

GLOBAL SCHOOLS PROGRAM



**Global Schools
Program**

DRAFT REPORT

**THE OPPORTUNITES AND CHALLENGES
OF CURRICULUM LOCALIZATION FOR
THE SUSTAINABLE DEVELOPMENT
GOALS:**



**RESULTS OF THE GLOBAL SCHOOLS
PILOT STUDY IN TURKEY**



**Global Schools
Program**



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Global Schools Country Research Program, an initiative of the Sustainable Development Solutions Network (SDSN) aims to demonstrate how countries can reform their education systems in line with Education for Sustainable Development (ESD) and Global Citizenship Education (GCED) principles. The project currently comprises 3 Country Research Teams, composed of leading educational research institutions from Morocco, Ghana, and Turkey.

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UN Sustainable Development Solutions Network

The UN Sustainable Development Solutions Network (SDSN) was set up in 2012 under the auspices of the UN Secretary-General. SDSN mobilizes global scientific and technological expertise to promote practical solutions for sustainable development, including the implementation of the Sustainable Development Goals (SDGs) and the Paris Climate Agreement. SDSN works closely with United Nations agencies, multilateral financing institutions, the private sector, and civil society.

Global Schools Program

The Global Schools Program is an initiative of the SDSN working in support of UNESCO's Global Action Program on Education for Sustainable Development (ESD). Through research and advocacy, Global Schools develops the tools, resources, and programs to support schools and educators around the globe. The vision of the program is to create a world where every primary and secondary school student is being equipped with the knowledge, values, and skills necessary for effectively responding to the greatest challenges of this century and shaping a sustainable and prosperous world for all.

Hacettepe University

Hacettepe University (HU) is one of the oldest and leading universities in Turkey. HU began to operate as a hospital in Ankara in 1957. Education, research and public service activities started in 1958. HU expanded further in the course of time with the foundation of new departments and faculties on two campuses. HU continues its activities with 16 Faculties, 15 Graduate Schools and Institutes, 4 Vocational Schools, 1 Conservatory, 98 Research and Application Centers. HU has around 53.000 students and over 3.700 faculty members. The medium of instruction is through 4 languages: Turkish, English, French, and German.

Background

One of the biggest challenges of implementing ESD and Global Citizenship Education around the world has been the process of localization. Every education system around the world is different - in terms of standards, laws, priorities, content and curriculum, delivery model, and degree of flexibility. As such, localizing a universal and global concept like ESD can often be challenging. Localizing ESD curriculum requires knowledge, decision-making, and examinations of local cultures. More specifically, to create ESD lesson plans, educational communities need to identify locally relevant issues, perspectives, skills, values, and behaviors central to sustainable development in each of its components: environment, economy, and society.

Another significant point is that, much of the ESD curriculum used in classrooms around the world is not being evaluated, especially in the long run. To put it another way, it is unclear if ESD is affecting student behaviors, attitudes, skills, and so on. Furthermore, ESD (i.e. Target 4.7) is currently not being comprehensively measured in K-12 education, especially in developing countries.

To address the above mentioned challenges, the Global Schools Program ran a pilot in three countries: Morocco, Ghana, and Turkey. In each country, Global Schools partnered with eminent research teams and advocacy institutions (country teams) with expertise and practice in education. The pilot centered on two core objectives: (1) Localizing the core ESD competencies, as defined by UNESCO, in the pilot country; and (2) Documenting the localization process in each pilot country and developing a localization toolkit that other Ministries of Education can use to localize ESD in their respective countries.

The project was implemented over an 18 month period across 6 separate phases, which included an analysis of educational policies and laws; a comprehensive K-12 curriculum audit; the creation of a national committee comprised of the key education stakeholders; adaptation and creation of lesson plans and contents; and finally an evaluation of the lesson plans in classrooms using a range of research methods and technique. The instructions for each phase were provided by Global Schools, with Country Teams given the opportunity to adapt their approaches based on local circumstances and priorities. Therefore, the views, data, and analysis outlined in this report belong solely to the authors and their respective team of contributors.

This report was prepared within the scope of the Global Schools Program Piloting Project led by the UN Sustainable Development Solutions Network (SDSN) in order to present the findings emerging from three main research activities conducted in the project:

- Policy Analysis executed on five policy documents on the basis of key competencies for ESD and concepts of sustainable development as defined by UN (2015) and UNESCO (2012, 2017) on the 2030 Education Agenda.
- Curriculum Mapping executed on twenty-three subject-specific and one skill-based curriculum documents with respect to global learning objectives of ESD as suggested by UN (2015) and UNESCO (2012, 2017) on the 2030 Education Agenda.
- Preliminary Program Evaluation on the sixty lesson plans of Global Schools Program by ESD-competent Turkish teachers practicing in different regions of Turkey.

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TABLE OF CONTENTS

BACKGROUND	4
ACKNOWLEDGEMENTS	5
TABLE OF CONTENTS	6
EXECUTIVE SUMMARY	8
PHASE 1: TEAM FORMATION	10
PHASE 2: SITUATION ANALYSIS AND CURRICULUM MAPPING	10
BACKGROUND	10
OBJECTIVES	10
METHODOLOGY	10
SUMMARY	11
POLICY AND LEGAL ANALYSIS	12
Findings in Relation to Conceptual Keywords	13
Findings in Relation to Competency-based Words	14
CURRICULUM MAPPING	16
Findings in Relation to Language Studies	16
<i>Turkish Language Curriculum</i>	17
<i>Foreign Language Curriculum</i>	17
Findings in Relation to Science, Mathematics, and Technology	18
<i>Science Curriculum: Science, Physics, Biology, Chemistry</i>	18
<i>Mathematics Curriculum</i>	20
<i>Technology Curriculum: Information Technologies, Software, Technology, Design</i>	20
Findings in Relation to Music, Arts, and Physical Education	21
<i>Music Curriculum</i>	21
<i>Visual Arts Curriculum</i>	22
<i>Physical Education Curriculum</i>	23
Findings in Relation to Social and Life Studies	25
<i>Life Studies Curriculum</i>	25
<i>Social Studies Curriculum</i>	26
<i>Geography Curriculum</i>	26
Findings in Relation to History Education	28
Findings in Relation to Morals, Values, and Civics Education	29
Findings in Relation to Pre-School Education	31
CONCLUSIONS AND RECOMMENDATIONS	32
PHASE 3: COMMITTEE FORMATION	36
PHASE 4: ADAPTATION AND LOCALIZATION	36
PHASE 5: TESTING AND EVALUATION	37
BACKGROUND	37
OBJECTIVES	37
METHODOLOGY	37

RESULTS	38
CONCLUSION	40
CHALLENGES AND OPPORTUNITIES	40
RECOMMENDATIONS AND NEXT STEPS	41
REFERENCES	43
REFERENCES FOR CURRICULUM DOCUMENTS	44
TABLES	46
TABLE 1 - LIST OF POLICY DOCUMENTS	46
TABLE 2 - CONCEPTS/SUB-CONCEPTS OF POLICY DOCUMENTS	46
TABLE 3 - KEY COMPETENCIES BY POLICY DOCUMENTS	47
TABLE 4 - SUBJECTS ACROSS K-12 GRADES	48
TABLE 5 - TURKISH LANGUAGE CURRICULUM: THEMES AND TOPICS RELATED TO SDGS	49
TABLE 6 - FOREIGN LANGUAGE CURRICULUM: LEARNING OUTCOMES RELATED TO SDGS	50
TABLE 7 - SCIENCE CURRICULUM	52
TABLE 8 - MATHEMATICS CURRICULUM	53
TABLE 9 - TECHNOLOGY CURRICULUM	54
TABLE 10 - MUSIC CURRICULUM	54
TABLE 11 - VISUAL ARTS CURRICULUM	55
TABLE 12 - PHYSICAL EDUCATION CURRICULUM	56
TABLE 13 - LIFE STUDIES CURRICULUM	57
TABLE 14 - SOCIAL STUDIES CURRICULUM	58
TABLE 15 - HISTORY CURRICULUM	59
TABLE 16 - CULTURE OF RELIGION AND MORALS CURRICULUM	60
TABLE 17 - HUMAN RIGHTS, CIVICS AND DEMOCRACY, PHILOSOPHY	61
TABLE 18 - PRE-SCHOOL LEARNING OUTCOMES BY KEY COMPETENCIES	62
TABLE 19 - FREQUENCY OF REFERENCES TO SDGS BY LEARNING DOMAIN VS SDGS	63
TABLE 20 - FREQUENCY OF REFERENCES TO SDGS BY SUBJECT VS GRADE LEVEL	64

Executive Summary

This report consists of the findings emerging from three main research activities conducted within the scope of the Global Schools Program Pilot Project led by the UN Sustainable Development Solutions Network (SDSN). These findings include:

- (1) How are the global perspectives of ESD and GCE incorporated into the local educational policies in Turkey?;
- (2) How well does the Turkish national curriculum prepare generations regarding global citizenship and sustainable futures?;
- (3) How would the Global Schools Program fit in the Turkish national curriculum and educational goals from the perspectives of practicing teachers?

