

Analysis of Award-Winning Children's Literature Works in Terms of the Inclusion of Popular Science and Science Fiction

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Abstract

Children's literature studies started in the second half of the nineteenth century in Turkey and continue to increase with quality improvements. To encourage writers working in the field of children's literature, award-winning competitions are organized by various institutions and organizations, and it is known that the authors who receive awards in these competitions do successful work. This study, it is aimed to investigate the award-winning children's literature works in terms of their inclusion of popular science and science fiction. In the study, the document analysis method, one of the methods in qualitative research, was used. In the document analysis, 12 books were examined and it was determined that popular science was included in 3 books (25%), science fiction was included in 4 books (33%), and how the current issues were handled was interpreted. It is known that popular science studies have existed in Turkey for the last fifty years and have been intensified since the beginning of the 2000s. It has been determined that two of the examined books (17%) were written before 2000, and the other ten books (83%) were written after 2000, and the rate of popular science and science fiction in the examined books was relatively low. Children's love of science and their future participation in scientific studies in Turkey can only be possible if they have scientific literacy and a love of science. In the study, suggestions were made to overcome the deficiency in light of the findings.

Introduction

The written or verbal expression of dreams, feelings, and thoughts is called literature (Kibris, 2016). It is possible to state that literature has existed from the first human to today and that it will exist as long as human beings exist. Humans have expressed their emotions, thoughts, and dreams in different ways. From a historical perspective, first humans explained their feelings, thoughts, and dreams simply through pictograms; then they invented writing and started to use alphabets (Gurel & Aksit, 2021). Knowledge, which is the common accumulation of humanity, has been brought into books over time and has begun to be passed on to the next generations. The spread of books accelerated especially after the industrial revolution (Dalkiran, 2013). Since the beginning of the 19th century, there has been an increase in the number of books published in line with the developments in science and technology. Advances in the printing press and paper technology have increased the quality of visual and print books. Since the beginning of the twentieth century, book /author awards/competitions have been organized in different periods to encourage authors from different fields. These competitions, it has been aimed to produce more quality written works. A relationship exists between success and reward (Sahin, 2004), and reward is one of the factors that trigger success in writing.

Children's Literature

From the pre-school period to the first youth period, literature that helps children to take literary pleasure and develops their language skills is called children's literature, and works written in this field are called children's literature (Ipek, 2017). Children's literature studies in the world started towards the end of the sixteenth century (Orhan, 2021). In this century, children were accepted as individuals in Europe, and books for them began to be written. Since the seventeenth century, studies in the field of children's literature have increased in terms of quantity and quality. The political, economic, and technological developments that emerged after the industrial revolution had a positive impact on children's literature studies in Europe. With the discoveries and inventions that took place in the twentieth century, studies in the field of children's literature gained a modern quality (Tasdemir, 2018). It is possible to state that all the problems and issues encountered in the twenty-first century are included in the children's literature studies in Europe.

The studies on children's literature in the "modern" sense started in the Tanzimat period in Turkey (Tasdemir, 2018). During the Tanzimat period, translated books for children were in the majority, but copyrighted books were also written. Children's literature studies, which continued in the period of Servet-i Fünun and Fecr-i Ati, gained momentum in the period of "National Literature". After the proclamation of the Republic, children's literature studies increased with the contributions of different institutions and organizations. The inclusion of radio and television in social life has brought a different quality to the studies of children's literature. In the 1980s, the increase in children's magazines and books continued.

In the 2000s, developments in computer and printing technologies and the widespread use of the Internet have contributed to the digitalization of children's literature studies as well as printed materials (Cakir, 2014). In Turkey, children's literature continues to exist in two branches, printed and digital. In children's books published and still being published in Turkey, general topics such as family relations, love of people, animals and country, hard work, and responsibility were covered until the beginning of the 1990s. The popular science and science fiction topics have been included in children's books since the 1990s.

Features of Children's Books

Although children's books that appeal to certain age groups have different features according to the developmental characteristics of children, the obvious common feature of them is that they are "for the children" (Stebler, 2018). Since the developmental characteristics of children vary according to the periods, the content and form characteristics of children's books differ according to age groups. In the books written for preschool children, the subjects are generally told in fairy tales. Since children of this period have a short attention span, the subjects should be presented understandably and the texts should be short. The plot in the book should be at a level that children can understand and should be explained in plain language. In preschool children's books, 70% of the book should be visual and 30% should be text. Instead of photos, pictures should be used visually, and 24 font sizes and higher characters should be used in the text. It is necessary to pay attention to the compatibility of the color and character of the text with the quality of the paper used in the book and the background color of the page (Bilgin, 2011). The pre-school period is considered the period when children start to get acquainted with books. In the books prepared for primary school children aged 6 to 10, stories should be used as a narrative type. Letters should be 16 points and above, 30% of the book should be visual and 70% should be text. In the books prepared for children of this period, sentences can consist of 8-10 words, and words that are not known in daily life can be used in a way that can be understood from the context. Subjects closely related to real-life can be included in children's books for primary school children. In books for children aged twelve and over, the letters can be 12 points. Other narrative types of literature and all kinds of subjects can be included in the books for children in this period. In the narrative, rhetoric and cultural elements can be included (Stebler, 2018). It is important to note that the language used in children's books prepared for secondary school children has the role of transferring culture.

Popular Science and Its Emergence

Expressing academic studies in different disciplines in a plain language that the average public can understand is called popular science (Turan et al., 2016). For a study to be accepted as popular science, it must be scientifically done/continuing to be done, and the result must have emerged/continued to emerge. Studies in which popular science studies are described are generally in the form of writing, but any kinds such as "posters, drawings, photographs" can also be used. The bottom line is to convey the scientific results to the target audience by bringing the texts to a level that the target audience can understand. The same scientific subject is presented differently to children and adults (Turan et al., 2016).

