

The Bibliometric Analysis of Life Science and Social Studies Teaching with Art Studies

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Abstract. This study investigates the limited integration of art into life sciences and social studies education in Turkey, despite these subjects being designed to reflect real-life experiences and social contexts. The primary aim is to identify research trends on this topic through descriptive, content-based bibliometric analysis. Following the PRISMA (Preferred Reporting Items for Systematic Reviews and Meta-Analyses) guidelines, a total of 318 academic studies, including theses and peer-reviewed articles, were systematically reviewed. Data was analyzed according to publication year, research type, method and design, study group, grade level, sample size, and art branch. Results show that publication activity peaked in 2019, with the majority of studies being master's theses. Most research focused on 7th-grade students, involved small samples (0–30 or 31–60 participants), and employed qualitative or experimental designs. Drama emerged as the most integrated art form. These findings reveal a growing academic interest in interdisciplinary approaches, while also underscoring the need for broader exploration of underrepresented art branches in life sciences and social studies education. The results highlight a growing scholarly interest in interdisciplinary approaches, while simultaneously revealing significant gaps in the representation of diverse art forms. These findings underscore the need for future research to adopt broader methodological diversity, include larger and more varied participant groups, and expand the scope of artistic integration to enrich both cognitive and socio-emotional dimensions of learning in life sciences and social studies education.

Keywords: Life Studies; Social Studies; Art; Bibliometric Analysis, Art Integration.

1. Introduction

The educational institution aims to make the individual an active member of society by providing him/her with the knowledge, skills, attitudes and values he will need. This knowledge, skills, attitudes and values can be transferred to students through different lessons (Kırıkçı et al., 2022). These lessons should have content that explains life. Life Sciences course is a course that aims to provide students with knowledge and skills on issues such as solving problems they may encounter in daily life, leading a healthy life, and being sensitive to the environment (Ministry of National Education [MoNE], 2018). Social Studies course is a course that aims to help students understand and evaluate their social environment in areas such as history, geography, economy and politics. In this course, students acquire knowledge and skills on subjects such as historical events, intercultural interactions, geographical regions, economic systems, political structures (MoNE, 2018.). It is understood from the definitions of the Ministry of National Education that in Turkey, efforts are being made to integrate the new generations into society through life science and social studies courses. There are examples of Life Sciences and Social Studies lessons in different countries around the world. Course names, contents and curricula may vary in each country, but in general they aim to provide students with knowledge and skills on personal, social and health issues. For example, in Australia, there is a course program called "Personal Development, Health and Physical Education (PDHPE)". This program covers subjects such as personal development, health, physical education and social skills. The aim of this course is to enable students to acquire healthy life skills and social interaction abilities

(Australian Curriculum, Assessment and Reporting Authority, 2008). In England, there is a course program called "Personal, Social, Health and Economic Education (PSHE)". This program includes topics such as personal and social skills, health and safety, relationships, economic awareness. The PSHE course aims to help students express themselves, develop healthy life skills and take an active part in society (PSHE Association). In the United States, there are courses with similar content under different names depending on the state. For example, in New York state, the "Health Education" course teaches students about topics such as health, sexual health, nutrition, drugs and substance abuse. Additionally, a course called "Civics" teaches students about topics such as civics, democratic processes, and the legal system (New York State Education Department). These examples can be further diversified around the world. As a matter of fact, according to Durkheim, education is "the influence of adults on the new generation who are not ready for social life." In short, the purpose of education is to transfer the knowledge of previous generations to new generations and make young people an active part of society. In all societies, there is formal or informal education and its purpose is to integrate the child into society. Therefore, life science and social studies course outcomes are observed in all education systems, even with different names and contents.

Another discipline that exists with society is art. Although it is difficult to give a clear answer about the exact origin and purpose of art, it can be seen that art has emerged for different purposes throughout human history. People have expressed their thoughts, feelings, beliefs and experiences through artistic expression since prehistoric times. There are many different areas of art throughout human history. Cave paintings, one of the oldest known artistic pursuits, date back to the Paleolithic period (Approximately 40,000 years ago). Various motifs such as animal figures, people, hunting scenes and symbols are painted on cave walls or ceilings (Chauvet et al., 1996; Hoffmann et al., 2018). Another oldest known artistic endeavor is the statuettes of ancient times (Marshack, 1991). One of the well-known artistic endeavors in history is wall paintings in civilizations such as Ancient Egypt, Greece and Rome. Wall paintings were made using fresco or mosaic techniques. These paintings may be mythological scenes, portraits, natural landscapes or depictions of historical events. There are many examples of wall paintings that have survived to this day from excavations in ancient cities such as Pompeii and Herculaneum (Clarke, 2011; Ling, 1991). These are just a few examples, and they are just some of the artistic endeavors that emerged in different periods of history. In short, art has been a part of people and society in various forms throughout history.

The use of art has had certain purposes in communicating with society since ancient times. People can use art as a way of communication for religious and ritual purposes (Lewis-Williams & Dowson, 1988; Conkey & Tringham, 1995), narrative and storytelling (Clottes, 2002; Gimbutas, 1989), communication and expression (Tilley, 2004). These objectives are also included in educational activities. It is understood that the use of art in social studies lessons, which is common, is effective in creating cultural awareness. However, despite the increasing number of such studies, there has been no comprehensive bibliometric analysis mapping the trends, gaps, and patterns in this field. The lack of a synthesized overview makes it difficult for educators, curriculum developers, and researchers to identify what has been prioritized, which art forms are most studied, and what methodological approaches dominate the field. The urgency stems from the growing need for interdisciplinary learning in 21st-century education, which emphasizes creativity, cultural sensitivity, and integrated knowledge. Therefore, this study aims to systematically explore the scope of academic research on the integration of art into life sciences and social studies education. The author's perspective is rooted in the belief that only through such thematic mapping can future studies be guided effectively and underexplored areas be brought into focus. In today's rapidly evolving educational landscape, there is an increasing emphasis on interdisciplinary approaches that foster creativity, critical thinking, and social-emotional development. As the world faces complex global challenges from climate change and social inequality to cultural fragmentation, educators are seeking innovative ways to cultivate empathy, cultural awareness, and reflective citizenship among students. Art integration in education has emerged as a vital pedagogical approach that transcends traditional subject boundaries and enriches learning experiences. Particularly in social studies and life sciences education,

incorporating art fosters holistic understanding, bridges cognitive and affective domains, and supports active engagement with real-world issues. This growing global recognition underscores the importance of systematically analyzing how art is being integrated into these curricular areas.

1.1. Problem Statement

A review of the existing literature reveals that integrating art into courses connected with culture and social life has been widely researched and generally shown to yield positive outcomes. However, despite these individual studies, there is a notable lack of research systematically examining the overall direction and trends of such interdisciplinary integration. This absence of a comprehensive perspective on how art is incorporated into life sciences and social studies education represents a critical gap in the field.