To answer the research questions, three types of analyses were performed:

- (a) Policy Analysis executed on five policy documents based on critical competencies for ESD and concepts of sustainable development as defined by the UN (2015) and UNESCO (2012, 2017) on the 2030 Education Agenda.
- (b) Curriculum Mapping executed on twenty-three subject-specific documents and one skill-based curriculum document concerning global learning objectives for ESD as suggested by the UN (2015) and UNESCO (2012, 2017) on the 2030 Education Agenda.
- (c) Preliminary Program Evaluation on the Global Schools Program's sixty lesson plans by ESD-competent Turkish teachers practicing in different regions of Turkey.

The findings from the policy analysis revealed that the concepts of sustainable development and 21st-century skills seem to have more prevalence in the policy documents. In contrast, global citizenship as a concept does not receive as much attention throughout Turkish policy. As a second point, most of the key competencies suggested by UNESCO (2017) are significantly reflected in Turkish educational policies even though they are mostly implicit. Considering the number of references given to fundamental competencies, we concluded that they are well-situated in the local educational policies; more specifically, the UNESCO ESD competencies like collaboration, critical thinking, self-awareness, strategic competency, and anticipatory competency have more direct references than the other competencies.

Regarding the curriculum analysis, the top three SDGs that receive the highest number of references in Turkish national learning outcomes are SDG11: Sustainable Cities and Communities; SDG3: Good Health and Well-being; and SDG12: Responsible Consumption and Production. This finding implies that the compulsory parts of the Turkish National K-12 curriculum attach great importance to the following issues:

- Healthy lives and promoting well-being for all at all ages.
- Cities and human settlements that are inclusive, safe, resilient, and sustainable.
- Sustainable and responsible consumption and production patterns.

In other words, those three areas of sustainable development seem to have a substantial role in the curriculum.

On the other hand, the lowest number of references between SDGs and the Turkish national curriculum

was detected concerning SDG14: Life Below Water; SDG4: Quality Education; and SDG6: Clean Water and Sanitation. This finding suggests that the curriculum can give more attention to issues such as:

- Conserving and using the oceans, seas, and marine resources sustainably.
- Ensuring inclusive and equitable education and promoting lifelong learning opportunities for all.
- Ensuring availability and sustainable management of water and sanitation for all.

These three topic areas are significant weaknesses of the curriculum that might lead to failure in promoting the comprehensive vision of ESD.

The comparison of explicit and implicit references is almost equal in number, as 51% of the references to the SDGs are explicitly stated while 48% are implied.

The national learning outcomes within the Science Curriculum put the most emphasis on the SDGs. There are a total of 188 references to SDGs (explicit f=140) within the Science Curriculum. This happens to be, by far, the number one subject-specific curriculum that is connected to ESD and GCED learning outcomes. In terms of the domains of learning objectives, the percentages indicate that over 70% of the national learning outcomes represent the cognitive domain. The rest of the national learning outcomes are related to the other learning domains.

The overall findings reveal that both the Turkish national curriculum and Turkish educational policies reflect an adequate level of emphasis on ESD and GCE even though most of the focus happens to be implicit and changes across different subjects and educational levels. Also, the level of attention attached to SDGs highly depends on the thematic representation of a specific SDG and the content covered in a particular subject. All in all, the global perspectives and goals of ESD and GCE find a proper way into the local educational policies and national curriculum in Turkey; still, there is always room for improvement.

A preliminary program evaluation of the Global Schools Program's sixty lesson plans concluded that Turkish teachers' overall evaluation of the sixty lesson plans of the Global Schools Program is highly positive at 61%. In contrast, the remaining 39% of the lesson plans could be modified or improved to make the lesson plans more local. Even though the teachers reported that there are specific lesson plans to be improved for Turkish schools, none of the lesson plans in the Global Schools Program were reported as unsuitable or inappropriate for implementation in Turkish schools, which is a very remarkable point in terms of the suitability of the Global Schools Program for different regions across the world.

Phase 1: Team Formation

Phase 1 of the pilot project consisted of team onboarding and an initial call with the Global Schools Program Director, Project Lead and Project Officers. In Phase 1, each country team was briefed on the pilot methodology

Phase 2: Situation Analysis

Background

This section portrays the findings emerging from the situation analyses performed on educational policy documents and K-12 curriculum in Turkey based on the 2030 Education Agenda for Sustainable Development, as defined and suggested by the UN (2015) and UNESCO (2012, 2017).

Objectives

This phase had two main objectives: to analyze Turkey's educational policies and national curriculum concerning ESD. The following questions will be answered in this section:

- How do global perspectives of ESD (Education for Sustainable Development) and GCE (Global Citizenship Education) find a way into the local policies in Turkey?
- How well does the Turkish national curriculum prepare generations for global citizenship and a sustainable future?

Methodology

For this phase, two types of situation analyses were performed:

- (1) Policy Analysis executed on five policy documents based on key competencies for ESD and concepts of sustainable development as defined by the UN (2015) and UNESCO (2012, 2017) on the 2030 Education Agenda.
- (2) Curriculum Mapping executed on twenty-three subject-specific documents and one skill-based curriculum document concerning global learning objectives of

ESD as suggested by UN (2015) and UNESCO (2012, 2017) on the 2030 Education Agenda.

The following steps were performed for the analysis of the policy documents:

1. The first step started with identifying a list of conceptual keywords (n=21) about three key concepts: sustainable development, global citizenship, and 21st-century skills (see Table 2 for the main concepts and subconcepts).
2. In the second step, another list of competency-based keywords (n=45) related to UNESCO's (2017) key competencies was identified (see Table 3 for the list of key competencies and related keywords).
3. Next, each document was scanned, analyzed, and coded one by one using those identified keywords (N=66). At this stage, explicit or implicit references to the identified keywords were detected in each document.
4. Whenever one of the keywords was detected explicitly in a document, it was coded as "X" on the excel sheets. However, for a keyword that was not explicitly reflected in a document but only implied, it was coded as "N" on the excel sheets.
5. A further step was to determine whether the reference was "for," which refers to a competency-based keyword appearing as a target, or "through," which refers to a competency-based keyword appearing as a means. Then, the keyword was coded as "X1" or "N1" when the reference was "for"

and “X2” or “N2” when the reference was “through.”

As for the analysis of the curriculum documents, 255 keywords were identified in the Turkish language based on the 17 SDGs and corresponding learning objectives of ESD. According to the themes that the SDGs generally address, around 10 to 15 keywords were defined and listed under each SDG. Then, the national learning outcomes (NLOs) in each curriculum document were scanned, analyzed, and coded one by one by using those identified keywords. At this stage, explicit or implicit references to the identified keywords were detected in the NLOs. The coding process was conducted in the following order:

1. When a national learning outcome (NLO) including any of the identified keywords was thematically matched with a specific SDG, the number of SDG was coded in the first column (i.e., 1, 8, 13, 17, etc.).
2. When the NLO had a direct congruence with a specific learning objective within the scope of that SDG, the NLO was given the same code as the specific learning objective provided by UNESCO (2017). Furthermore, it was entered into the same column on the excel sheets (i.e., 1.5, 8.4, 13.2, etc.).
3. When the NLO was not directly congruent with any of the learning objectives, the next step was categorizing the NLO based on the learning domain that it indicates (i.e., “1-C” for the cognitive domain within SDG1, “13-B” for the behavioral domain within SDG13, and 17-SE for the socio-emotional domain within SDG17). The grade level indicated in the NLO (i.e., from 1 to 12) was also entered on excel.
4. The last step was to determine whether the reference was implicit or explicit. Whenever one of the keywords was detected explicitly in an NLO, it was coded as “X” on the excel sheets. However, for a keyword that was not explicitly reflected but implied in an NLO, it was coded as “N” on the excel sheets.

