what should be done to maintain the health of body systems (MEB, 2018).

Methods and Techniques: Creative drama method; improvisation, role-playing techniques, split-screen technique.

Materials: Music player, pre-selected song *Master of Tides* by Lindsey Stirling (Stirling, 2014), YouTube / Spotify / Deezer, dramatic scenarios, play dough, tongue depressors, plastic bottles and caps, scrap paper.

A. Preparation/Warm-up

Before the lesson: If there is no drama room, desks in the classroom should be moved aside and cushions should be brought in. The classroom or drama room should be cleaned and ventilated to be ready. The temperature, colors, and lighting in the space should be checked and adjusted if necessary. All materials should be prepared in advance.

Activity 1 (5 minutes): Participants dance freely to the song *Master of Tides* by Lindsey Stirling.

Activity 2 (10 minutes): *Shark/Who Is the Killer?* Game: Participants begin to walk freely. At the leader's command, they stop and close their eyes. The leader then taps one participant, who becomes the shark. Everyone opens their eyes and continues walking. The shark's goal is to eliminate all other participants after eyes are open. To do this, the shark must wink at them. Other participants should not avoid eye contact. When the shark winks at someone, that person silently counts five steps and exits the game without speaking. If three participants correctly guess who the shark is, they can whisper their guess to the leader. If they are wrong, they are also out. The leader must frequently remind participants of the rules: "Walk around the space, do not stay still, and do not avoid eye contact." (Adıgüzel, 2019; Kayıran, 2018; Rilke, 2011).

B. Dramatization

Activity 3 (20 minutes): Participants will pantomime a child who has not eaten for three days (Arıkan, 2016) and then a child who finds food and will never be hungry again.

Activity 4 (20 minutes): Participants gather in a circle and count off "1-2-3." After "3," the count returns to "1." Those who say the same number form a group, resulting in 3 groups with 4 participants each. The split-screen technique will be applied. This

technique works as follows: The stage is imagined as divided into three parts (according to the number of groups), as each group has a defined performance area. While the first group performs their scene, the other groups remain frozen. After the first group finishes, the second group continues the story. Once the second group is done, the third group performs the final part as a continuation. The following dramatic situation is provided:

The child's parents learn that their daughter/son, Evren, was born with diabetes.

Group 1: This group will create a dramatization focusing on the day Evren was born. Roles: Mother, father, doctor, Evren.

Group 2: This group will perform a scene where the parents find out that Evren has diabetes. Roles: Mother, father, doctor, Evren.

Group 3: This group will depict a moment when Evren is 12 years old and a lasting solution is found for the illness. Roles: Mother, father, Evren, Evren's friend.

Participants will choose their roles and develop their improvisation themselves.

C. Evaluation

Activity 5 (10 minutes): Participants are divided into 3 groups of 4. Each group is asked to develop a solution proposal related to hereditary diabetes and to design their proposal using recycled materials such as play dough, tongue depressors, plastic bottles, and caps.

Activity 6 (5 minutes): A verbal evaluation will be conducted. Participants will be asked to reflect on what they thought and felt during the workshop.

CONCLUSION, DISCUSSION, AND RECOMMENDATIONS

One of the intersection points between contemporary science education and the creative drama method is the emphasis on the importance of the knowledge and experiences that students bring into the classroom, and the idea that knowledge should be constructed by the learner (Özdemir Şimşek, 2024). Moreover, it is believed that through this method, schools can move away from being the meaningless set of rules described by Gatto (2018), and that science often perceived as unappealing by most students can become more enjoyable through the use of creative drama (Ahıshalı, 2021).

Ong et al. (2020) reported that creative drama enhances students' critical thinking, problem-solving, creativity, presentation, and social skills, while also increasing their interest in science. Through the "pretend" environments created during activities, laboratory experiments and similar applications were simulated in the classroom, allowing students to experience abstract science concepts in a concrete context and actively participate in the learning process.

In educational terminology, a plan refers to the process of pre-designing and documenting which instructional methods and techniques will be used to achieve specific educational goals and program objectives, why and how these methods will be applied to students, what supplementary and supportive resources and materials will be utilized, and how the resulting outcomes will be evaluated (Demirel, 2004).