1.2. Related Research

Vitulli, and Santoli (2013) also discussed the relationship between social studies course and visual arts. It was concluded that this relationship can play an important role in developing students' comprehension, critical thinking and cultural awareness skills. It has been found that visual arts encourage active participation of students in teaching social studies and can make the subjects more interesting. Hong (2019) also showed that art can offer students the opportunity to think from different perspectives and gain a deeper understanding of cultural diversity. He demonstrated that art in social studies education can play a significant role in developing students' cultural understanding, critical thinking, and cultural awareness skills, as well as enhancing their ability to interact with different cultures and articulate their own perspectives. Similar studies in the Turkish literature were conducted by Burstein, and Knotts (2010) who showed that integrating social studies with visual arts can support students' comprehension, cultural awareness, and social relationship skills. These findings suggest that the use of art in social studies classes, which is relatively common, is effective in fostering cultural awareness.

1.3. Research Objectives

To address the identified problem, this study aims to systematically investigate the orientation and trends of art integration within social studies and life sciences education. In line with this purpose, the following research questions were formulated:

1. What is the distribution of life sciences and social studies teaching with art studies carried out according to years and research type?
2. What is the distribution of life sciences and social studies teaching with art studies according to study groups, grade levels and numerical size of the study group?
3. What is the distribution of life sciences and social studies teaching with art studies carried out according to research methods and designs?
4. What is the distribution of life sciences and social studies teaching with art studies carried out according to art branches?

2. Theoretical Framework

Gardner's theory, which suggests that cognitive development can be supported and integrated by addressing different intelligence areas within interdisciplinary education approaches, creates a theoretical basis for the integration of art into life sciences and social studies courses (Gardner, 1983, 1999). Howard Gardner's Multiple Intelligences Theory is a framework that assesses individuals' cognitive abilities in various domains. Gardner first introduced this theory in 1983 and argued against the notion that intelligence could be solely measured through linguistic and mathematical capabilities, proposing instead a broader and more inclusive view of human intelligence. In his influential book *Multiple Intelligences: The Theory in Practice* (1999), he elaborated on the theory and identified seven distinct types of intelligences: linguistic, logical-mathematical, visual-spatial, bodily-kinesthetic, musical-rhythmic, interpersonal, and intrapersonal intelligence. Gardner's theory fundamentally

challenges traditional understandings of intelligence, emphasizing that everyone has a unique combination of these intelligences and that educational practices should be designed to accommodate this diversity. As a result, the theory encourages educators to diversify learning experiences and empower students to leverage their individual strengths (Gardner, 1983, 1999).

Art can increase students' creativity and self-confidence. Students can develop their ability for emotional expression through art, which can help them gain a deeper understanding of historical or cultural topics in social studies and life science classes (Dubaz, 2011). Art can provide context for social disciplines in education. Through art, students can embody concepts related to history, culture, geography, and other social studies. For example, they may depict historical events or cultural features using paintings or sculptures (Baltacı, 2019). Art can offer students the opportunity to better understand historical and cultural differences. For example, artworks from a period can reflect the values, beliefs, and lifestyle of that period, so students can better understand history from a perspective (Kuş, 2010; Türkkan, 2008). Art can make learning fun and engaging. Students can become more involved through art projects and activities, which can increase their interest in social studies topics (Meydan and Akkuş, 2014). Art can provide students with visual analysis skills. This can improve their ability to examine works of art and gain a deeper understanding of social studies and life sciences topics (Burgger & Winner, 2000).

As a result, Howard Gardner's Theory of Multiple Intelligences (1999) can provide students with richer, customized, and contextualized learning experiences by supporting the integration of arts and social studies and life sciences courses.

3. Method

3.1. Research Design

In this study, a descriptive, content-oriented bibliometric analysis was conducted to identify research patterns and trends in the integration of art into life sciences and social studies education. Bibliometric analysis refers to the systematic evaluation of academic literature through quantitative and qualitative indicators such as publication year, study type, methodological design, and thematic focus (Zupic & Čater, 2015). While traditional bibliometric studies often focus on citation metrics and author collaborations (van Eck & Waltman, 2010), this study adopts a content-based approach, examining metadata across studies to map thematic developments rather than citation influence. Such an approach is especially valuable for providing a structured overview of fragmented research areas and guiding future empirical studies (White & McCain, 1998; Donthu et al., 2021). Bibliometric analysis focuses on mapping patterns and metadata such as publication year, research design, target groups, and thematic categories across a broad set of studies (Zupic & Čater, 2015; Donthu et al., 2021).

3.2. Bibliographic Filters

The study sample consists of a total of 318 academic works. These are interdisciplinary studies that specifically address the integration of art into life sciences and social studies education. They include both theses and peer-reviewed articles conducted in relevant educational fields.

3.3. Data Collection

In this study, data were collected through document analysis. Document analysis refers to the systematic examination of written materials relevant to the research topic (Yıldırım & Şimşek, 2018). For this purpose, academic publications were gathered and reviewed. The analysis followed the five-stage process proposed by Yıldırım and Şimşek (2008): (1) accessing the documents, (2) assessing authenticity, (3) understanding the content, (4) analyzing the data, and (5) utilizing the findings.

Documents were retrieved from various academic databases including the National Thesis Center (YÖKTEZ), TR Index, Google Scholar, Web of Science (WoS), EBSCO, ERIC, and Scopus. Keyword-based searches were conducted by scanning the titles, keywords, and abstracts of

studies. The search was carried out in two stages. In the first stage, combinations of "life sciences" with art-related terms were used; in the second stage, "social studies" was paired with the same art-related terms. The review process was conducted in accordance with the PRISMA 2020 guidelines (Page et al., 2021), ensuring transparency in the identification, screening, and inclusion phases. The art-related keywords included: art, music, song, poetry, literature, sculpture, painting, visual arts, theatre, drama, cartoon, photography, caricature, animation, film, museum, art criticism, and land art. As a result of this process, 361 academic documents were initially identified. However, 43 of them were excluded from the final analysis due to their unavailability in full text or missing database records, resulting in a total of 318 documents included in the study.

3.4. Data Analysis

Content analysis was carried out on the data obtained from the data sources. Content analysis shows researchers the orientation in the field being studied (Cohen et al., 2007). In this way, other researchers can see the deficiencies and requirements and save time. In content analysis, common or similar data are collected around certain themes and systematically organized and interpreted (Yıldırım & Şimşek, 2005).

3.5. PRISMA Diagram

Figure 1 presents the PRISMA 2020 flowchart summarizing the identification, screening, eligibility, and inclusion phases of the review.