Summary

The findings from the policy analysis revealed that the concepts of sustainable development and 21st-century skills seem to have more place in the policy documents. In contrast, global citizenship as a concept does not receive enough significance in the same documents. Secondly, most of the key competencies suggested by UNESCO (2017) are significantly reflected in Turkish educational policies even though they are mostly implicit. Considering the number of references given to key competencies, we can conclude that they have an adequate place in the local educational policies; more specifically, competencies like collaboration, critical thinking, self-awareness, strategic competency, and anticipatory competency have more direct references than the other competencies.

Regarding the curriculum analysis, the top three SDGs that received the highest number of references in the national learning outcomes are SDG11: *Sustainable Cities and Communities*; SDG3: *Good Health and Well-being*; and SDG12: *Responsible Consumption and Production*. This finding could imply that the compulsory parts of the Turkish National K-12 Curriculum attach great importance to the following issues:

- Healthy lives and promoting well-being for all at all ages;
- Cities and human settlements that are inclusive, safe, resilient, and sustainable;
- Sustainable and responsible consumption and production patterns.

In other words, those three areas of sustainable development seem to take prevalence in the curriculum. This was interpreted as a significant strength.

On the other hand, the lowest number of references were detected concerning SDG14: *Life Below Water*; SDG4: *Quality Education*; and SDG6: *Clean Water and Sanitation*. This finding could mean that the curriculum should give more spac-

es to the issues such as:

- Conserving and using the oceans, seas, and marine resources sustainably;
- Ensuring inclusive and equitable education and promoting lifelong learning opportunities for all; and
- Ensuring availability and sustainable management of water and sanitation for all.

Those three points seem to be the major weaknesses of the curriculum that might fail in promoting the comprehensive vision of ESD.

Explicit and implicit references are almost equal in number as 51% of the references to SDGs are explicitly stated while 48% are implied. To answer the question of what specific subject(s) put the most emphasis on SDGs through national learning outcomes, the Science Curriculum with a total of 188 references to SDGs (explicit f=140) happens to be, by far, the number one subject-specific curriculum. In terms of learning domains, the analysis indicates that over 70% of the NLOs represent the cognitive domain while the rest are related to the other domains.

Policy and Legal Analysis

This section of the report presents the policy analysis executed on key documents (n=5) of Turkish educational policies and the general findings derived from this exercise. The primary purpose of the exercise was to demonstrate how the global perspectives of ESD and GCE find a way into the local educational policies in Turkey. Five key documents were selected to be included in the exercise based on their significance, coverage, and dates. In total, 476 pages of documents were analyzed. Two were strategy documents, and the others were Law No: 1739, a policy quality manual, and a policy vision document.

Table 1 displays the list of the documents analyzed at this stage, along with the type, date, significance of each document. The oldest dated document was the Basic Law of National Education (Law No: 1739), enacted in 1973 as a corner-

stone of the Turkish education system. Although a series of amendments have been passed in the last four decades, it is still the governing law of education in all matters in Turkey. Being amended nineteen times in particular years (1983, 1997, 2003, 2004, 2008, 2009, 2012, 2014, 2016, and 2019), the Basic Law of National Education defines the general framework and principles of the Turkish education system (METK, 1973).

“This law covers the basic provisions regarding the objectives and principles of the Turkish national education, the general structure of the education system, teaching profession, school buildings and facilities, educational tools and materials, and the duties and responsibilities of the government in providing educational services” (METK, 1973, p. 1)

The other four documents were relatively recent. The Quality Framework for National Education dated 2014 includes a list of fundamental values, key competencies, knowledge, skills, attitudes, and learning outcomes for the Turkish national education (MEB, 2014). The document highlights the following objectives:

- to make general objectives of education clear and to improve quality;
- to determine the quality standards and criteria for education,
- to raise the educational services;
- to the international standards;
- to increase accountability by making the educational services transparent;
- to identify the strengths and weaknesses of education;
- to measure and evaluate the educational system through outputs;
- to determine and increase the performance of all actors within the system;
- to increase the equality of opportunities;
- to make new strategies and policies based on data; and
- to use administrative and financial resources more effectively and efficiently (MEB, 2014).

Turkey's Education Vision for 2023 was released in 2018 to put forward the country's national vision for contemporary and future education. It is significant because it takes its title from a future year (2023), the 100th anniversary of the Turkish Republic (MEB, 2018). It is clearly stated in the document that this educational vision aims to raise individuals:

- who are equipped with the skills of the current age and the future times;
- who can use their agency for the benefit of humanity;
- who are passionate about science;
- who are interested in and sensitive to culture; and
- who are qualified and moral (MEB, 2018, p. 7).

The subsequent two documents analyzed were strategy documents: the Strategic Plan for 2019-2023 and the Performance Program for 2020. First, the Strategic Plan for 2019-2023 includes five-year measures on seven major goals, twenty-four specific objectives, and ninety-three performance indicators linked to the primary goals and specific objectives. The risks and strategies identified for the years between 2019 and 2023 were also included in the document (MEB, 2019a). The final document was the Performance Program for 2020, in which a one-year program on policy measures and performance indicators are reflected. This document indicates strong links and references to the previous strategy document (MEB, 2019b).

Findings Concerning Conceptual Keywords

The general findings obtained from the first step revealed that Turkish educational policies analyzed within the scope of this report reflected a remarkable number of references to the concepts of sustainable development and 21st-century skills. On the other hand, global citizenship, as a concept, did not receive significant emphasis even though some relevant sub-concepts received an adequate level of attention in the policy

documents.

Table 2 displays the results of the first exercise on major concepts and subconcepts. Accordingly, the concept of sustainable development appeared somehow in all of the policy documents. However, three documents emphasized it explicitly, while the two other documents only implied but did not directly express it. Regarding the sub-concepts, sustainable development's economic, social, and cultural aspects received more explicit references than the ecological aspect, which had only implicit references in three policy documents. Additionally, there were more references to the current generations' needs than the future generations' needs, although they were all non-explicit. As for future generations, Turkey's Education Vision for 2023 was the only document reflecting an implicit reference. Explicit or implicit, all of the references related to the concept of sustainable development appeared to be a target, not a means.

Another concept was global citizenship, and it did not receive any explicit references in any of the documents. Nevertheless, specific related keywords took more place in the documents than the central concept of global citizenship. For instance, human rights and social/moral responsibility received a sufficient number of explicit and implicit references in all of the documents. Specifically, the Quality Framework for National Education emphasizes human rights and social responsibility issues as a target. Additionally, the only document putting an explicit emphasis on cultural diversity was also the Quality Framework for National Education.

Regarding environmental concerns, the only policy document indicating a reference was the Strategic Plan for 2019-2020, and it was implicit. While national/local goals were explicitly stated and mentioned implicitly in all of the documents, global goals were not considered explicitly in the documents; there were three non-explicit references. Similarly, "our citizens" had explicit references in all of the documents, whereas global citizens had no single reference.

Finally, 21st-century skills were detected in two documents: one explicit and one implicit reference. 21st-century skills gained considerable attention in Turkey's Education Vision for 2023, including all explicit and target-oriented references to each sub-concept within this dimension. Looking at the sub-concepts more specifically, skill-based education had four explicit and one implicit reference, and all of them appeared as a target in the documents. Contemporary education received two explicit and two implicit references, both as a means and as a target.

As a result, 21 conceptual keywords were scanned and coded across five different policy documents. In total, 71 references appeared (41 explicit and 30 implicit; 67 as a target and four as a means) to those keywords (see Table 2). Assuming that all of the documents indicated a reference to every keyword, there would have been 105 references detected in this exercise. Considering the result of the current exercise (71 references), we could conclude that global perspectives of ESD are adequately represented in the local educational policies in Turkey. However, as a final note, we should state that sustainable development and 21st-century skills seem to have more place in the policy documents. In contrast, global citizenship as a concept does not receive similar attention in the same documents. This conclusion could imply a slight gap regarding global citizenship, and this gap indicates that Turkish educational policies should give more place to and attach more importance to GCE.