Popular science studies started after the industrial revolution (Saglam, 2020). As a result of the discoveries and inventions made in the scientific field in the eighteenth century, some changes occurred in social life. The inventions such as steam engines, and the discovery of some important vaccines and drugs in the field of medicine made social life easier, contributing to an increase in society's interest in science. This growing interest has brought about an increase in popular science studies (Dursun, 2010). The discoveries and inventions made after the industrial revolution facilitated the transportation of newspapers, magazines, and books from the city centers to the countryside. Due to this convenience, it has become easier for individuals living in the countryside to be aware of scientific studies, and the interest in scientific studies has gradually increased. As a result, scientists began to explain scientific studies to people in a language that the average public could understand. Popular science studies, which started in the eighteenth century, continued in the nineteenth century. Scientific

and technological developments in Europe have increased industrialization and the need for labor, and production has turned from traditional methods to fabrication. In the twentieth century, with the invention of the radio, later television, and later the invention of the Internet, popular science studies experienced their heyday. Although it is known that science and popular science studies are used for purposes other than the benefit of humanity (Dursun, 2018), the interest in popular science is promising.

The Beginning of Popular Science Studies in Turkey

Western-like popular science studies in Turkey started after the Tanzimat period. Popular science news in newspapers and magazines that started to be published after the proclamation of the Tanzimat continued despite the first world war. After the proclamation of the Republic, popular science studies continued with the works of both the state administration and private institutions and organizations (Kucuk, 2015). The inclusion of radio and television in daily life is an important factor in the spread of popular science in Turkey. Another important factor is the establishment of TUBİTAK in the 1960s and the publication of the journal *Science and Technique* (*Bilim ve Teknik*). In the following period, *Science Child* (*Bilim Çocuk*) and *Curious Child* (*Meraklı Minik*) magazines, which were also started to be published by TUBİTAK, played an active role in the dissemination of popular science. With the widespread use of the Internet since the beginning of the 2000s, popular science studies have entered a new era (Dagtas & Yildiz, 2016). Popular science studies do not take place in children's books at desired rate and way. One of the reasons is that science communication and children's literature courses are not given to students in higher education institutions that provide science and technology education in Turkey or the content of the courses is not sufficient (Koroglu, 2019). It is thought that the state, the private sector, and individuals have duties to do for popular science studies to be included in children's books as desired. Although the state's support of popular science studies is criticized by some circles (Dagtas & Yildiz, 2016), it is considered that state support is important in popular science studies.

Technology

It is possible to define technology as the production of simple or complex machines and devices which are based on scientific knowledge (Gunay, 2017). In daily use, the word "technology" is sometimes confused with the word "science" and they are used interchangeably. A close connection between technology and scientific development exists and both trigger each other (Gunay, 2017).

Differences between Popular science and Technology

Popular science means expressing scientific studies at a level that the target audience can understand while technology refers to the production of machines with simple or complex systems as a result of scientific developments. In daily use, scientific progress is understood with statements such as 'Medical science has developed a lot' and 'eye diseases are divided into several sub-branches. The narration of scientific studies related to any sub-branch of eye diseases to the target audience at an appropriate level is called popular science and such narrations are accepted as popular science studies. The devices used in eye surgeries and manufactured by the latest scientific developments are called technology, and the developments in this field are called technological developments. Popular science, on the other hand, is the expression of the science and scientific developments that reveal the technology

according to the target audience. It is natural to see the use of these two concepts side by side in different environments. Technology and technological devices can be mentioned in an article on popular science. Because the two are related, they are not the same. It is known that some of the novels written for children in Turkey include popular science subjects (Aydin, 2019).

Science Fiction

Based on the scientific data, studies dealing with the scientific developments that can be achieved in the coming years and the positive/negative effects of these developments on the individual and society are called science fiction (Balbag et al., 2012; Turan, 2018). Considering that the word science fiction is derived from the combination of the words "to know" and "to establish" (Gur, 2021), the general feature of the genre is also understood. It is important that science fiction is based on positive sciences and tells about future situations (Bayar, 2001). In some science fiction works, the mind may seem to be pushed to the limit, but the close relationship between science fiction and imagination should not be ignored. The imagination of science fiction writers plays an important role in increasing the interest in science as well as being the source of inspiration for scientific and technological progress (Balbag et al., 2012). For this reason, it is considered that science fiction works are important (Bayar, 2001).

Although there are different definitions for the use of the word fantastic in the expression, it is possible to state that the emotions and thoughts are expressed at a point between reality and imagination, but in a more prone to fictionalized imagination and prioritization of extraordinariness (Gunes, 2012; Ugur, 2010). In literary works, the concept of fantastic appears as a form of expression that takes the imagination of the reader to the fore and offers the reader a fiction between subjectivity and objectivity (Kadizade & Sakar, 2018). From this point of view, the word "fantastic" is used for fairy tales (Asutay, 2013). Objectivity is not sought in fantastic expression, but objectivity can still be found in it.

Fantasy Writing – The Difference Between Science Fiction and Popular Science

The fantastic narrative presents the reader with a fiction between subjectivity and objectivity, and this fiction is closer to subjectivity. The objectivity and scientificity of the fantastic narrative cannot be questioned (Kadizade & Sakar, 2018). Science fiction is science-based and is a type of narrative that deals with future developments based on science (Turan, 2018). Popular science, on the other hand, is the studies that are completely based on science, aiming to announce the scientific findings to the general reader and the public (Kilic, 2009). In Turkey, there is confusion of terms from time to time and the word science fiction and popular science are used interchangeably. It is common to see the use of the word fantastic instead of popular science or science fiction, albeit very rarely. Two areas that which the reader has difficulty in deciding on the types of narration are science fiction and popular science. In popular science texts, only science and scientific study processes are discussed. It should be noted that popular science texts are not informative texts in the relevant field, but rather intriguing texts for it. It is expected that popular science texts will arouse scientific curiosity and form an opinion about scientific processes in the minds of the readers (Kilic, 2019). In such books, if science fiction is dominant, it should be called science fiction, and popular science if popular science is dominant.

On the other hand, it is known that there is a close relationship between popular science and popular science products, and popular science products are often used instead of popular science. Popular science products, it is meant all kinds of applications that have emerged as a

result of scientific studies and developed to facilitate daily life. It is thought that this usage is because large masses of people do not have enough information about the concept of popular science.