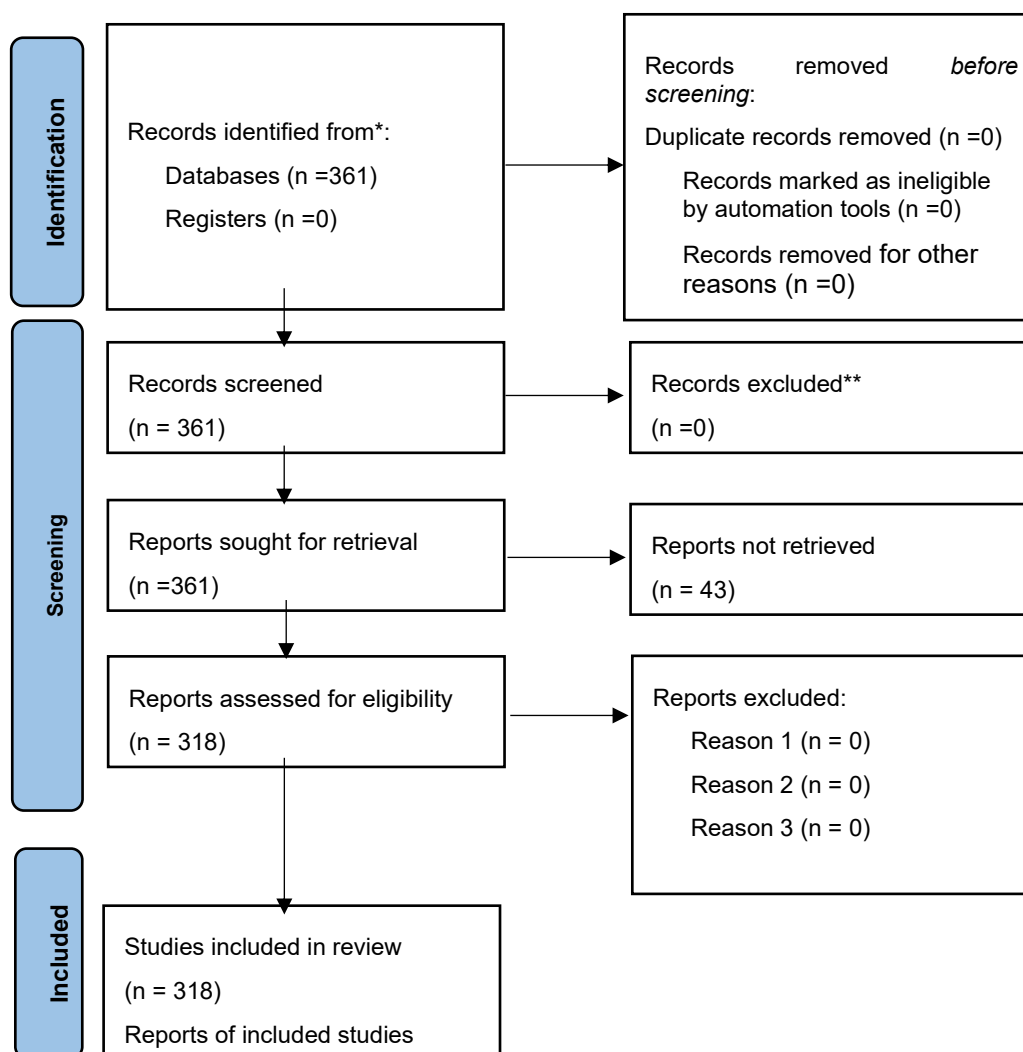


Figure 1. PRISMA 2020 Flow Diagram

A total of 361 records were identified through database searches using a comprehensive set of art-related keywords (social studies, life sciences, art studies etc.). No duplicate records were found, and no automation tools were used for pre-screening. All records were screened at the title and abstract level. Subsequently, 361 full-text reports were sought for retrieval. Of these, 43 reports were excluded due to lack of access to the full text or missing database information. The remaining 318 reports were assessed for eligibility based on predetermined inclusion criteria. As all eligible reports met the inclusion criteria, 318 studies were included in the final synthesis. No reports were excluded after full-text eligibility assessment.

4. Findings

This section presents the findings of the study, which aims to explore the orientation and research trends of art integration in life sciences and social studies education. The analysis was guided by four key research questions and focused on a range of variables, including publication years, research types, study groups, grade levels, sample sizes, research methods and designs, as well as the specific branches of art employed. The results are organized thematically in accordance with these dimensions to provide a comprehensive overview of the current landscape in the field.

4.1. What is the Distribution of Life Sciences and Social Studies Teaching with Art Studies Carried Out According to Years and Research Type?

Table 1 shows the distribution of life sciences and social studies teaching with art studies by years. Studies in each year are also listed in the table according to research types.

Table 1. Distribution of Studies Conducted by Years and Research Types

Years	Master's Theses	Local Articles	Foreign Articles	Doctoral Theses	Frequency (f)	Percent (%)
1990			1		1	0.3
1999	1		1		2	0.6
2000			1		1	0.3
2003		2			2	0.6
2004	2		3		5	1.6
2005	3		1		4	1.3
2006	2	1	1		4	1.3
2007	1		1		2	0.6
2008	3	1	4		8	2.5
2009	3	1	1	1	6	1.9
2010	6	2	1		9	2.8
2011	6	1	3	1	11	3.5
2012	2	5	3	2	12	3.8
2013	2	3	3	2	10	3.1
2014	9	4		1	14	4.4
2015	9	1	2		12	3.8
2016	9	7	2		18	5.7
2017	10	7	5	2	24	7.5
2018	7	11	3		21	6.6
2019	26	6	9	1	42	13.2
2020	8	12	12	1	33	10.4
2021	8	12	9	2	31	9.7
2022	10	5	11	2	28	8.8
2023	6	8	4		18	5.7
Total	133	89	81	15	318	100.0

When it looked at the distribution of life sciences and social studies teaching with art studies by years, it is observed that the most studies were carried out in 2019. In Figure 1, the distribution

of art works related to life sciences and social studies teaching according to 5-year periods is reflected in the column chart. As can be seen, studies in this field have increased in recent years.