Urfalı Dadandı (2023) identified that studies on creative drama have primarily focused on preschool and primary school levels, and suggested that sample lesson plans could be developed for the middle school level. Tümtürk Yılmaz (2000); Serin (2005); Urfalı Dadandı (2023) have prepared sample lesson plans and models in the field of Turkish language education. Tümtürk and Yüksel (2020) published a study on the use of the drama method in preschool education. Siyahlı (2019) developed models for foreign language education.

Since the 1990s, the creative drama method has been developing in our country alongside academic studies conducted on the subject. In 2005, a creative drama course was included as an elective in the Department of Science Education (Özdemir Şimşek, 2024).

An example of a lesson plan using the creative drama method in physics education was developed by Şahin and Yağbasan (2012), while a study aimed at enriching preschool science education through creative drama was conducted by Mutlu et al., (2020). In a book chapter titled Science Education and Drama, Bertiz (2019) published sample lesson plans for science courses. More recently, under the editorship of Özdemir Şimşek (2024), a book containing sample lesson plans for 3rd through 8th grades in the field of science education has been prepared. However, there were still very few and inadequate sample lesson plans using creative drama methods that teachers could use in science lessons. With the aim of contributing to this deficiency, this study developed sample lesson plans specific to the Systems in Our Body and Health unit in the 6th grade science curriculum It is believed that this study will contribute to the literature in this context and assist teachers who have difficulty finding lesson plans related to creative drama.

Eğerci and Özdemir Şimşek (2019) reported that one of the challenges faced by science teachers in using the drama method is that students with exam-related anxiety often perceive the method as a waste of time. Öcal (2014), although 24 hours were allocated to the *Systems in Our Body* unit, anticipated that the lessons would take slightly longer when using the drama method with the puppet–Karagöz and Hacivat technique, and therefore allocated 29 hours to this technique. In currant study, since lesson plans were prepared for almost every concept covered in the topics, the duration was significantly longer than the time allocated in the MEB (2018) curriculum. This represents a limitation of the sample lesson plans presented in this study.

Özdemir Şimşek (2024) recommended allocating 10 minutes for the preparation phase when designing lesson plans. In our study, on the other hand, the suggested duration for the preparation phase generally ranges between 10 and 15 minutes.In this study, lack of time, the difficulty of preparing lesson plans using the creative drama method, the failure to achieve learning outcomes, and noise in the classroom were seen as negative attitudes toward the drama method by teachers. On the other hand, teachers who conducted lessons using the creative drama method stated that it enables children to learn through enjoyment and increases their active participation. According to teachers, the application of creative drama methods increases children's self-confidence and develops their ability to express themselves (Eğerci & Özdemir Şimşek, 2019). Morover this method teaches students how to behave in certain situations and develops their problem-solving and communication skills (Aksu & Doğan, 2015).

In a study conducted with a mathematics teacher, Duatepe Paksu & Ubuz, 2007 identified both the positive and negative aspects of using the creative drama method in lessons. According to this study, some of the positive aspects of the creative drama method include increased student self-confidence, making the lesson more enjoyable, enhancing students' communication skills, and improving retention in mathematics classes. On the other hand, the study highlighted certain negative aspects of the method, noting that it requires *creativity, patience, and financial resources.* Nevertheless, it was emphasized that if meaningful learning is prioritized over exam-oriented education in schools, the use of the creative drama method is likely to increase. In the study, the teacher stated that in the absence of a dedicated drama classroom, preparing the desks every day was challenging, and that drama activities were more suitable for smaller class sizes. Additionally, the study recommended providing teachers with support such as *"lesson plans, a music player, music/CDs, and an appropriate classroom environment"* (Duatepe Paksu & Ubuz, 2007). In the current study, music was

frequently used in the sample lesson plans, and in the absence of a drama room, it was suggested that desks be moved aside, cushions be brought in, and the classroom be cleaned. Similarly, in her study, Dadük (2018) recommended removing desks and bringing materials such as cushions and carpets into the classroom. According to Siyahlı (2019), in cases where classrooms are crowded, the lesson must be planned very carefully. For this reason, the number of participants in our study was limited to 12.