Educational Relation between Popular Science and Science Fiction Writing

To carry out scientific studies, it is necessary to have sufficient education in a particular field of science. Training is required to write articles that can meet the needs of the target audience on any subject (Gunel, 2006). According to some thinkers and writers, although authorship is an innate talent, it is generally accepted that training in the field can develop this talent. Authorship is also an occupation that requires knowing the spelling rules of the language and the semantics of words. These details about the language can only be learned with a certain education. In the writing of popular science and science fiction texts, medicine, engineering, basic sciences, Turkish language and literature, child development, physics, chemistry, mathematics, biology, and visual arts teaching fields are considered essential. It is considered that the compulsory courses in these departments and fields should include children's literature, popular science, science fiction, etc. Considering the practices in Turkey, these courses are not among the compulsory courses (OSYM, 2021). It is considered that applications such as science literacy (Cepni et al., 2003) and MEB in-service training (Kaya et al., 2004) will contribute to the proliferation of popular science and science fiction writers. The importance of homework in the development of students and preparing them for the field/profession is known (Ünal et al., 2018). In this context, it is thought that creating popular science and science fiction texts should be included in the assignments given to the students. Considering that the graduates of these departments will touch thousands of individuals during their professional life, adding such practices related to science literacy and science fiction to the curriculum of the related departments are important (Basturk, 2010).

Types of Narration and Methods of Expressing Popular Science

It is possible to express feelings, thoughts, and dreams in written or oral forms. The written expression itself includes different forms such as poetry, fairy tale, story, novel, etc. One of these forms/types is chosen according to the general characteristics of the text to be told. It is known that poetry was mainly used in Turkish literature until the Tanzimat period (Kudret, 2003a). After the proclamation of the Tanzimat, plain writing forms such as stories, novels, essays, articles, etc. were used. In the books written for children, novels, stories, diaries, etc., and particularly fairy tales are used.

Fairy Tale

One of the types of expression of thoughts, dreams, and emotions is fairy tales. The fairy tale is created by a society based on an event that has an important place in the social lives of societies. Fairy tales continue their existence in the oral tradition. Although the protagonists are mostly humans, animals, and witches, genies, giants, fairies, etc. are also seen in them. Most of the events described in fairy tales are fictional (Kilicaslan, 2019). It has been determined that preschool children love to read books written in fairy tale format since extraordinary events in fairy tales are generally realized by extraordinary heroes and in a place of dreamland. It is also known that books written in fairy tales contribute to enriching the world of thought and imagination of children (Ibacoğlu, 2019). For this reason, fairy tales should be preferred as the type of expression in preschool children's books. It is possible to tell different subjects of popular science to pre-school children and to produce tales in the type of

science fiction with fairy tale narration. It is known that there are popular science children's books published by various publishing houses that deal with popular science topics in the form of fairy tales (Alanyali, 2019).

Story

One of the types of narration in which feelings, thoughts, and dreams can be expressed is the story. The short narrative type in which the events that have happened or are likely to be experienced are told with a place, time, and people is called a story. The type of storytelling entered Turkish literature during the Tanzimat period. The story is one of the types of narration used to tell different subjects for children and adults (Arici et al., 2018). Storytelling is considered an effective type in terms of developing children's imagination and language skills. It is considered important to use storytelling in the books written for the 6-12 age group children in the first period of primary education (Stebler, 2018). Popular science and science fiction topics are also taught to children in the storytelling genre. It is known that children like to read the story type (Yilmaz, 2014). It is necessary to be careful in the selection of events, place, time, and hero, which are the basic elements of the story while telling popular science topics to children in this genre. It should not be forgotten that children who read such books take literary pleasure and love popular science.

There are numerous children's books published by various publishing organizations where science fiction and popular science are told in the storytelling genre, with a language and fiction suitable for the age group of the target audience (Adali, 2020; Gallini, 2017; Gur, 2011; Fossey, 2021; Joyce, 2021; Lepera, 2016; Kim & Kim, 2019; Nam, 2017). However, the distribution of books published in the field of popular science by age groups is considered insufficient.

On the other hand, some of the story books written for children received different awards in different competitions (CGYD 2009 Children's Book of the Year Award; (Ozer, 2018); ÇGYD 2009 Best Children's Book Award, Best Children's Book Design Award '(Eray, 2020). There are numerous publishers that published science fiction and popular science in Turkey such as Güncel Yayıncılık, Cumhuriyet Kitap, İletişim Yayınları, İnkılap Yayınları, Ketebe Yayınları, Pan Yayıncılık, Boğaziçi Yayınları, Teleskop Popüler Bilim, ODTÜ Yayıncılık, Pegasus Yayınları, Ginko Bilim and particularly TUBİTAK.

Novel

Dreams, feelings, and thoughts can also be expressed in the novel genre. Long forms of expression that describe lived or livable events with the place, time, and heroes are called novels. During the Tanzimat period, countless books were written for adults and children in the form of novels that came to Turkish literature from western literature. The fact that the novel narrative type is long allows for telling interrelated subjects under the main theme. For this reason, it is one of the most frequently used narrative types. Science fiction and popular science topics can also be explained in novels with different genres according to their subjects (Arici et al., 2018). The language level of the novels should be in line with the children, and the topics to be covered and the visuals to be included in the book should be determined by considering the developmental characteristics of the target group of children. There are children's novels that include science fiction and popular science in Turkey (Aydin, 2019). However, children's novels on science fiction and popular science in Turkey are insufficient for age groups (Arici et al., 2018). Some of these novels were awarded in various competitions:

(Hepçilingirler, 2021) 'ÇGYD 2013 Children's Novel of the Year Special Jury Award',