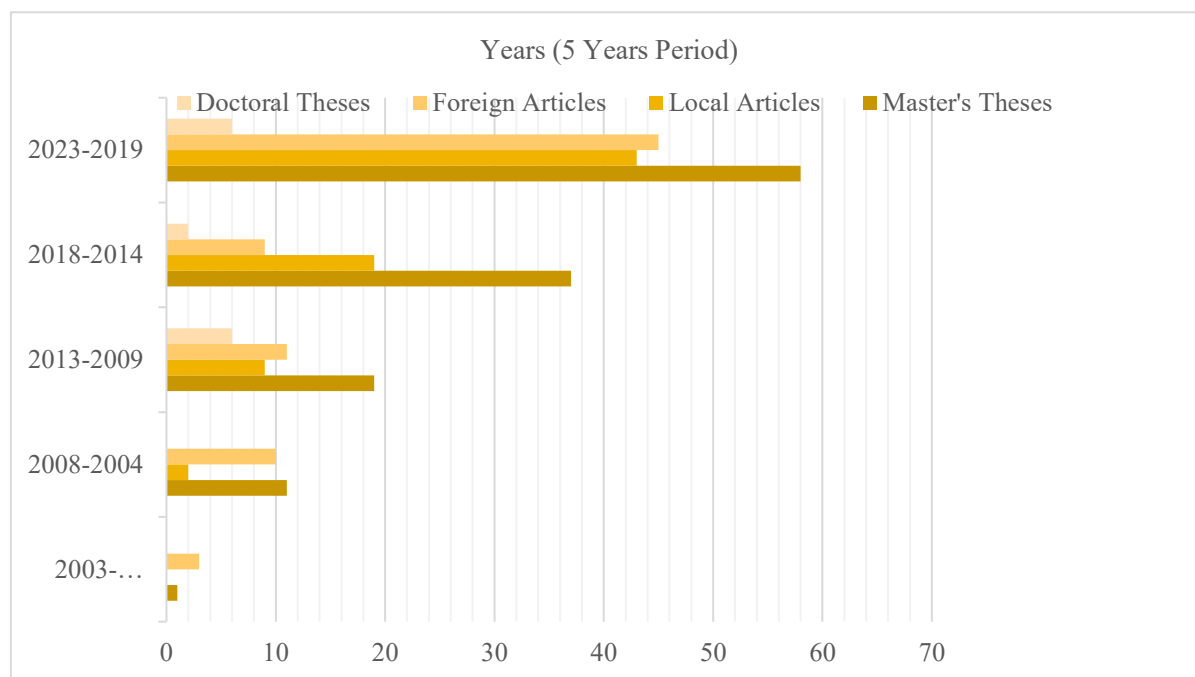


Figure 1. Distribution of Studies Conducted by Years and Research Types

Table 2 shows the distribution of life sciences and social studies teaching with art studies according to research types.

Table 2. Distribution of studies according to research types

Research Types	Frequency (f)	Percent (%)
Master's Theses	133	41.8
Local Articles	89	28.0
Foreign Articles	81	25.5
Doctoral Theses	15	4.7
Total	318	100.0

In terms of research type, 41.8% of the studies in the study group examined were master's theses. In -total- articles, art works in the field of life sciences and social studies are preferred as much as -total- theses. In Figure 2, the distribution of art studies related to life sciences and social studies teaching according to research types is shown with a pie chart.

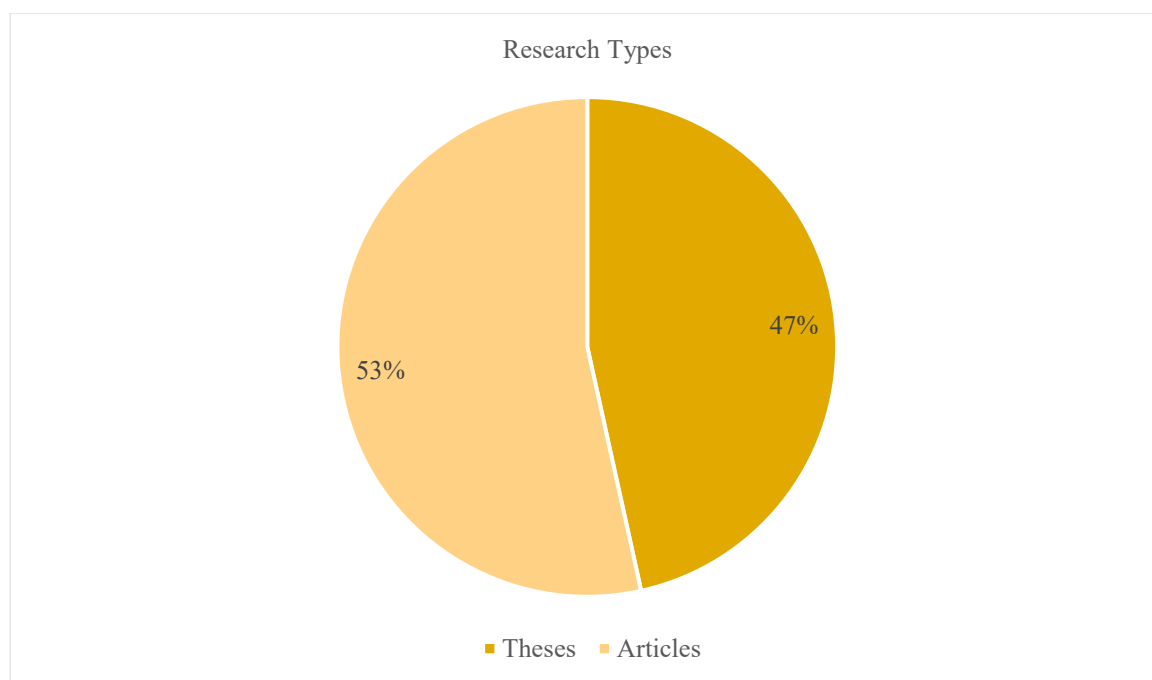


Figure 2. Distribution of Studies According to Research Types

4.2. What is the Distribution of Life Sciences and Social Studies Teaching with Art Studies According to Study Groups, Grade Levels and Numerical Size of the Study Group?

Table 3 shows the distribution of life sciences and social studies teaching and art studies according to the study group. Each study group is also listed in the table by research type.

Table 3. Distribution of Studies According to Study Group

Study Group	Master's Theses	Local Articles	Foreign Articles	Doctoral Theses	Frequency (f)	Percent (%)
Student	85	39	23	15	162	50.9
Document	17	11	14		42	13.2
Social Studies Teacher Candidate	6	13	17		36	11.3
Social Studies Teacher	9	6	2		17	5.3
Primary School Teacher	6	4	2		12	3.8
Student	5	2	5		12	3.8
Social Studies Teacher Unspecified		5	7		12	3.8
Teacher Candidate			5		5	1.6
Student + Primary School Teacher	1	1	2		4	1.3
Field Expert	1	1			2	0.6
Social Studies Teacher Candidate + History Teacher Candidate		2			2	0.6
Social Studies Teacher + History Teacher + Geography Teacher + Visual Arts Teacher + Primary School Teacher		2			2	0.6
Student + Social Studies Teacher + Parent	1				1	0.3

Classroom Teacher + Social Studies Teacher	1				1	0.3
Social Studies Teacher + Field Expert	1				1	0.3
Primary School Teacher Candidate	1				1	0.3
Social Studies Teacher + Geography Teacher + History Teacher	1				1	0.3
Primary School Teacher Candidate + Social Studies Teacher Candidate	1				1	0.3
History Teacher		1			1	0.3
Social Studies Teacher + Science Teacher + Literacy Teacher		1			1	0.3
Social Studies Teacher Candidate + Science Teacher Candidate		1			1	0.3
Pre-School Teacher		1			1	0.3
Total	133	89	81	15	318	100.0

When it looked at the distribution of life sciences and social studies teaching with art studies according to the study group, it is seen that the most frequent studies were with students with a rate of 50.9%. Looking at the table, it is understood that the total studies conducted with teacher candidates and teachers are almost close to the studies conducted with students. In Figure 3, the distribution of life sciences and social studies teaching with art studies according to study group is reflected in the column chart.