Findings in Relation to Competency-Based Keywords

In this exercise, eight key competencies (UNESCO, 2017) and 39 keywords related to those competencies were scanned and coded across each document. The general findings obtained from this step revealed that most of the key competencies and sub-skills were reflected significantly in Turkish educational policies even though

they were mostly implicit. According to Table 3, which displays the results from this exercise, competencies like collaboration, critical thinking, self-awareness, strategic competency, and anticipatory competency had more direct references than the other competencies. However, all of the key competencies received an explicit or implicit emphasis in each document. The highest number of references to the competencies were included in Turkey's Education Vision for 2023 (f=40), followed by the Quality Framework for National Education (f=37). On the other hand, the least number of references to the competencies were from the Basic Law of Education (f=21).

- *Systems Thinking* as a competency did not appear explicitly in any of the policy documents. However, almost all of the additional keywords linked to systems thinking were addressed explicitly or implicitly in the documents. For example, a systemic approach to education and a holistic perspective in education had comprehensive coverage as a means in all of the documents, even though most of the coverage was non-explicit. Similarly, all of the documents addressed cause-effect or mutual relationships and links mostly in an implicit way. The only explicit target-oriented reference within this competency was for cause-effect or mutual relationships and links and was identified in the Quality Framework for National Education. Apart from that, all the other references in this context were either implicit (f=14) or means-oriented (f=16), as depicted in Table 3.
- *Normative* competency did not appear explicitly in any of the policy documents. Nonetheless, almost all of the additional keywords were addressed in the documents. While global or universal norms and values were addressed as an implicit target, national or local values were seen as an explicit target in all of the documents. Similarly, there appeared to be both explicit and implicit references across all five documents

to the following keywords: moral, ethical, and spiritual values; shared and humanitarian values; and social and cultural values (see Table 3).

- *Anticipatory* competency appeared in two documents, both as an explicit target and as an implicit means. Within this context, the following keywords appeared as an explicit target at least once: future vision, prediction of future possibilities and scenarios, awareness and identification of risks and changes, and envisioning consequences of actions and decisions. All of those references were from the Quality Framework for National Education. The other four documents indicated either implicit (f=3) or means-oriented (f=7) coverage to those keywords (see Table 3).
- *Strategic* competency was seen in two means-oriented explicit references in the documents. More specifically, the additional keywords in this dimension all contained explicit references. Accordingly, innovative solutions and practices were addressed explicitly as a target in three documents and as a means in two documents. Collective action was addressed as an explicit target in two documents. Strategic objectives and practices had one target-oriented and three means-oriented references. Innovative designs and resources and strategic objectives and practices had target-oriented and means-oriented references (see Table 3).
- *Collaboration* competency appeared through four explicit references, all of which appeared as a means. The codes for additional keywords indicated that cooperation and partnership of different actors received explicit attention in all documents both as a target and as means. Teamwork and group work were addressed as an explicit target in Turkey's Education Vision for 2023. Another keyword significantly emphasized in most of the documents was the participation of different actors. In particular, participation of children or students and pluralism and inclusiveness were addressed as an explicit target in four documents (see Table 3).
- *Critical thinking* as a competency received two explicit and one implicit target-oriented reference in three documents. In parallel with this finding, sub-skills of reasoning, questioning, and interpreting also received two explicit and one implicit target-oriented reference across different documents. The documents attaching more importance to this competency were Turkey's Education Vision for 2023 and the Quality Framework for National Education (see Table 3).
- *Self-awareness* competency, as a target, appeared explicitly in two documents, and most of the references to this dimension were through the following keywords: self-recognition and self-knowledge (f=3); self-esteem, self-confidence, and self-efficacy (f=5); self-development (f=2); and self-revelation and self-reflection (f=2). Furthermore, all of those references were explicit and target-oriented. In addition, community awareness was addressed explicitly in all documents, either as a target or a means (see Table 3).
- *Integrated Problem Solving* was not addressed as an explicit competency in any of the documents. However, problem-solving skills had an essential place in each policy document. Concerning finding solutions for problems, solutions to economic problems were emphasized as a target implicitly in all five documents. Similarly, solutions to cultural problems were also emphasized as a target, mostly implicitly, along with one explicit reference. On the other hand, solutions to social problems took more prominent places as targets through four explicit and one implicit reference. However, solutions to environmental problems appeared in only two documents: one as an implicit

target and the other as an explicit target (see Table 3).

As a result, 45 competency-based keywords were scanned and coded across five different policy documents, and in total, 150 references were made to these competencies within Turkish national policy to those keywords (107 explicit and 43 implicit; 104 as a target and 46 as a means) (see Table 3). Assuming that all of the documents indicated a reference to every keyword, there would have been 225 references to be detected in total. Considering the number of 150 references detected in the current exercise, we could conclude that the key competencies suggested as crucial in the 21st century by UNESCO (2017) have a good place in the local educational policies in Turkey.

Curriculum Mapping

This section of the report presents the curriculum analysis executed on twenty-three subject-specific documents and one skill-based curriculum document concerning ESD competencies and the general findings derived from this exercise. The main purpose of the exercise was to demonstrate how well the Turkish national curriculum prepares generations for global citizenship and a sustainable future. In total, 1,253 pages of curriculum documents were analyzed, and all were included in the exercise because they are compulsory for the K-12 levels.

Table 4 displays what subjects are taught in what grades as a component of compulsory curricula and the list of the curriculum documents analyzed at this stage. Accordingly, the compulsory parts of the Turkish national curriculum within elementary, middle, and high schools include 23 different subjects. The situation analysis performed on those specific subjects is presented under six subject areas based on their relevance to each other: (1) *Language Studies*, (2) *Science, Mathematics, and Technology*, (3) *Music, Arts, and Physical Education*, (4) *Social and Life Studies*, (5) *History Education*, and (6) *Morals, Values, and Civ-*

ics Education. In addition, the analysis was done on (7) *Pre-school Education*, which is independent of those subjects and follows a skill-based pattern, which is reported in a separate section.

Findings in Relation to Language Studies

An analysis of the language studies curricula (1 to 8 grades Foreign Language-English; 9 to 12 Foreign Language-English; 1 to 8 Turkish-Mother Tongue; and 9 to 12 Turkish Language and Literature) in terms of references to the 17 SDGs revealed that both the structure and the nature of mother tongue and foreign languages curricula made it hard to find explicit or implicit links to the SDGs and the specific learning objectives of ESD. However, this does not necessarily mean there is no direct or indirect connection between cognitive, socio-emotional, or behavioral learning domains defined for the SDGs and the NLOs in the language studies curricula. As stated in the general objectives of the language studies curricula, the objectives were all prepared in line with the general objectives and principles of Turkish National Education as defined in the Basic Law of National Education and thus incorporate SDGs. For both the mother language curriculum and the foreign language curriculum, rather than specific learning objectives, some themes and topics included or suggested at different levels, and the target vocabulary are considered to be particularly noteworthy to draw a parallel between the SDGs and the language studies curricula in Turkey. Furthermore, in addition to certain related themes, some NLOs given under the themes in foreign language curriculum, especially after grade 5, can be regarded as having some explicit or implicit references to the SDGs.

Although incorporating SDGs into the language studies curricula, whether it is the mother tongue or foreign language, is a real challenge because of the unique nature and structure of language teaching, both the Turkish and foreign-language curricula are thought to reflect SDGs to some extent. In the Turkish language curriculum, 16 specific topics were somewhat related to the

SDGs. In contrast, in the English language curriculum, ten specific units and themes were directly or indirectly linked to the SDGs. This was just for grades 1 to 8.

Turkish Language Curriculum

Turkish Language Curriculum is organized in terms of language skills (listening, speaking, reading, and writing), and the outcomes and objectives are expressed with reference to the skills defined. For instance, the 8th-grade Turkish curriculum includes learning outcomes such as: “students will be able to identify the main idea of a spoken text” or “students will be able to make use of different reading strategies. (“MEB Türkçe Dersi”, 2019).

The Turkish language is the most emphasized subject in elementary and middle schools and is taught five to ten hours each week. The number of hours allocated to implement the Turkish language curriculum in different grade levels is as follows: ten hours in grades 1 and 2; eight hours in grades 3 and 4; six hours in grades 5 and 6; and five hours in grades 7 and 8 (MEB, İlköğretim Kurumları Haftalık Ders Çizelgesi, 2018). The topics and themes suggested for elementary school (1-4 grades) and middle school (5-8 grades) are values and virtues, national culture, national independence and Atatürk, individual and society, school culture, literacy, communication, rights and freedoms, personal development, science and technology, health and sports, time and space, feelings, nature and universe, art, citizenship, and kids’ world. Eight of these themes are expected to be picked and covered in each grade level (MEB Türkçe Dersi”, 2019). The themes and topics that were thought to be related to SDGs are presented together with their proposed sub-topics in Table 5.