(Buhara, 2016) 'Youth Books International Board 2002/2003 Hall of Fame'
 (Der, 2021) 'ÇGYD Best Children's Novel of the Year' Award 2007, İBBY Hall of Fame 2010 Writer Candidate',
 (Atilla, 2020) 'ÇGYD Book of the Year 2010',
 (Ucuk, 2021) '1958 '1958 Hans Christian Andersen Hall of Fame, 1991 1991 Turkish Children's Foundation Honorary Award, 1995 TÜYAP Book Fair Honor Award, 2001 Turkish Writers Union Outstanding Service Award',
 (Bertan, 2019) ÇGYD 2005 Best Children's Novel Award of the Year',
 (Cakman, 2021) '2011 TUDEM Literature Awards Novel Competition First Prize',
 (Ak, 2021) 'ÇGYD 2013 Children's Novel of the Year, ÇOGEM 2014 Children and Youth Literature Novel Award,
 (Dayioglu, 2020) 'ÇGYD 1987 Children's Literature Award,
 (Dayioglu, 2019) 'ÇGYD 1984 Three Hundred Book Award Giving Hope to Youth for Tomorrow'

Memoir

The type of narrative in which people who are known for their success in the field they work in tells about the important events they have experienced or witnessed are called memoirs. There are impressions, information, and observations in memoir-type writings (Kudret, 2003b). Memoirs are among the important genres of Turkish literature. In addition to the memories of statesmen, the memories of prominent artists and writers in the field of art and literature are considered important in terms of giving literary and aesthetic pleasure to the readers. There are works written in the genre of memoirs in children's literature books. Science fiction and popular science can be included in children's books written in the memoir genre. There are books written in the genre of memoir that include popular science (Jr., 2021; Lears, 2015; Mallinos, 2011; de Rubertis, 2017).

Essay

One of the genres in which emotions, thoughts, and dreams can be expressed by writing is an essay. The types of expression in which feelings, thoughts, and dreams on any subject are written in a conversational mood and the correctness or falsity of the asserted views are not discussed are called essays. Essay articles express personal opinions and do not exceed one or two pages (Arici et al., 2018). The essay type, which entered Turkish literature after the proclamation of the Tanzimat, is among the noteworthy genres in western literature. Children's literature can also include the expression of different opinions on different subjects in essays (Ayci, 2014). Essay writing is considered important in popular science and science fiction.

The presence of essays and books on popular science topics in Turkey is known (Allegre, 2009; Allegre, 2011; Marc & Leblond, 2017; Sengor, 2014). It is considered that there are not enough essays on popular science topics, especially for children.

Travel Writings

The articles that introduce the places visited in terms of their historical, cultural riches, and natural beauties are called travel writings (Maden, 2008). The first examples of travel writings date back to ancient times, as human beings are curious to travel, see and explore due to their nature. There are many works written in the genre of travel writing in world and Turkish literature. Travel writings are among the types of articles that are read with interest

because they give information on various subjects such as the history, culture, nature, architecture, customs, and traditions of the places visited. Since it is possible to follow the development of countries and regions in the historical period with travel writings, they are also important (Maden, 2008). Despite the existence of books written in the genre of travel writing in a literary language for adults and children in Turkey, it is thought that the number of books dealing with science fiction and popular science is insufficient. A book that can be considered as an example of travel writings on popular science topics was published by Anadolu Agency in 2020 (AA, 2020). The book includes information about the purpose of the trip to Antarctica and what happened during the trip. Although the book, taken as a whole, is a work that stands out with its promotional aspect, it is considered important in that it may serve as a guide to those who want to write in the field. Researchers sometimes share their articles describing their scientific trips in newspapers, magazines, and virtual environments, and there are groups in which such articles are shared in the virtual environment. It is necessary to publish such articles under a title and in the form of a book within the integrity of the subject. Popular science and science fiction-oriented trips and travel articles also attract the attention of children, and the interest of children participating in such trips in popular science increases (Topaloglu & Balcin, 2021). Therefore, it is necessary to write science fiction and popular science-oriented travel books for children and to encourage writers in this field.

Diary

The writings in which the person writes the events that he/she has experienced daily or that the events that are likely to be experienced by giving the date and sometimes the time are called diary. Diaries generally contain subjective judgments due to their type (Iskender, 2017). The diaries, which are also described as the writings in which the inner conversations of the person take place, are in a sense the writings in which the individual talks to himself and include his feelings and thoughts that he cannot convey to the second persons. In Turkish and world literature, it is known that there are books written in the form of a diary. Generally, the children like diaries due to their plain language, short sentences, and inclusion of the events experienced by the individuals. It is considered important that people interested in popular science studies and scientists write diaries including popular science and science fiction for children, leading the children to love science. In recent years, popular science and science fiction-oriented books for adults and children in the diary genre in Turkey have been increasing and this increase would be beneficial (Saracoglu, 2020; Scotti, 2014; Tapan, 2020a; Tapan, 2020b).

Poem

To express feelings and thoughts, poetry is used as well as prose types. Poetry is a type of narrative with its own rules. Literary genres in which feelings and thoughts are expressed in verses according to certain rules are called poetry (Memmedov, 2013). Poetry existed before the invention of writing. Children enjoy reading poems due to the low number of words, the sound relationship between the words, and the use of some rhetoric. Since it is known that poetry is read with love by children and is more effective on children than prose types (Onkas, 2009), the teaching of love, mercy, goodness, cleanliness, and responsibility can be done through poems. It is known that poems on the subjects such as seasons, health, food, vehicles, etc., which fall into the field of popular science can be found in the literature. Subjects of popular science which are not dealt with in poems can be written to attract children's attention to science.

Biography

The types of articles that describe the lives of people who have conducted important studies in one of the branches of science and art and have served their country or humanity in the military or political fields are called biography (Kudret, 2003b). Biography writings, by their nature, consist of the fields that the person is concerned about. Biography articles, in which years of experience are expressed, are considered among the important books for those working in the related field. It is known that there are many books in the genre of biography in Turkish literature. Biography books are generally written for adults. It is known that since the end of the twentieth century, biography books on the lives of scientists dealing with popular science and achieving national and international success in their fields have been published (Chambers, 2018; Robinson, 2021). It is thought that it is important for biographers to prepare biography books for children by taking into account their developmental stages. Thus, such books set an example for children to love popular science.