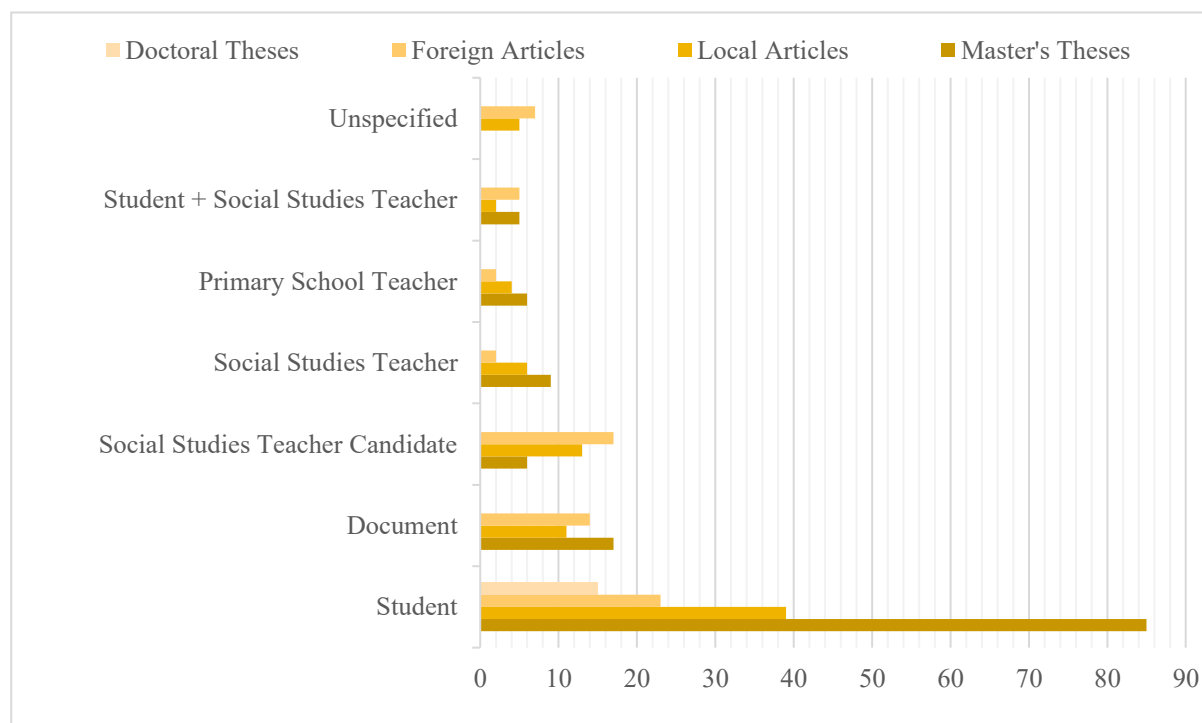


Figure 3. Distribution of Studies According to Study Group

Table 4 shows the distribution of life sciences and social studies teaching and art studies courses according to the grade level of the study group. The level of each working group is also listed in the table by research type.

Table 4. Distribution of Studies According to the Grade Level of The Study Group

Grade Level of the Study Group	Master's Theses	Local Articles	Foreign Articles	Doctoral Theses	Frequency (f)	Percent (%)
Non-student	41	47	43		131	41.2
Pre-school				1	1	0.3
1st grade	1		1		2	0.6
2nd grade	2	2	1		5	1.6
3rd grade	6	1	2	1	10	3.1
4th grade	13	9	6	2	30	9.4
1st, 2nd, 3rd and 4th grade	1				1	0.3
Primary School Education						
2nd and 3rd grade	1	1			2	0.6
2nd, 3rd and 4th grade	1				1	0.3
3rd and 4th grade	1	1			2	0.6
4th and 5th grade	1				1	0.3
5th grade	15	11	3	2	31	9.7
6th grade	22	4	6	3	35	11.0
7th grade	21	10	5	6	42	13.2
8th grade	2				2	0.6
5th and 6th grade		1			1	0.3
Secondary School Education						
5th, 6th and 7th grade	1				1	0.3
6th, 7th and 8th grade	3				3	0.9
7th and 8th grade	1	2			3	0.9
Secondary Education			2		2	0.6
High School			1		1	0.3
Unspecified			11		11	3.5
Total	133	89	81	15	318	100.0

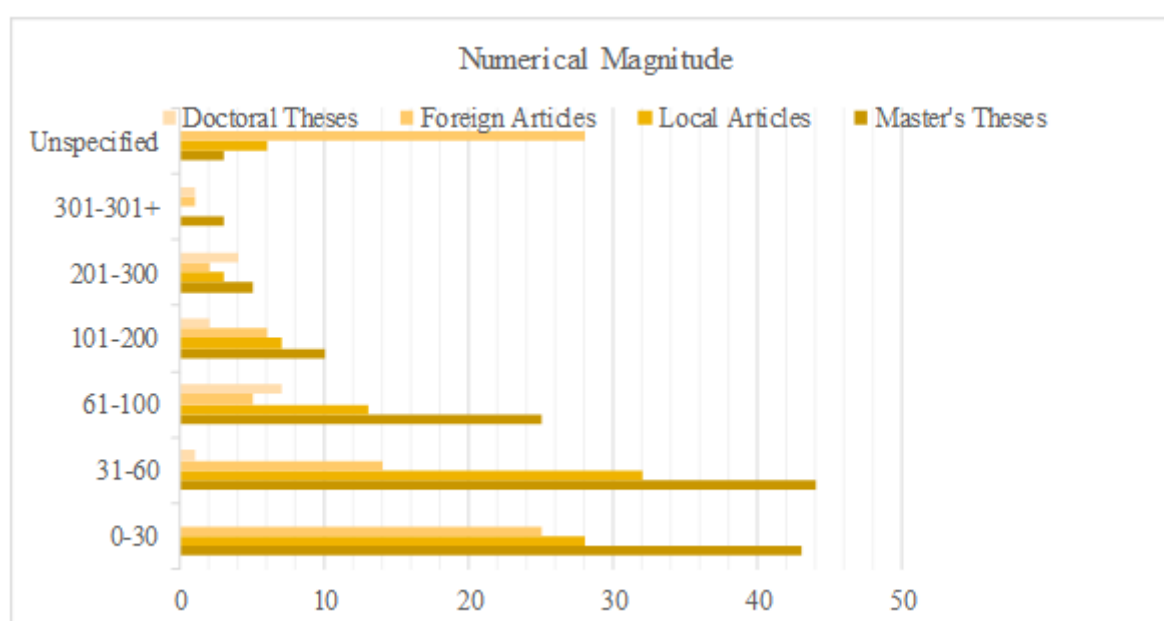
Considering the grade level of the students, 13.2% of them were carried out with 7th graders, 11% of them were carried out with 6th graders. It is understood that among the education levels, the most work is with secondary school students. It has been revealed that among the education levels from pre-school to the end of primary education, studies on mathematics teaching and art are carried out at least with the pre-school (0.3%).