As seen in Table 5, ten out of 16 suggested topics and their sub-topics in grades 1 to 8 were viewed as directly or indirectly related to 14 of the SDGs. The sub-topics expected to be covered in those grades somehow reflect the keywords of SDGs and specific learning objectives of ESD.

For instance, many of the sub-topics listed under the theme of health and wellbeing closely corresponded to the learning objectives presented under SDG 3 (Good Health and Well-being). Furthermore, the topic of “Individual and the Society” and corresponding sub-topics such as multiculturalism, multi linguisticism, disabled groups, empathy, equality, and respect for differences and law were associated with SDG16 (Peace, Justice and Strong Institutions).

As for the high school Turkish Language and Literature curriculum, no specific topics or themes related to the SDGs are suggested. Instead, certain literary genres such as poetry, novels, stories, and plays are covered in the curriculum. In addition to the NLOs about Turkish grammar, most of the NLOs are introduced under three language skills: reading, writing, and oral communication related to the literary genres (“MEB Türk Dili ve Edebiyatı”, 2018). Therefore, further analysis of the textbooks is deemed necessary to clearly understand the link between the curriculum and the 17 SDGs.

Foreign Language Curriculum

Foreign Language Curriculum is similar to the Turkish language curriculum for grades one through eight. It is based on the Common European Framework of Languages (CEFR) and structured with respect to language skills and related objectives. In the current foreign language curriculum, it is also suggested that key concepts such as values, friendship, justice, honesty, respect, love, and responsibility be embedded into the themes and topics of the curriculum with a focus on values education (“MEB İngilizce Dersi”, 2018a). Foreign language teaching starts in grade 2 in elementary school and goes on through middle and high school. The number of hours allocated to implement the foreign language curriculum is as follows: two hours in grades 2, 3 and 4; three hours in grades 5 and 6; and four hours in grades 7 through 12 (MEB, İlköğretim Kurumları Haftalık Ders Çizelgesi, 2018).

Ten specific themes or topics were suggested for

each level from grade 2 to grade 12 in the foreign language curriculum. For grades 2 to 5, as the number of hours allocated to implement the curriculum is very limited, and the NLOs focus mostly on basic language functions, structures, and vocabulary, it is unlikely to make any connections between the NLOs and the SDGs. However, as the students' language competency improves and they can discuss a variety of issues in the target language, certain themes and objectives are incorporated into the curricula with clear references to the SDGs. Particularly, from grade 6 to grade 12, some of the linguistic objectives and target vocabulary included are explicitly or implicitly connected to the SDGs' keywords and learning objectives ("MEB İngilizce Dersi", 2018b). Table 6 presents the themes, units, and specific learning outcomes that are considered to be related to SDGs for grades 6 through 12.

As presented in Table 6, a total of forty NLOs under ten different themes were identified with explicit or implicit references to SDGs in the foreign language curriculum from grade 6 to grade 12. The SDG which was most commonly referred to is SDG 13 (Climate Action). Five specific themes and the NLOs under these themes were thought to be connected with SDG 13. Four specific themes and their corresponding NLOs were linked to SDG 11 (Sustainable Cities and Communities) and SDG 15 (Life on Land). Three of the themes and their respective NLOs were considered to be in line with SDG 7 (Affordable and Clean Energy). Two of the themes and the corresponding NLOs were considered to be related to SDG 9 (Industry, Innovation, and Infrastructure), SDG 16 (Peace, Justice and Strong Institutions), and SDG 17 (Partnerships for the Goals). Additionally, SDG 3 (Good Health and Well-being), SDG 6 (Clean Water and Sanitation), SDG 12 (Responsible Consumption and Production), and SDG 14 (Life below Water) were the other SDGs that were referred to through only one unit in the foreign language curriculum. There was not a single reference identified as being related to the following SDGs: SDG 1 (No poverty), SDG 2 (Zero Hunger), SDG 3 (Quality Education), SDG 5 (Gen-

der Equality), SDG 8 (Decent Work and Economic Growth), and SDG 10 (Reduced Inequalities). In total, 17 of the 40 NLOs identified were classified to address the behavioral domain, while 13 NLOs to the socio-emotional domain and 10 NLOs were related to the cognitive domain.

Findings in Relation to Science, Mathematics, and Technology

The curriculum for Science, Mathematics, and Technology Curricula consists of seven subject-specific divisions: Science (3-8), Physics (9-12), Biology (9-12), Chemistry (9-12), Mathematics (1-12), Information Technologies and Software (5-6), and Technology and Design (7-8). Science along with Physics, Biology, and Chemistry was analyzed as a single Science Curriculum and presented in the first subsection. Mathematics Curriculum was examined for the grades from 1 to 12 in the second subsection. And in the last subsection, Information Technologies and Software, as well as Technology and Design, were examined as a single Technology Curriculum.

Science Curriculum: Science, Physics, Biology, Chemistry

Science courses start as a single course named "science" in the early stages (3-8), then it branches into Physics, Biology, and Chemistry in high school (9-12). Therefore, in this study, when the science curriculum is mentioned, it covers four different sub-programs. The science curriculum aims to raise individuals with the following skills: Scientific Process Skills, Engineering and Design Skills (i.e., Innovative thinking), and Life Skills (i.e., analytical thinking, decision making, creative thinking, entrepreneurship, communication, and teamwork). In this context, some of the basic objectives of the Science Curriculum (Science 3-8, Physics 9-12, Chemistry 9-12, and Biology 9-12), which aim to raise individuals as science-literate, could be summarized as follows:

- Adopting scientific process skills and scientific research approach in the process of

discovering nature and understanding the relationship between human and environment, and producing solutions to the problems encountered in these areas;

- Realizing the interaction between the individual, the environment, and society;
- Developing sustainable development awareness regarding society, economy, and natural resources;
- Taking responsibilities for daily life problems and using knowledge, scientific process skills, and other life skills in science to solve these problems;
- Developing career awareness and entrepreneurship skills related to science;
- Arousing interest and curiosity and developing an attitude regarding the events occurring in nature and its immediate surroundings;
- Ensuring the adoption of universal moral values, national and cultural values, and scientific, ethical principles.

In elementary and middle schools, the science curriculum consists of four learning areas identified for each grade level: "Earth and Universe," "Living and Life," "Physical Events," and "Matter and Nature of Matter." The suggested total class hours are 108 hours for elementary school (for grades 3 and 4) and 144 hours for middle school (for grades 5-8), each in an 18 week-term. The weekly class hours that are mandated in primary and secondary schools to implement the science curriculum are specified as three hours per week in Grade 3 and Grade 4 and four hours per week in Grade 5 to Grade 8. The total number of NLOs in the science curriculum from Grade 3 to Grade 8 is: 36 (3rd grade), 46 (4th grade), 36 (5th grade), 59 (6th grade), 67 (7th grade) and 61 (8th grade) ("MEB Fen Bilimleri Dersi", 2018).

In high school, science classes branch into three subjects: Chemistry, Biology, and Physics. The suggested class hours to implement the curriculum are 72 hours per course for grades 9 and 10, and 108 hours per course for grades 11 and 12. The weekly class hour is specified as two hours

per week in grades 9 and grades 10, and 4 hours per week in grades 11 and 12. In other words, students have a total of 6 hours of science classes per week (216 total hours across three courses) in Grade 9 and Grade 10 and a total of 12 hours of science classes per week (in total 324 hours for three courses) in Grade 11 and Grade 12. In high school, the total number of NLOs in the science curriculum from Grade 9 to Grade 12 are 93 (grade 9), 79 (grade 10), 131 (grade 11), and 128 (grade 12), respectively for each grade ("MEB Biyoloji Dersi", 2018; "MEB Fizik Dersi", 2018; "MEB Kimya Dersi", 2018).

Table 7 shows the total number of NLOS linked to specific objectives of ESD, which is 188. 140 of the references to ESD competencies were explicit, and 48 of them were implicit. The number of NLOs related to the SDGs is 32 in primary school (grade 1-4), 57 in secondary school (grade 5-8), and 93 in high school (Grade 9-12). When the frequency of the explicit ESD-related NLOs are analyzed by grade level, it could be seen that the frequencies varied from primary school to high school as follows: 27, 43, and 68. On the other hand, the frequency of the implicit ESD-related NLOs were 5, 14, and 25, respectively. When the learning domains are considered, it is seen that the ESD-related NLOs are mostly clustered around the cognitive domain (explicit f=86, implicit f=40, total f=126). This was followed by the NLOs in the behavioral domain (explicit f=43, implicit f=7, total f=50). The NLOs clustering around the socio-emotional domain had the lowest frequency (explicit f=12, implicit f=11, total f=12).