Letter

The type of writing in which feelings and thoughts are expressed through mutual correspondence is called a letter. The letter is divided into two "private" and "official". While official letters are written between states or commercial individuals and institutions, private letters are written between individuals (Kudret, 2003b). The letter type has existed in the world and Turkish literature since ancient times. The letters that poets, writers, and thinkers wrote to each other on various issues concerning society have great importance in terms of literary value. On the other hand, it is also known that some books are written in letter form in terms of being impressive and sincere. In letters or books written in the form of letters for adults and children, various topics of interest to society are included. Since the end of the twentieth century, books in the form of letters dealing with popular science topics have also begun to be written.

Autobiography

The type of narrative in which individuals who draw attention with their successful works in science, art, politics, or the military write their own lives is called autobiography (Kudret, 2003b). As in the biography genre, the autobiography genre is among the important books for those working in the field. There are biography books written by successful people in the fields such as art, literature, economy, and management in the world and Turkey. Autobiography books, like biography books, are generally written for adults. It is thought that it would be beneficial to write such books for children taking into account the developmental stages of children. The fact that successful scientists in the world and our country write their own life stories according to children is considered important in terms of children's love of popular science.

In the literature review, numerous studies were conducted on award-winning children's books (Aydin, 2019; Buyukalan & Harmankaya, 2019; Cicek, 2021; Erbas & Yildirim, 2017; Sener, 2018; Tuncay, 2021). However, no studies addressing the issue of whether popular science and science fiction are included in award-winning children's books have been found. For this reason, it is thought that the current study is the first study in the literature. Scientific articles are important in terms of guiding researchers who want to conduct research in the

field. It is believed that the current study may serve as a guide for researchers who want to study the issues of children's literature, popular science, and ways of telling popular science.

This study aimed to investigate whether popular science and popular science products are included in the children's literature books that were awarded in different competitions and investigate how these books dealt with the subjects of popular science and popular science products. The determined books are for the target audience of children aged 9 - 12 written in the field of children's literature. As is known, children's books make it possible for children to love reading books (Eroglu, 2016). The subjects included in children's books are considered very important in terms of children's interest in those subjects. For this reason, children's books differ from adult books. The inclusion of popular science and science fiction in children's books is important in that children who develop a positive perception of popular science and science fiction from a young age will be more interested in science and scientific studies in the future, and will contribute more to the scientific studies. If popular science and science fiction are not included in children's books, children's acquaintance with science takes place at later ages and during compulsory education. The perception of children of science and scientists in this period varies depending on the environment they grew up in (Ayvaci & Yurt, 2016) and is not very positive in general. The child, who does not know science and scientific studies from a young age and does not like it enough, is reluctant to participate in such studies in the future. For these reasons, children's books need to include science, popular science, and science fiction. In children's books, popular science and science fiction can be given in the context of the event, as well as in the forms of memoirs, diaries, travel writings, and poems. On the other hand, it is possible to prepare popular science and science fiction texts for children in the form of informative plain texts.

The results obtained from this study, it is aimed to draw the attention of children, families, educators, and publishers to the subject of the inclusion of popular science and popular science products in award-winning children's books. To this end, answers to the following questions were sought within the scope of the research:

1. Do popular children's books receive awards in different competitions between 1984 and 2014 whose target audience is children between the ages of nine and twelve including science and popular science products?
2. If popular science and popular science products were included in the books determined for the research, how were they dealt with?

Method

Research Design

This quantitative study, aiming to examine the award-winning children's literature works in terms of the inclusion of popular science, was carried out using the document analysis method. The research sample (books) was determined by criterion sampling, which is one of the purposive sampling methods. The document analysis method was used in the research because it aimed to reveal an existing situation. Qualitative research has been expressed with different names and definitions such as natural research, interpretive research, and field research due to its characteristics. Observation, interview, focus group interview and document analysis methods are commonly used to collect data in qualitative research. (Yildirim & Simşek, 2018). In line with the purposes of the current study, document analysis was used.

The copyrighted books, which were written for children between the ages of nine and twelve and received various awards in their field, constitute the universe of the current study. Instead of a basic criterion that determines the award criteria for children's books, there are different criteria determined by the institutions and organizations that give the award. In this study, the criterion of examination of copyrighted books that were awarded by ÇGYD between 1984 and 2014 and whose target audience was between 9 and 12 years old was taken as a basis. Within the universe, 12 books by 11 authors, whose target audience was children between the ages of 9 and 12 and who received awards between 1984 and 2014 by ÇGYD were taken as a sample. The books that are the basis of the study, the names of the books, authors, publishers, publication years, and the awards and years they received are given in Table 1 below.

Table 1*Information About the Books Analyzed*

No	Name of the Book (In Turkish)	Author	Award and Year (In Turkish)	Publisher and Year
1	Türk İkiizleri	Cahit Uçuk	1958 Hans Christian Andersen Şeref Listesi, 1991 Türk Çocuk Vakfı Onur Ödülü, 1995 TÜYAP Kitap Fuarı Şeref Ödülü, 2001 Türkiye Yazarlar Birliği Üstün Hizmet Ödülü	Bilge Kültür Sanat Yayın, 2021
2	Dünya Çocukların Olsa	Gülten Dayıoğlu	1984 Gençliğe Yarın Umudu Veren Üç Yüz Kitap Ödülü	Altın Kitaplar Yayınevi, 2019
3	Parbat Dağı'nın Esrarı	Gülten Dayıoğlu	1987, Çocuk Edebiyatı Ödülü	Altın Kitaplar Yayınevi, 2020
4	İnternet Canavarı	Muharrem Buhara	2002/2003 Onur Listesi	T. İş Bankası Kültür Yayınları, 2016
5	Hızlı Tosbi	İsmet Bertan	2005 Yılın En İyi Çocuk Romanı	Günüşiği Yayınları, 2019
6	Küçük Cadı Şeroks/ 2	Aslı Der	2007, Yılın En İyi Çocuk Romanı	Günüşiği Kitaplığı, 2021
7	Frej Apartmanının Esrarı	Nazlı Eray	2009, Yılın Çocuk Kitabı Ödülü	Everest 2020
8	Çocukluk Anayurdum	Kemal Özer	2009 Yılın Çocuk Kitabı Ödülü	Can Çocuk Yayınları, 2018
9	Parktaki Gergedanlar	Mehmet Atilla	2011 Yılın Kitabı	TUDEM Yayınevi, 2020
10	Almarpa'nın Gizemi	Koray Avcı Çakman	2011 TUDEM Edebiyat Birincilik Ödülü	TUDEM Yayınevi, 2021
11	Türkü Çocuk	Feyza Hepçilingirler	2013 Jüri Özel Ödülü	Kırmızı Kedi 2021
12	Yaşasın Ç Harfi Kardeşliği	Behiç Ak	2013 Yılın Çocuk Romanı 2014 Çocuk ve Gençlik Edebiyatı Ödülü	Günüşiği Kitaplığı, 2021