Table 5 shows the distribution of life sciences and social studies teaching and art studies courses according to the numerical magnitude of the study group. The level of each working group is also listed in the table by research type.

Table 5. Distribution of Studies According to the Numerical Magnitude of The Study Group

Numerical Magnitude of the Study Group	Master's Theses	Local Articles	Foreign Articles	Doctoral Theses	Frequency (f)	Percent (%)
0-30	43	28	25		97	30.5
31-60	44	32	14	1	97	30.5
61-100	25	13	5	7	45	14.2
101-200	10	7	6	2	27	8.5
201-300	5	3	2	4	11	3.5
301-301+	3		1	1	4	1.3
Unspecified	3	6	28		37	11.6
Total	133	89	81	15	318	100.0

In 30.5% of studies related to life sciences and social studies teaching and art around the world, the numerical size of the study group is between 0-30 and 31-60. At least no work has been carried out in intervals above 301.

**Figure 4.** Distribution of Studies According to Study Group

4.3. What is the Distribution of Life Sciences and Social Studies Teaching with Art Studies Carried Out According to Research Methods and Designs?

Table 6 shows the distribution of life sciences and social studies teaching and art studies according to research method. Each method is also listed in the table according to their research type.

Table 6. Distribution of Studies According to Research Method

Research Method	Master's Theses	Local Articles	Foreign Articles	Doctoral Theses	Frequency (f)	Percent (%)
Qualitative	54	52	44	4	154	48.4
Quantitative	60	23	12	6	101	31.8
Mixed	17	10	9	5	41	12.9
Unspecified	2	4	16		22	6.9
Total	133	89	81	15	318	100.0

When the studies on life sciences and social studies teaching, which is an interdisciplinary subject, and art studies were examined, it was determined that almost half of them were carried out with qualitative methods, with a percentage of 48.4%, followed by 31.8% with

quantitative methods, and the rest were carried out with no method statement or mixed methods.

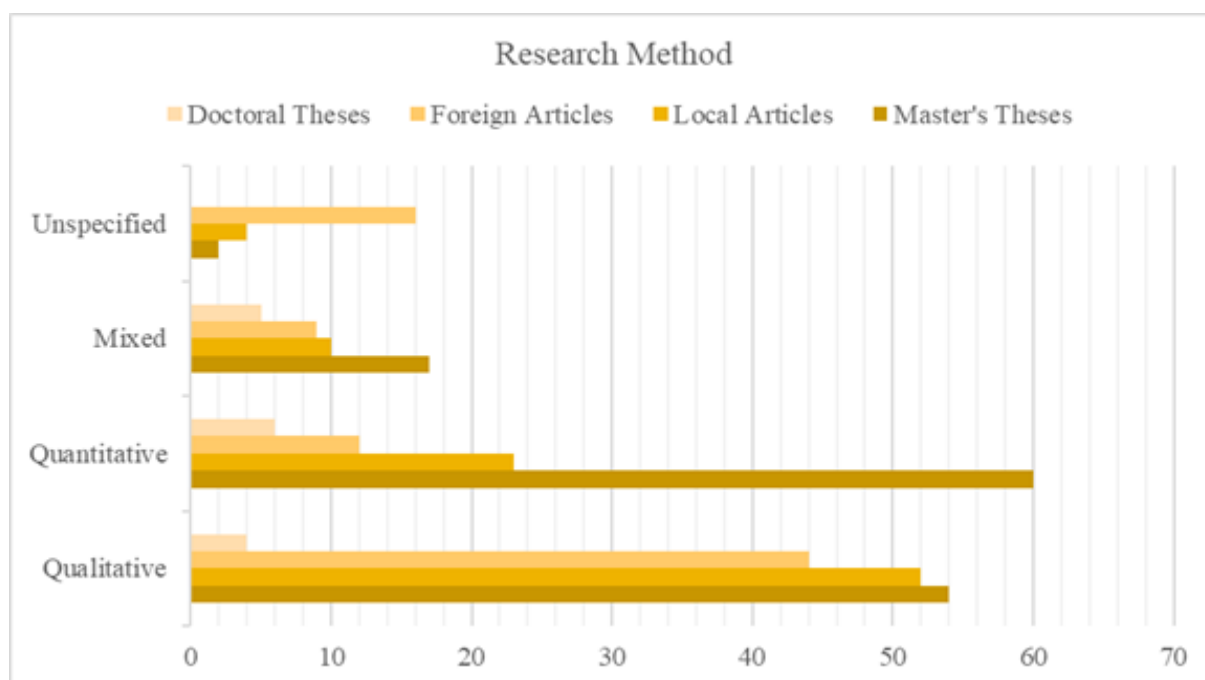


Figure 5. Distribution of Studies According to Research Method

Table 7 shows the distribution of life sciences and social studies teaching and art studies according to the research design. Each design is also listed in the table by research type.

Table 7. Distribution of studies according to research design

Research Design	Master's Theses	Local Articles	Foreign Articles	Doctoral Theses	Frequency (f)	Percent (%)
Unspecified	26	28	32		86	27.0
Experimental Design	49	18	10	6	83	26.1
Case Study	12	13	7		32	10.1
Action Research	10	7	9	4	30	9.4
Phenomenological Design	8	7	11		26	8.2
Survey Design	11	5	1		17	5.3
Exploratory Design	5	6	3	3	17	5.3
Grounded Theory	4			1	5	1.6
Meta-Synthesis			4		4	1.3
Basic Qualitative Research Design	1	2			3	0.9
Experimental Design + Case Study		2	1		3	0.9
Survey Model + Case Study	2				2	0.6
Experimental Design + Phenomenology			2		2	0.6
Split-Plot Mixed Design	1				1	0.3
Experimental Design + Document Review			1		1	0.3
Survey Model + Phenomenological Design	1				1	0.3

Action Research + Experimental Design				1	1	0.3
Convergent Parallel Design	1				1	0.3
Descriptive Design	1				1	0.3
Basic Interpretive Design	1				1	0.3
Simultaneous Triangulation Design		1			1	0.3
Total	133	89	81	15	318	100.0

When it checked at the distribution of life sciences and social studies teaching with art studies according to research design, no pattern is specified in the average quarter. Experimental design was preferred in approximately a quarter of the studies mentioned. There was not much accumulation in other research design

4.4. What is the Distribution of Life Sciences and Social Studies Teaching with Art Studies Carried Out in the According to Art Branches?