In the first years of science education, the number of cognitive NLOs was higher, as they aim to provide information to students on some topics included in the content of sustainable development. In the following years, behavioral NLOs start to take more place. The most prominent SDGs that received references from the NLOs were "SDG7-Affordable and Clean Energy" (explicit f=25, implicit f=11, total f=36) and "SDG3-Good Health and Wellbeing" (explicit f=29, implicit f=2, total f=31), which were necessarily

relevant to the learning areas and topics of the science curriculum.

In general, themes such as the human-nature relationship, global warming, renewable energy, and healthy lives, which have also been emphasized worldwide in recent years, are widely included in the science curriculum. This implies that such issues are given sufficient importance in the curriculum. Additionally, curriculum designers stated that they attached importance to sustainable development in the mission and vision statement of the science curriculum, and the NLOs were written in line with the aims of the curriculum. Thus, the most powerful aspect of the science curriculum is that it accepts sustainable development as one of its most important objectives and takes it to the foundation of the program. Thus, the continuity of the parallelism of the science curriculum with the global developments and scientific, social, and technological needs is ensured.

When the other dimensions of sustainable development for all grade levels are examined, it is seen that environmental issues, especially renewable energy and wellbeing, are frequently covered in the curriculum. Issues such as “raising environmental awareness, preventing environmental pollution, calculating the ecological footprint and offering suggestions for the solution of environmental problems, discussing the ways to realize the harmful effects of humanity on nature and minimizing this harm, renewable and clean energy, global warming, greenhouse gas, recycling” are among the most frequently emphasized topics of the science curriculum, and they all point at “SDG7-Affordable and Clean Energy”. In addition, “food consumption, the relationship between nutrition and health, the importance and consequences of healthy nutrition, harmful food habits and ways to get rid of them, the relationship between obesity and the nutritional habits, and possible harms” are among the other issues emphasized through the NLOs, and they all point at “SDG3-Good Health and Wellbeing”.

The most powerful aspect of the science curric-

ulum is that it accepts sustainable development as one of its most important objectives, and this is the foundation of the program. However, learning outcomes related to SDG 4 (Quality Education), SDG 5 (Gender Equality), and SDG 10 (Reduced Inequalities) could not be detected sufficiently in the science curriculum even though these goals were generally included in the vision statement of the curriculum. In a curriculum in which sustainable development is emphasized as one of its most important goals, these SDGs could have been reflected better in the NLOs. This could be considered a main weakness of the science curriculum.

Mathematics Curriculum

Mathematics Curriculum in Turkey has three levels: Grade 1-4 as an elementary school level, Grade 5-8 as a middle school level, and Grade 9-12 as a high school level. Considering all these levels, the number of the NLOs identified as a reference to SDGs was 16, and all of them were implicitly stated. As seen in Table 8, The highest frequency of references was related to SDG 5 (f=4). In addition to that, there were references to the following ones: SDG 1, SDG 2, SDG 4, SDG 5, SDG 6, SDG 11, and SDG 12. To provide grade-level findings, the NLOs linked to SDGs were mostly in high school level (f=8), which was followed by the two other levels (middle school, f=5; and elementary school, f=3). Among them, the highest frequency number of NLOs represented were in the cognitive domain (f=11). In conclusion, it is clear that the NLOs indicating a reference to SDGs were mostly implicit, and most of them clustered around the cognitive domain.

Technology Curriculum: Information Technologies, Software, Technology, Design

Technology Curriculum covers two different sub-programs named “Information Technologies and Software” and “Technology and Design,” which were examined together and presented in Table 9. Technology Curriculum was designed to meet the following purposes:

- Raise individuals who are lifelong learners,

who can apply what they learn, and who can use information and communication technologies, and design processes for the benefit of themselves and the society they live in;

- Educate technology-literate individuals who can understand, interpret, manage; and evaluate the technology and design process;
- Develop innovative and original projects for the solution to the problems encountered in daily life (problems faced by elderly and disabled people, etc.).

The suggested class hours are 72 hours per grade from 5 to 8 in an 18-week term, and the weekly class hours at all grade levels (5-8) to apply the curriculum are two hours per week. The total number of NLOs included in the curriculum from Grade 5 to Grade 8 are specified as follows: 75, 77, 51 and 42 (“MEB Bilişim Teknolojileri ve Yazılım”, 2018; “MEB Teknoloji ve Tasarım”, 2018).

Table 9 shows that the total number of NLOs related to ESD objectives for grades 5-8 is 86. 30 of these references were explicit, and 56 of them were implicit. When the domains are considered, it is seen that the ESD-related NLOs mostly clustered around the cognitive domain (explicit f=24, implicit f=50, total f=74), which was followed by the behavioral domain (explicit f=6, implicit f=6, total f=12). However, not a single NLO was detected to represent the socio-emotional domain. The most prominent SDGs that received references from the NLOs were “SDG 12- Responsible Consumption and Production” (explicit f=7, implicit f=28, total f=35) and “SDG 17-Partnerships for the Goals” (explicit f=0, implicit f=14, total f=14). Both of them are relevant to the learning areas and topics of the technology curriculum.

Technology Education focuses on learning areas called: Fundamentals of Technology and Design; Design Process and Promotion; Built Environment and Product; Needs and Innovation; and Design and Technological Solution. It mainly aims through the NLOs to make the students aware of the impact of technology and design,

and improve their knowledge on sustainable development issues related to society, economy, and natural resources. The most powerful aspect of the technology curriculum is that it accepts the importance of innovation and designing projects to further global developments. The most prominent SDG represented is SDG 12, which emphasizes sustainable consumption and production patterns. This is the main focus in the current technology curriculum.

Although the NLOs in the curriculum were prepared considering the cognitive, socio-emotional, and psychomotor (behavioral) characteristics of students, the cognitive NLOs were more frequently represented than the behavioral and socio-emotional NLOs. The NGOs related to SDG 1, SDG 2, SDG 4, SDG 5, SDG 6, SDG 13, and SDG 14 could not be detected sufficiently in the curriculum, so these SDGs could be reflected better through NLOs. The reason for not having enough (or none) of these SDGs in the curriculum may be that the main goal of technology education, which is “to gain basic computer use and programming skills,” is given more weight. This could be considered a weakness of the curriculum.

Findings in relation to Music, Arts, and Physical Education

In general, Music, Visual Arts, and Physical Education curricula seem to have a limited extent of SDG-related themes and outcomes. There seems to be almost no focus, even no mention of sustainability in those curricula. Each individual subject area mainly focuses on covering its content.

Music Curriculum

The music curriculum is divided into two sections: grades 1-8 and grades 9-12. The specific aims of the music curriculum for grades 1-8 generally focus on developing the basic musical perception, skills, talents, knowledge, and creativity of learners while letting them express their

feelings and thoughts through music, as well. It introduces local, national, and international music types in order to ensure diversity, enrich cultural knowledge, and make use of this knowledge to strengthen national unity and facilitate bonds with other nations. The curriculum for grades 1-8 focuses on four different domains of learning: (1) Listening and Singing; (2) Musical Perception and Knowledge; (3) Musical Creativity; and (4) Music Culture. The number of NLOs to be achieved for each level is as follows: Grade 1 (n=24), Grade 2 (n=18), Grade 3 (n=22), Grade 4 (n=21), Grade 5 (n=23), Grade 6 (n=24), Grade 7 (n=22), and Grade 8 (n=25). The suggested lesson hours for grades 1 to 8 is 36 hours per grade level, i.e., music lesson is taught for two hours every week in an 18 week-term ("MEB Müzik Dersi," 2018a). The number of NLOs aimed to be achieved for 9-12 levels is as follows: Grade 9 (n=25), Grade 10 (n=22) Grade 11 (n=24) and Grade 12 (n=21). The suggested lesson hours for grades 9 to 12 is 72 hours per each grade level, i.e. music lesson is taught for four hours every week in an 18 week-term ("MEB Müzik Dersi", 2018b). The specific aims of the music curriculum for grades 9-12 focus on developing the interests and knowledge of learners at a more advanced level, including using music terminology correctly, literacy in reading and writing music, following studies in the field of music, creating a background for universal and national music culture, and becoming an acculturated listener as well ("MEB Müzik Dersi", 2018b).