* Books are listed according to the years they received awards

Data Collection and Analysis

The findings of the 12 books published by different publishing houses, written for children aged 9-12 and awarded between 1984 and 2014, are given within the framework of the relevant titles. The data collected in the research were obtained by document analysis. In the document analysis, children's books published by different publishers for children aged 9-12 and awarded between 1984 and 2014 were examined in terms of addressing popular science and studied for the research.

Findings

This section includes the subject of the books analyzed and whether the books include popular science, what their genre is, and how they deal with popular science. Table 2 includes the subject of each work, including popular science and science fiction.

Table 2

The subject of the books examined, the state of inclusion of popular science and science fiction

No	Name of the Book (In Turkish)	Subject	Popular Science	Science Fiction
1	Türk İkiizleri	Events he twin brothers and their family lived are told.	-	-
2	Dünya Çocukların Olsa	The events between the rulers and scientists of two states named Chirupon and Avampaka are discussed.	-	+
3	Parbat Dağı'nın Esrarı	Events developing in and around the Little Gardener who can communicate with plants.	-	+
4	İnternet Canavarı	The events lived by the secondary school student Sezai and her friend Burcu are discussed.	-	+
5	Hızlı Tosbi	The events lived by the little turtle Tosbi is told.	-	+
6	Küçük Cadı Şeroks/ 2	The events lived by the little witch Şeroks inland of tales are told.	-	-
7	Frej Apartmanının Esrarı	The events lived by two friends named Nazlı and Osman are told.	-	-
8	Çocukluk Anayurdum	The life of the hero and his family in the war years are told.	-	-
9	Parktaki Gergedanlar	The events lived by three friends named Dilek, Şenay, and Okan are told.	-	-
10	Almarpa'nın Gizemi	The events that Kaan lived in Koycegiz, where he had just moved, are told.	+	-
11	Türkü Çocuk	The events that Barış lived in his grandmother's village are told.	+	-
12	Yaşasın Ç Harfi Kardeşliği	The events that Ali lived with her family and friends are told.	-	+

“-“ Not included; “+“ Included

The first book [Turkish Twins (Türk İkizleri)] is written in the narrative genre of a novel. No findings that can be accepted as popular science and science fiction were identified in the book.

In the second book [If the World Belonged to Children (Dünya Çocukların Olsa)] written in the novel genre, it has been determined that scientific and technical issues such as space apparatus, harmful chemicals, brain transplants, obtaining food from seaweed, building shelter underground, etc. are included. Since the scientific and technical issues discussed in the book are thought to be real in the future, they are considered to be science fiction types of texts. In science fiction texts, it is important to deal with events that may occur in the future based on science. The following excerpts from the book exemplify science fiction:

"The scientist replied with a shrug. 'Yes sir. I said so. I have found such a formula to be used in the enemy hemisphere that only people will die...'" (Dayioglu, 2019b, p. 11).

"While they were making contracts with space pigeons by circling the globe, the Chirupons were discussing the same issue with their scientists inside the spire-shaped submarine anchored at the bottom of the sea of ice, and agreeing to wipe the self-deprecating Avampakans off the face of the earth with a 'hot rain fest' attack" (Dayioglu, 2019b, p.15).

It has been determined that the examined book does not include any science-based, interesting, intriguing text in any field of science that can be accepted as popular science texts.

In the third book [The Mystery of Mount Parbat (Parbat Dağı'nın Esrarı)] written in the novel type, it was determined that scientific subjects such as plants, sky, signals coming from the sky, celestial bodies, humanoid creatures, etc. are included. It is known that some of the issues discussed in the plot are real today, and some of them are thought to be realized in the future. It is considered that the parts in which such events are described are science fiction texts. The following excerpt from the book exemplifies science fiction:

"Indeed, Little Gardener had progressed so quickly in the plant-growing business that his reputation had crossed borders. The unfamiliar and unknown plant species he had grown in his laboratory had stunned world-renowned herbalists. His remarkable discoveries were discussed in world-renowned scientific journals (Dayioglu, 2020b, p.18)".

Today, it is known that many different plants are grown under laboratory conditions.

"When he finished his higher education, he had only one goal: to communicate with plants. He concentrated all his work on this goal. The shortest way to enter the mysterious world of plants was communication. (Dayioglu, 2020b, p.27)

It is known that different studies are carried out on plants in different countries of the world.

"He had made a simple device to communicate with plants. This device looked like a heat meter that processes air temperature onto graph paper. Young Scientist was attaching some plants he had specially produced in his laboratory to this device. The plant was getting nervous as loud music started in the room. The vibrations created on it due to this tension were drawn on the graph paper by the device. During these communication experiments, the young scholar deciphered so many secrets about plants that he soon managed to communicate with them. (Dayioglu, 2020b, p.28)"

It is thought that with the increase in research and the development of technology, communication with the plants mentioned in the book can be realized. It has been determined that the book contains no information that is interesting, intriguing, and can be considered a popular science text.

The fourth book [İnternet Canavarı] written as a novel, the book includes some events that Sezai, a second-grade student in secondary school, experienced while surfing the Internet. Some of these events are considered to be possible in the future.

“Again, as you can easily guess, we found ourselves in the assistant principal’s office. In front of Cemil Bey. The same questions started there, of course...”