Table 8 shows the distribution of life sciences and social studies teaching and art studies according to art branches. Each design is also listed in the table by research type.

Table 8. Distribution of Studies According to Art Branches

Art Branches	Master's Theses	Local Articles	Foreign Articles	Doctoral Theses	Frequency (f)	Percent (%)
Drama	45	26	12	2	85	26.7
Museum	23	23	9	1	56	17.6
Literature	14	11	16	2	43	13.5
Cartoon	10	4	12	3	29	9.1
Animation	11	6	3	1	21	6.6
Music	5	5	4	1	15	4.7
Film	6	3	3		12	3.8
Art	3	1	5	2	11	3.5
Visual Arts	1	4	1	1	7	2.2
Photograph	5		1		6	1.9
Picture		2	3		5	1.6
Drama + Museum	2	2			4	1.3
Art Criticism	1	1	1		3	0.9
Land Art	1		1		2	0.6
Literature + Drama	1	1			2	0.6
Visual Arts + Drama			2		2	0.6
Theatre	1				1	0.3
Statue	1				1	0.3
Performing Arts			1		1	0.3
Sculpture + Painting + Literature + Drama	1				1	0.3
Literature + Cartoon	1				1	0.3
Picture + Photo	1				1	0.3
Literature + Visual Arts				1	1	0.3
Land Art + Photography				1	1	0.3
Literature + Music			1		1	0.3
Cartoon + Literature			1		1	0.3

Cartoon + Animation			1		1	0.3
Cartoon + Photo Literature + Sculpture			1		1	0.3
Literature + Music + Animation			1		1	0.3
Animation + Literature			1		1	0.3
Total	133	89	81	15	318	100.0

Among the branches of art, drama (26.7%) has been the most frequently preferred branch of art in both theses and articles. Immediately afterwards, 17.6% percent of studies were conducted on museums. Then, literary contents were researched.

5. Discussion

Art maintains a profound connection with life sciences and social studies education (Smith, 2018). This integration supports the development of essential skills such as emotional intelligence, creativity, and cultural awareness. Through artistic activities, students can explore complex historical and cultural topics more deeply, gaining insights that extend beyond traditional textbook learning. Moreover, incorporating art into these subjects has been shown to enhance students' intrinsic motivation and create more personalized learning experiences (Marshall, 2005). As a result, the integration of art with life sciences and social studies represents a holistic educational approach that fosters students' cognitive, emotional, and social growth.

Vitulli and Santoli (2013) emphasize that combining art with life sciences enables students not only to express themselves but also to grasp abstract concepts, particularly within the context of social studies. They argue that integrating art into social studies courses fosters critical thinking and allows students to engage deeply with historical and societal issues. Beyond its cognitive and cultural benefits, art-based instruction also significantly increases student motivation and engagement, as demonstrated by Marshall (2005). By merging art with life sciences and social studies, educators can transform classrooms into dynamic environments where students actively participate in constructing their own knowledge.

Combining art with life science and social studies, and other subjects offers a complete approach that helps students grow in many ways. Teachers can use art to help students become not only good learners but also emotionally aware, creative, and socially responsible. It will have been understood that the lessons taught using art are useful, and they have been researched more every 5 years compared to the previous period. It is understood that the number of studies has increased in recent years. As a matter of fact, although the most studies were carried out in 2019, it can be said that interest has generally increased over the years. This situation supports each other in different researches carried out interdisciplinary in the field of life sciences and social studies (Evci & Yeşiltaş, 2023; Er Tuna & Kaya, 2022; Bayram, 2021; Öztürk Demirbaş & Yıldırım, 2021; Er-Türküresin, 2020; Yıldırım, Tikman & Sentürk, 2022). In the content analysis study on alternative methods in social studies conducted by Öksüzoğlu and Çelikel (2021), drama and art integration peaked in 2019 and generally increases every year. Considering the studies examining this strong relationship between mathematics and art, another discipline in the field of education, most publications were published in 2019 (Gülhan, 2022; Sungur, Saylan Kırmızıgül & Ateş, 2022). Similar to these findings, studies on the integration of life sciences and social studies courses and art education were the most in 2019. One of the reasons for the sudden increase in the number of studies, especially since 2018, may be the mention that there should be an interdisciplinary understanding in the 2018 curriculum.

In content analysis studies conducted, master's theses outnumber doctoral theses in almost all studies, supporting the results of this research. Articles are sometimes more than theses and sometimes less. This may be due to limitations of research.

In this study, mostly students were studied. It is a meaningful situation since it is the studies discussed that reflect interdisciplinary approaches to the student. The unexpected outcome was that more studies were conducted with prospective teachers than with teachers. This may be because the study group is easily accessible.

When it looked at the grade level of the students, the emphasis seems to be at the secondary school level. The reason for this may be that the social studies course investigated was in both secondary and primary schools. In addition, since life sciences and social studies courses are included under different disciplines in other countries, history, geography and citizenship subjects were also examined. Because these contents are at the secondary school level, it is thought that the studies may be concentrated at this level.

The study group is stacked between 0-60. It is thought that the reason for this is to avoid the difficulties of working with large groups and because the evaluation and implementation of art practices will become difficult in large groups.

When the studies analyzed in this research are examined by methodology, it becomes evident that qualitative research is the most commonly employed approach. Quantitative methods rank second, while mixed methods combining both qualitative and quantitative techniques—are the least utilized among the reviewed postgraduate theses and articles. Interestingly, an opposite trend appears in studies focusing exclusively on drama in Turkey, where experimental quantitative research designs are predominant (Calp & Seçgin, 2019; Şahin, Girgin, & Özgeçen, 2021). This likely results from drama frequently being implemented as a teaching method, prompting researchers to assess its effects through controlled experiments. In this study as well, quantitative methods are primarily associated with research on drama. In contrast, in areas such as literature and museum education, qualitative approaches are generally preferred both in Turkey and internationally. This preference may stem from differing cultural perspectives on how best to explore and interpret educational phenomena.

It was found that experimental research design was employed in 83 of the 318 studies examined (26.21%) within the scope of life sciences and social studies education. However, a review of the broader literature indicates that the most frequently utilized research design in the field of social studies is the survey model (Avcı & Sipahi, 2016; Dilek, Baysan & Öztürk, 2018). The discrepancy between the findings of this study and those of similar research may stem from the broader scope of this analysis, which encompassed all branches of art. In the studies reviewed, the integration of art varied considerably: in some cases, art was incorporated as a teaching method, while in others, it served primarily as instructional material.