While Adıgüzel (2019) considers dramatisation to be a technique of creative drama, Akman (2018) argues that theatre and creative drama are distinct methods. Özdemir Şimşek (2024) states that in the drama method, improvisation and role-playing are employed, while dramatization is used in theater. An examination of the techniques employed in the sample lesson plans developed for this study indicates that improvisation and role-playing both of which are fundamental components of creative drama were the most frequently utilized methods. The sample lesson plans in our study were not designed to require children to perform word-for-word, direct applications; however, certain rules were provided in advance to prevent misconceptions. For instance, in the case of the sense of sight, the path followed by light is fixed.

The study reveals that, following the techniques of role-playing and improvisation, the technique of concept modeling in science was employed. İçelli et al., (2008); Tümtürk and Yüksel (2020), have addressed concept modeling in science as analogy (simulation). Additionally, Davies and McGregor (2020) have examined the modeling of concepts in science within the framework of drama strategies.

The brainstorming technique (Ün Açıkgöz, 2014), which is one of the active learning methods, was used once in the 20th lesson plan among the sample lesson plans. The station technique, which is one of the methods of constructivist educational philosophy, can be supported by Gardner's Multiple Intelligences Theory (Demir, 2008; Maden & Durukan, 2010).

The station technique, which was used four times in the sample lesson plans, is discussed by Arslan (2019) as one of the techniques that can be applied in creative drama methods. The six thinking hats technique, which was used twice, is considered one of the methods that foster creativity and empathy skills in modern education systems (Orhan et al., 2012). Arslan (2019) also considers the six thinking hats technique as one of the methods that can be applied in creative drama.

Another frequently used technique, the headline technique, is included in the evaluation phase of the sample lesson plans. The techniques of improvisation, role-

playing, role reversal, simultaneous improvisation, teacher-in-role/leader-in-role, group-wide improvisation-role playing, dramatization, hot seat, dull image, gossip circle, writing in role, inner voice, pantomime, role cards, split screen, group sculptures-table formation, fluid sculpture, narrative technique, and headline are all mentioned by Adıgüzel (2019) as techniques used in creative drama.

Small group discussions include techniques such as whisper, buzz, or hum (Böcük, 2008, as cited in Anabilgi Anadolu University, 2023). In large group discussions, the entire class participates actively (Böcük, 2008, as cited in Anabilgi Anadolu University, Large Group Discussion, 2023). Davies and McGregor (2020) emphasize the importance of student discussions within groups. The presentation technique, used once in the sample lesson plans, is considered a traditional method. In this technique, the teacher is active while the student is passive. This technique is primarily aimed at the cognitive domain (Taşpınar, 2005, as cited in Aksu & Doğan, 2015).

In the study conducted by Şahin and Yağbasan (2012), the tug-of-war game was used during the preparation phase of the lesson plan. Similarly, the 10th lesson plan in the present research included the use of the tug-of-war game. The poetry writing technique proposed by Ün Açıkgöz (2014), which encompasses both poetry and songwriting, was applied twice within the lesson plans. According to this technique, each student is expected to write a single line, after which the paper is passed to the next group member to continue the poem. This process continues until the number of poems matches the number of group members. The technique may also be implemented in this structured format.

The sample lesson plans presented in this study are intended as suggestions. Teachers may adapt and implement these plans according to the needs of their own classrooms. When designing school buildings, a dedicated room may be allocated as a creative drama classroom. The science curriculum can be restructured to incorporate the creative drama method. In addition, reducing class sizes in schools may enhance the effectiveness of such methods.

Author Contributions Statement

This study is derived from the master's thesis of the first author. The second author is a specialist in creative drama. The second author reviewed the implementation of creative drama methods and techniques in the sample lesson plans written by the first author and contributed by adding relevant activities. The third author served as the thesis advisor of the first author and supervised the study in terms of its formal structure and its alignment with the nature of science education.

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Conflict Statement

The authors declare that there is no conflict of interest among the authors.

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