‘What do you mean, did you go to Disneyland alone?’

Come on, let’s see.

‘Yes, I went alone.’

‘How did your family allow it?’

‘No, not like that, I went with the Internet.’

‘Oh...just like that. Screen navigation.’

‘No. Walked in from the screen and made the real trip’ (Buhara, 2016, p.51).”

In the "metaverse" virtual environment, which has been mentioned frequently recently, what could happen in the future is already being discussed. It is considered that such conversations in the book may take place soon.

“Here is the Internet in front of me. But I don’t know exactly where to go. More precisely, I’m so new to this business that I don’t have an address. I was in the same situation last time. That’s when I closed my eyes and repeated Disneyland in my head. I will try the same method now. To be honest, I’m seriously scared. I think of Hollywood. I want to see a lot of famous people up close and try the opportunity to meet them. I close my eyes and start repeating the word Hollywood inside of me...”

‘Hollywood, Hollywood, Holly...’

Yes, the same things started to happen again. I feel a lightness in my body” (Buhara, 2016, p.58).

Many previously unknown aspects of the human brain are known today (Karacay, 2019). As a result of the studies carried out in the field of artificial intelligence, it is evaluated that it will be possible for machines to communicate with the human brain in the future. In the book, it is evaluated that some of the places where Sezai’s events on the Internet are told are science fiction texts.

The fifth book [Fast Tosbi (Hızlı Tosbi)] written in the genre of a novel, includes the events that take place in the life of little turtle Tosbi. It is thought that some of the events witnessed by Tosbi may take place soon and therefore evaluated as some science fiction texts are included in the book. The following excerpts from the book exemplify science fiction:

“An irresponsible driver did not stop at a red light. He extinguished the life light of first a child, then a family. Their daughters did not survive. The mother could not stand it and she caught one of the incurable brain diseases. Moreover, at that time, a doctor was researching a drug that could prevent the death of brain cells, have repair properties, and activate unused cells” (Bertan, 2019, p.97).

It is known that different studies are being conducted on the brain (Karacay, 2019). Soon, it is expected that drugs with much more advanced therapeutic properties will be developed.

“He thought of the pink crystals. He tried it on himself and had positive results. His intuition was strengthened, his communication with living things became easier, and he could understand them. But he still wasn’t sure. Pink crystals were one of the results of a lifetime of research. Even though he did not have the opportunity to apply, he continued to ponder and develop new formulas. He believed that it would be useful in diseases related to the brain (Bertan, 2019, p.100).

As it is known, scientists continue to work on foods. In addition to natural vitamins, artificial vitamins, painkillers, etc. medicines have long been at the service of humanity. Studies on the functionality of foods (Aslan & Ayaz, 2019), suggest that the effects of foods taken may be much different from today soon. It is known that the crystals that Doctor One is working on have a scientific basis. In the future, such foods are expected to affect the bodily functions of living things. For this reason, such narratives in the book are considered science fiction narratives.

The sixth book [Little Witch Seroks/2 (Küçük Cadı Şeroks/2)], which is written in the genre of novel, explains the importance of language and words, which are accepted as the cornerstone of culture. No expression has been identified in the book that can be accepted as an example for the popular science and science fiction genre.

The seventh book [The Mystery of the Frej Apartment (Frej Apartmanın Esrarı)] is written as a novel. It has been determined that the book, which is about the adventures of Nazlı and Osman based in the Frej Apartment, does not include popular science and science fiction.

There are no popular science or science fiction narratives in the eighth book [My Childhood Homeland (Çocukluk Anayurdum)], which tells in the language of the child about the life of a middle-class family and the events they went through during the war years.

The ninth book [Rhinos in the Park (Parktaki Gergedanlar)] which tells the events lived by three friends named Dilek, Şenay, and Okan, through time travel, was written in the form of a novel. It has been determined that popular science and science fiction are not included in the book.

The tenth book [The Mystery of Almarpa (Almarpa’nın Gizemi)] tells about the life of the boy named Kaan's in Köyceğiz, where they have just moved, and expressions that can be described as popular science have been identified. The following excerpts from the book exemplify science fiction:

Very knowledgeable Kuşçu Bey helped Sıtkı a lot when he first started organic farming. You know, we shouldn’t use any chemical fertilizers or anything in our business. So, it is very difficult to get efficient and grow crops. (Cakman, 2021, p.47).

These sentences, in which organic agriculture is mentioned, are the subject of chemistry and are considered popular science texts because they are of interest to the reader.

They plunged into one of the paths through the fields. And where are the tomatoes, Dad? Arda asked in an impatient voice:

Hold on, son, we didn’t plant early. Is it right away?

Watermelon? Where is the watermelon then?

Should we take your boy to the greenhouse friends, İlhan? said Sıtkı Bey.

Ms. Işıl also joined the conversation: 'This is really hard organic farming, isn't it, Sitki? Tough aunt! Especially the most difficult is to rehabilitate the soil. All of the current soils are accustomed to chemicals and the hormone of the seed (Cakman, 2021, p.52).

These sentences, which talk about the fact that vegetables are grown in a certain period and soil improvement, will attract the attention of the reader to the related sciences of agricultural engineering and chemical engineering and are considered a popular science text.

The oil extracted from the bark of the sweetgum tree is used as a raw material for perfume. The sweetgum tree is rare. It grows only in limited areas here and also in America and China. That is why it is so valuable (Cakman, 2021, p.134).

The sentences in which information about the regions where the sweetgum tree grows and sweetgum oil are given contain information about both geography and chemistry and can arouse curiosity. Such narratives are considered popular science texts.

They would collect the secretions and bark that had leaked from the cuts they had made on the trees. As far as I know, sweetgum oil is obtained by boiling them and squeezing them in special presses. This oil is a valuable input used in the perfume industry (Cakman, 2021, p.134)

They also use turtle oil in the cream and perfume industry (Cakman, 2021, p.135).

The sentences that contain information about the production of sweetgum oil and its use in the perfume industry together with turtle oil are considered popular science texts. As it is known, these two products are among the products grown in our country and used in the chemical industry (Keykubat, 2016; Temel et al., 2018).