Drama is reflected in this study as the most integrated art form. The fact that drama is a major education method, that there are sufficient resources for its implementation, and that it is suitable for the nature of life science and social studies courses may have caused this result. As a matter of fact, the museum is one of the frequently researched topics. This may be due to the fact that sub-disciplines such as history, geography and citizenship, which are included in life sciences and social studies courses due to the principle of integrated teaching, are the subjects discussed in museums. Bucar (2016) who researched the transfer of religious and ritual purposes through art, conducted a study examining the visual arts in religious culture and ethics textbooks and concluded that visual arts are an effective tool to better understand and internalize religious concepts and rituals. Knohl (2018) examined ancient Jewish art and archeology in the Land of Israel. This study evaluated the works of art that the Jewish community used to express their religious rituals and beliefs. It was concluded that works of art were frequently used in religious education in Jewish societies. Erdem (2022) emphasized that using religion and art together in education, which are important dynamics of society, can strengthen students' religious beliefs and help them understand religious values.

In the study carried out by Nikolajeva and Scott (2013), they examined how picture book's function. They found that picture books support children's understanding, creativity and cultural awareness skills through visual images, texts and story structure. Gunawardena, and

Koivula (2023) stated that teachers can support students' understanding and emotional bonding skills by using stories effectively.

Communication and expression are the basic elements of socialization. In their study, Türkeç, and Koyuncu (2022) evaluated visual expressions in primary school mathematics and Turkish textbooks. They stated that visual expressions can contribute to students' processes of deepening understanding, organizing thought, and improving communication skills. As can be understood from these studies conducted, art can be used as an important tool and resource in disciplines in the socialization process related to life.

Studies conducted around the world indicate that the use of art education in teaching life sciences has positive contributions to both disciplines. In their research, Hennessey and Amabile (2010) questioned how art can encourage students' creativity through life sciences lessons. As a result, they observed that art activities can improve students' creative thinking skills and help them produce different and innovative solutions in life sciences. They also discovered that art could strengthen students' ability to express themselves, take risks, and seek alternative solutions. Qia et. all, (2021) discussed the relationship between art education and life sciences course and examined how this relationship can contribute to the cognitive, emotional and social development of students. It was concluded that combining art education and life sciences course could have positive effects on students' cognitive, emotional and social development. Art activities have shown to help teachers make life science subjects more meaningful and help students learn in depth. Deasy (2002) brought together a series of studies investigating the effects of art on the academic and social development of students. The relationship between life sciences lessons and art is one of these studies. It has been revealed that arts education can support students' academic and social development and have an increasing effect on student success and participation in life sciences courses. Eguz (2024) investigated the effect of art activities carried out in the life sciences course on the social skills of students and investigated the potential of art in developing skills such as social interaction, cooperation and empathy. Emphasized that art activities carried out in the life sciences course can be an effective tool in developing students' social skills, can strengthen students' skills such as social interaction, cooperation and empathy, and can have a positive impact on their social relationships. Blandy (2010) examines research on the place of art in the primary school curriculum and produced a synthesis study on how art can be integrated into life sciences lessons. It has been found that when art is used effectively in life sciences courses, it enriches students' learning experiences and that students can develop their emotional expression skills and establish deeper connections to life sciences subjects. Lukaka (2023) examines how art education and life sciences courses can be linked on a subject and researched how it can support students' creativity, problem solving and critical thinking skills, and showed that it can have positive results. It has also been revealed that art activities can increase students' motivation to learn and promote in-depth learning. Eisner (2002) discussed what role art can play in the field of life science in his/her study on how art supports the creativity and intellectual processes of the mind. It states that art activities can develop students' original thinking, aesthetic perception, meaning creation and understanding of the world from different perspectives.

Eguz (2024) found that art activities carried out in the life sciences course could have positive effects on students' learning processes. They emphasized that art helps increase students' motivation, provides learning pleasure and helps them understand the subjects better. It was concluded that the relationship between social studies course, which is a continuation of the life science course in primary school, and art education can be an effective tool in developing students' understanding, creativity, cultural awareness and critical thinking skills. For example, Mardiati ve Satrijono (2023) discussed the integration of social studies course with art in his/her study. They pointed out that social studies courses integrated with art can be an effective method to improve students' comprehension, creativity and cultural awareness skills, and can encourage students to learn in depth by making social studies subjects more meaningful and interesting.

6. Conclusion

The integration of art into education is pivotal, offering a holistic learning approach that fosters creativity, emotional intelligence, and diverse cognitive skills. Incorporating art positively influences students' emotional well-being, contributing to the development of empathy and expressive abilities (Guo, 2024). Moreover, art serves as a platform for problem-solving, enhancing students' critical thinking skills and preparing them for future challenges (Pope & Jones, 2022). The creation of multifaceted learning environments through various art forms allows students to discover and develop their unique strengths, fostering a more effective learning process (Gardner, 1999). This integration not only enhances academic success but also cultivates well-rounded individuals ready to navigate the complexities of the future workforce and society. In conclusion, the integration of art into education provides a comprehensive and enriching learning experience, ultimately contributing to the development of healthier and happier individuals in education. As can be understood from this study, art is a discipline used to fulfill the requirements of education, as it involves similar processes to education and with its diversity. Each learner's learning strategies are different and unique. Art is one of the most comprehensive disciplines that can adapt to this difference and uniqueness. As can be seen from the sample of this study, a wide variety of arts can be integrated into education and important findings are observed.

Limitation

This study has several limitations that should be considered when interpreting the findings. First, the bibliometric analysis was conducted using a dataset consisting of 318 studies selected from major academic databases including EBSCO, ERIC, Web of Science (WoS), DergiPark, YÖK National Thesis Center (YÖKTEZ), TR Index, Scopus, and Google Scholar. While these databases provide broad academic coverage, the study is inherently limited to works indexed in these specific platforms. As a result, potentially relevant studies published in other databases or non-indexed journals may not have been included. Additionally, the analysis focused on bibliometric parameters such as publication year, research type, method, design, study groups, grade levels, sample sizes, and art branches. It did not extend to a qualitative appraisal of study content or methodological rigor. Therefore, while the study maps publication trends and distributions, it does not evaluate the depth, theoretical quality, or empirical robustness of the individual studies. These limitations indicate that the findings primarily offer a descriptive overview and should be interpreted within this contextual boundary.

Recommendation

The integration of various branches of art into education, which is a result of this study, brings with it certain suggestions.

- Practical research can be carried out in experimental or action research designs regarding the integration of less studied art branches into life sciences and social studies teaching courses.
- In this study, only Turkish and English sources were scanned. A greater and more accurate direction can be revealed by researching the bibliometric analysis of life sciences, social studies and art works in other languages.
- Studies on the integration of art studies can also be researched with study groups at pre-school and high school levels.

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Conflict of Interest

The Authors declare that there is no conflict of interest.

Declaration of Generative AI-assisted Technologies

This manuscript was prepared without the assistance of Generative AI. All intellectual contributions, critical analyses, and final revisions were conducted by the authors. The authors take full responsibility for the accuracy, originality, and integrity of the content presented in this work.

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