Regarding the findings derived from the mapping exercise on Music Curriculum, there appeared to be almost no SDG-related NLOs. For grades 1 to 8, there was only one NLO that was linked to a specific learning domain (the cognitive domain) in SDG 1. It is in the 3rd grade, and it implicitly aims to raise children's awareness about their cultural identity in music. On the other hand, for grades 9 to 12, there were only three implicitly-stated NLOs that are linked to two SDGs (SDG 11, f=1; SDG 16, f=2), again in the cognitive domain. They mainly focus on cultural heritage in music and acknowledgment of other nations'

music in order to create awareness about diversity (see Table 10).

The music curriculum had the weakest link to the SDGs compared to other curricula. There were almost no SDGs related NLOs, or they (f=4) were implicitly stated. The reason for the lack of links could be the fact that the main aim of the lesson solely focuses on music, its terminology, and creating a national background for music, but nothing else. Hence, it could be said that there is almost no match or relationship between the music curriculum and the seventeen SDGs or specific learning objectives of ESD. There might have been more involvement in SDGs since music is universal and has the potential to address any subject if desired.

Visual Arts Curriculum

The Visual Arts Curriculum is divided into two sections: Grades 1-8 and Grades 9-12. The specific aims of the Visual Arts Curriculum for grades 1-8 aim to help learners gain literacy in visual arts, express themselves, and acquire esthetic consciousness while understanding and protecting the value of their own and other cultures, as well. It also aims at employing different skills and competencies, such as multitasking, critical thinking, esthetic sensitivity, media literacy, creative thinking, cultural heritage, and so on. It consists of three learning domains: (1) Visual Communication and Design; (2) Cultural Heritage and Art; and (3) Criticism and Esthetics. The number of NLOs for each grade is listed as follows: Grade 1 (n=15), Grade 2 (n=17), Grade 3 (n=17), Grade 4 (n=16), Grade 5 (n=19), Grade 6 (n=21), Grade 7 (n=20), and Grade 8 (n=20). No lesson hours were suggested in the curriculum ("MEB Görsel Sanatlar", 2018a).

Similar learning aims can be found in the Visual Arts Curriculum for grades 1 to 12. The aims also focus on raising learners who are sensitive to nature and the environment, learn the art through universal values, adopt cultural values of their own society as well as the values of other societies and respect them at the same time,

and understand, make sense of, and create art. This curriculum also employs the same skills and competencies as in grades 1 to 8 and includes similar learning domains: (1) Art Criticism and Esthetics; (2) Cultural Heritage; and (3) Visual Design. The number of NLOs to be gained for 9-12 levels are as follows: Grade 9 (n=46), Grade 10 (n=28), Grade 11 (n=20), and Grade 12 (n=25). The suggested lesson hours for the grades 9-12 is also four hours every week in an 18 week-term reaching a total of 72 hours (“MEB Görsel Sanatlar”, 2018b).

As displayed in Table 11, for all the grades in Visual Arts, the total number of NLOs matched with the SDGs was 53 (explicit f=19, implicit f=34). In grades 1-8, there were a total of 40 SDG-related NLOs (explicit f=13, implicit f=27). Due to the nature of the lessons, the NLOs usually clustered around the behavioral domain, but they also included the socio-emotional domain. The NLOs in elementary and middle schools were especially related to SDG 11 (f=13), focusing on establishing identity and culture through art, in particular through architecture or different forms of art by different countries; SDG 1 (f=6) focusing on topics like equality, justice, and wars; SDG 8 (f=5) focusing on the way economy is reflected in the society through art, economic crisis and its effects on the society, or art as having an economic value; and SDG 10 (f=4) focusing on ethics. Although they were less frequent, the other NLOs indicated references to the following SDGs: SDG 5 (f=1), SDG 7 (f=2), SDG 9 (f=2), SDG 12 (f=3), SDG 16 (f=3), and SDG 17 (f=1). However, it should be noted that some of the NLOs were overlapping with more than one SDG because they had various sub-goals or they covered more than one issue. Therefore, they were coded more than once in the mapping exercise. At the high school level, there were 13 NLOs related to SDGs (explicit f=6, implicit f=7). They reflected all of the three learning domains. The most frequent matching was done in relation to SDG 11 (f=7), which focuses on forming identity and culture through cultural heritage. The other NLOs that were matched to SDGs were SDG 1 (f=2), SDG 7

(f=1), SDG 12 (f=2), and SDG 16 (f=1).

In terms of the Visual Arts Curriculum, there was a more universal and inclusive perspective, both nationally and internationally, focusing on diversities, social inclusion as well as environmental awareness when compared to Music Curriculum. However, it was observed that most of the subjects related to sustainability issues were under the responsibility of the teacher. That is to say, if the teacher is not trained about or interested in the vision of sustainable development, there is little chance that s/he will involve SDGs in his/her classroom. There could be more focus on sustainability issues because of the reason that most of the NLOs matched with SDGs tended to introduce the concepts or themes (such as diversity, justice, economic crisis, etc.) more implicitly, but not to state directly, truly, or deeply.

Physical Education Curriculum

The Physical Education Curriculum is divided into three sections: Physical Education and Games for elementary schools, Physical Education and Sports for middle schools, and Physical Education and Sports for high schools. The specific aims for grades 1 to 4 include gaining basic and combined movement skills, joining activities to be healthy and improve physical development, getting to know games and dances in both one’s own culture and other cultures, developing communication skills, acknowledging fair play, respecting diversities and showing sensitivity to nature (“MEB Beden Eğitimi”, 2018a). The specific aims for grades 5 to 8 are mostly similar to those of the grades 1 to 4, and additionally, they focus on developing movement skills specific to certain activities and sports, making use of movement concepts and strategies, acknowledging rules about how to be and how to stay healthy and do sports accordingly (“MEB Beden Eğitimi”, 2018b). The curriculum for grades 9 to 12 has a wider perspective in terms of specific aims when compared to the other levels. It aims at gaining knowledge about the history of sports in the world as well as in Turkey, becoming a sports conscious person through joining physical

activities and sporting events, acknowledging the role and importance of sports events in improving the physical, social and emotional development of the disabled and people with special needs, respecting differences, and exhibiting fair play behaviors (“MEB Beden Eğitimi”, 2018c). The learning domains, which are the same for all levels (grades 1-12), are as follows: (1) Movement Competency; and (2) Active and Healthy Life.

The number of the NLOs for each level is listed as follows: Grade 1 (n=24), Grade 2 (n=28), Grade 3 (n=29), Grade 4 (n=25), Grade 5 (n=31), Grade 6 (n=31), Grade 7 (n=30), Grade 8 (n=30), Grade 9 (n=41), Grade 10 (n=39), Grade 11 (n=33), and Grade 12 (n=31). There is no specific time table suggested for the grades 1-4 and 5-8, but for the grades 9-12, a four-hour weekly program was suggested in the curriculum and this makes a total of 72 hours in 18 weeks (“MEB Beden Eğitimi”, 2018a, 2018b, 2018c).

As depicted in Table 12, in total, out of 82 NLOs related to SDGs, 32 of them were explicitly matched, while 50 of them were implicitly mentioned. For the elementary school level, 27 NLOs (explicit f=6, implicit f=21) matching with SDGs were identified. They usually clustered around the social-emotional domain, although they included behavioral and cognitive domains, as well. The NLOs were mainly related to SDG 11 (f=13), which deals with forming cultural identity; SDG 3 (f=6) that focuses on good health and wellbeing; and SDG 2 (f=5) that centers around a healthy diet. The other two SDGs that received references from the NLOs were SDG 7 (f=1) and SDG 9 (f=2). For the middle school level, 26 NLOs related to the SDGs (explicit f= 13, implicit f=13) were determined. Most of the matching NLOs belonged to the following SDGs: SDG 3 (f=16) wellbeing and staying healthy through exercises; SDG 16 (f=5) sensitivity to individual differences; SDG 2 (f=4) knowledge and habits of healthy eating. Finally, SDG 12 was matched with only one NLO (see Table 12).