The excerpt in the eleventh book [Folk Song Child (Türkü Çocuk)] below where Barış's father talks about healthy eating is considered a popular science text.

Even if the ads say it, you need to protect yourself from them. Advertising does not think about you, but about the sale of that product. They don't care if your health deteriorates or not. Will the advertisements think that you should not waste your money on such things and eat healthily, or will you think for yourself? (Hepcilingirler, 2021, p.31).

He knew what had to be done. He would pluck two or three of the plant's lowest leaves and collect them in his hand. The stems of the leaves would be in the same direction, and they would be placed on top of each other with the shiny side up. Then it will be passed to the other plant, then to the other (Hepcilingirler, 2021, p.51).

These sentences, which describe how the tobacco harvest is made, are also considered popular science texts, as they arouse curiosity in the field of "field crops".

Barış didn't realize how much his back was burning when he was playing by the seaside. The soreness of the sunburn went away the next day. His grandmother put yogurt on his back. He was angry with his father, saying, "Why did you let him stay in the sun for so long? (Hepcilingirler, 2021, p.67).

These sentences, which describe the treatment of the sunburn on Barış's back with a natural product (yogurt), are considered popular science texts as they can attract the attention of the reader to the relevant field (pharmacology - medicine).

In the conversation of the twelfth book [Long Live the Letter C Brotherhood (Yaşasın Ç Harfi Kardeşliği)] between Ali and his mother below, there is information about the habitats of moles and the damage they cause to plants. Since the readers of the text are expected to be

interested in the field of biology and agro-horticulture, the relevant parts are considered to be popular science texts.

Why are you burying soda bottles in the radish field in the garden?

Her mother's answer was simple:

'The moles are coming from under the ground and raising our radishes. When we bury the bottles in the ground with their mouths up, they can't do it.

Why? Are they afraid of soda bottles?

'Of course not. When the wind blows, a whistling sound comes out of the mouth of the bottles. This sound makes them run away (Ak, 2021, p.15).

Glasses, which are the subject of the above conversation between Ali and his uncle, may be invented in the future. This text is considered a science fiction text because it gives information about an object that can be produced in the future.

Sedat Bey straightened his glasses and looked at the computer with interest.

H218 model huh? ' he snorted.

Yes," said Ali, his eyes sparkling. It belonged to my father; he gave it to me.

You should be quick to transfer what you have written to the backup memory,' said his uncle, because his computer has a week to work properly.

Ali looked at her in amazement. He started a big sentence, "But this computer... when Sedat Bey interrupted him.

The watch on your wrist has a life of eleven months, and ten days. Your jeans will rip in three months, twelve days. Your shirt will give die in a month, ten days, or two hours.

How do you know? asked Ali, looking at his uncle Sedat Bey like he was crying.

My glasses, said his uncle, showing how many days' life is left for all products.

Ali was scared.

People too? he asked.

'No. Only goods are produced in factories (Ak, 2021, pp.34-36)

Discussion and Conclusion

In the current study, in which award-winning children's literature works were investigated in terms of the inclusion of popular science and science fiction, it was determined that 3 (25%) of the 12 books examined included popular science, and 4 (33%) included science fiction. Popular science books have played an important role in popularizing science (Kilic, 2019; Kilic, 2009; Eroglu & Sađlam, 2020). In this context, it is thought that it would be appropriate to focus on popular science and science fiction in studies in the field of children's literature. It is known that popular science studies have existed in Turkey for the last fifty years and have gained intensity since the beginning of the 2000s (Agca, 2016; Cinar, 2002). Two of the examined books (17%) were written before the year 2000, and the other ten (83%) were written after the year 2000. The low rate of inclusion of popular science and science fiction in the books awarded in the field of children's literature is considered a deficiency.

Considering the developmental stages of children, the books they read in the pre-school and primary education periods allow them to love science and to develop their understanding of art, aesthetics, and language. It is therefore important to write books on popular science and science fiction, especially for children in these age groups. When considered the popular science children books published by İş Bankası Kültür Yayınları (İş Bankası, 2021), Yapı Kredi Yayınları (Yapı Kredi, 2021), Teleskop Popüler Bilim Yayınları (Teleskop, 2021), TÜBİTAK Popüler Bilim Kitapları (TÜBİTAK, 2021) and sold by iKitapyurdu (Kitapyurdu, 2022), and

İdefix (İdefix, 2022), popular science books for children are generally translation books, and the number of Turkish popular science books is low. It is believed that the books delivered to the reader by the translation books do not preserve their language and culture-related characteristics (Kilic, 2009).

It is evaluated that popular science and science fiction books written by Turkish authors will be more effective in children's love of popular science, and the number of popular science books written by Turkish authors should be increased. Turkish language and literature, basic sciences, engineering, medicine, pharmacy, Turkish teaching, child development, science, mathematics, physics, chemistry, and biology teaching departments of universities are considered to be important in terms of being a source for popular science writing. On the other hand, the absence of courses related to popular science and popular science writing in general among the compulsory courses of the relevant departments (OSYM, 2021) is also considered a remarkable deficiency. For Turkish authors to write more popular science books for children and adults, it is considered that it would be beneficial to organize the curriculum of higher education institutions to include courses such as children's literature, popular science, and popular science writing in the departments prementioned.

Recommendations

It is possible to make suggestions for authors, institutions, and readers for the proliferation and enrichment of popular science books prepared for children by Turkish authors. The suggestions are as follows: It is considered that children's book writers should include popular science and science fiction topics in different narrative styles in their books. The educational institutions should review their syllabus to train popular science writers and scientific institutions should develop projects for the field, organize competitions to encourage the authors in this field, and give attractive prizes. Moreover, it is considered that publishing houses should pay attention to features of the books such as the design, visuals, external images, and font in children's books which are effective in the choice of the books. Lastly, families and young people need to prefer books prepared by Turkish authors when buying popular science books and to provide feedback to the author and publisher about the book.

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Appendix. Reviewed Resources)

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