For the high school level, as seen in Table 12, 29 NLOs (explicit f= 13, implicit f= 16) were matched with SDGs. At this level, the NLOs mainly piled up in the cognitive domain, with only two NLOs in the socio-emotional domain. Most of the NLOs indicated a reference to SDG 3 (f=13) and focus on staying healthy through exercise and explaining the harms of substance use. The NLOs also mostly referenced SDG 17 (f=8) that involves gathering knowledge through the use of technology. Additionally, there were references to SDG 11 (f=5) about forming cultural identity through local and national dances and information about famous Turkish sportspeople and to SDG 2 (f=3) about healthy eating habits.

Due to the nature of the Physical Education and Sports Curriculum, there was a greater emphasis on health issues, such as healthy diets and nourishments, doing regular sports to be healthy and to stay healthy, and avoiding the use of substances. The related NLOs were mostly in SDG 3 and focused on the healthy living and wellbeing of the individual, which is quite expected due to the content of the lesson. The concept of ‘fair play’ brought the issue of respecting others and respecting differences. Social inclusion for the disabled and people with special needs was also emphasized. However, when other concepts of sustainability such as poverty, sustainable cities, and responsible consumption are considered, the Sports Curriculum also failed to match these SDGs to a great extent due to the range of the topics or themes covered in the lesson. Similar to the Visual Arts Curriculum, it is the teacher’s responsibility to address subjects, including SDG-related NLOs, at a deeper level. Therefore, it is the teacher’s preference whether to inform students on the sustainability issues or not. In terms of ESD, the curricula designed for Music, Visual Arts, and Physical Education courses are very weak as there seems no reference to the issues like educational rights, lifelong learning, access to quality education, or the role of education for a sustainable world.

Findings in relation to Social and Life Studies

Social and Life Studies Curriculum includes five different sub-curriculum as Life Studies, Traffic Safety, Social Studies, Health and Traffic Culture, and Geography. The curriculum is given as Life Studies in Grades 1-3, and then it becomes Social Studies in Grades 4-7. Also, in Grade 4, Traffic Safety is included, but then, in Grade 9, it changes into Health and Traffic Culture. In addition, Geography is added in Grades 9-12.

Among the NLOs included within the Social and Life Studies Curriculum, 226 NLOs in total were linked to the specific learning objectives of ESD (explicit f=122, implicit f=104). The numbers on subject basis were as follows: Social Studies (f=123), Geography (f=45), Life Studies (f=42), Health and Traffic Culture (f=14), and Traffic Safety (f=2). The identified NLOs usually clustered around the following SDGs: SDG 11 (f=56), SDG 16 (f=23), SDG 17 (f=16), and SDG 12 (f=14).

Life Studies Curriculum

The Life Studies Curriculum is constructed around a theme-based approach under six themes identified for each grade level with the same names as “Life in Our School,” “Life in Our Home,” “Healthy Life,” “Safe Life,” “Life in Our Country,” and “Life in Nature”. The number of NLOs to be achieved are as follows: Grade 1 (n=53), Grade 2 (n=50), and Grade 3 (n=45). In each grade, 144 hours are allocated to implement the curriculum. The Traffic Safety Curriculum has two units called “Safety in Traffic” and “First-aid in Traffic” and includes 21 NLOs for Grade 4. In total, 36 hours are allocated for teaching the curriculum.

The Health and Traffic Culture Curriculum has 45 NLOs in total (Health, n=27; Traffic Culture, n=18). The number of recommended teaching hours is 36.

In the Life Studies Curriculum for Grades 1 to 3, there were 42 NLOs that were related to SDGs

(explicit f=32; implicit f=10). The NLOs were related to SDG 1 (f=1), SDG 2 (f=2), SDG 3 (f=11), SDG 4 (f=1), SDG 8 (f=2), SDG 12 (f=11), SDG 13 (f=1), SDG 15 (f=6), SDG 16 (f=5), and SDG 17 (f=1). As seen in Table 13, the NLOS clustered most frequently around SDG 3 (f=11) and SDG 12 (f=11). As for the learning domains, the NLOs usually addressed the cognitive (f=19) and behavioral (f=16) domains, both of which indicated more references than the socio-emotional domain did (f=7).

For the Traffic Safety Curriculum designed for Grade 4, there were only two NLOs related to SDGs, and it was for SDG 11 (cognitive and implicit f=2). Regarding the Health and Traffic Culture Curriculum designed for Grade 9, there were 14 NLOs that were linked to the SDGs (explicit f=6, implicit f=8). The most prominent SDG was SDG 3 with references from 12 NLOs (explicit f=5, implicit f=7). The rest of the references were to SDG 2 (f=1) and SDG 11 (f=1), and all of them are under the cognitive domain (see Table 13)

In Life Studies curriculum in Grades 1-3, the NLOs cluster around “SDG3-Good Health and Well-being”, “SDG12-Responsible Consumption and Production”, “SDG15-Life on Land”, and “SDG16-Peace, Justice and Strong Institutions”. This could be considered as one of the strengths of this program, because it is better to address the objectives related to ‘health and wellbeing, responsible consumption and production, protection of the life on land, and peace and justice’ at these grades, as early as possible, for the benefits of the learners to make them more conscious about these issues. However, the references to SDG 5, SDG 6, SDG 7, SDG 9, SDG 10, and SDG 14 could not be detected in the program. The NLOs that are linked to these SDGs are provided in further grades through Social Studies and Geography. In Traffic Safety in Grade 4, there is only one SDG that is linked to an NLO, and it is “SDG 11- Sustainable Cities and Communities”. In Health and Traffic Culture in Grade 9, there are three SDGs emphasized: “SDG2-Zero Hunger”,

“SDG3-Good Health and Well-being,” and “SDG11-Sustainable Cities and Communities”. These are closely related to the content of the programs.

Social Studies Curriculum

The Social Studies Curriculum has seven learning areas, including “Individual and Society,” “Culture and Heritage,” “People, Places and Circles,” “Science, Technology and Society,” “Production, Distribution and Consumption,” “Effective Citizenship,” and “Global Connections”. The number of NLOs are as follows: Grade 4 (n=33), Grade 5 (n=33), Grade 6 (n=34), and Grade 7 (n=31). For each grade, it is recommended to allocate 100 teaching hours.

Within the Social Studies Curriculum designed for Grades 4-7, there were 123 NLOs that were linked to the SDGs (explicit f=50, implicit f=73). The most prominent SDG was SDG 11, with references from 56 NLOs (explicit f=14, implicit f= 42). The most prevailing domain was the cognitive domain (f=46), which was followed by the behavioral (f=8) and socio-emotional (f=2) domains, respectively. The other prominent SDG was SDG 16 with references from 23 NLOs (explicit f=5, implicit f= 18). Similarly, the most predominant domain is the cognitive (f=17) domain, which was followed by the socio-emotional (f=4) and behavioral (f=2) domains, respectively. As depicted in Table 14, all the other SDGs that were linked to NLOs in Social Studies Curriculum were as follows: SDG 17 (f=16), SDG 12 (f=14), SDG 1 (f=3), SDG 4 (f=3), SDG 8 (f=3), SDG 15 (f=2), SDG 5 (f=1), SDG 9 (f=1), SDG 13 (f=1).

The Social Studies curriculum, in general, is organized to pay attention to the basics of sustainability. The learning areas such as “Individual and Society,” “Culture and Heritage,” “People, Places, and Circle,” “Science, Technology, and Society,” “Production, Distribution, and Consumption,” “Effective Citizenship,” and “Global Connections,” indicates that the learning outcomes of this curriculum are mainly linked to SDGs. Although the NLOs do not always explicitly indicate SDGs, the guidance that is provided at the beginning of

each learning area in the curriculum document directs the teachers to focus on the values of SDGs. One of the most frequently emphasized SDGs is “SDG 11-Sustainable Cities and Communities”. In this curriculum, as the main focus is the social life of the communities, the NLOs focus on the social needs of humans and how these needs are currently addressed in their settlements. Also, historical reasons of settlements, cultural heritage, and inclusive settlement are some of the other themes that are emphasized in this curriculum. Moreover, in parallel with the specific learning outcomes in SDG 11, the learners are guided to reflect on their region for the development of their own identities and culture, to recognize their roles in natural and social environments, and to develop inclusive, safe, and resilient community. The other mostly emphasized SDG is “SDG16-Peace, Justice and Strong Institutions”. Because of the nature of the curriculum, the themes of peace, justice, inclusive societies, and governance systems are the main focus of the NLOs. Although there are a number of NLOs that are linked to a lot of SDGs, there are other SDGs that are not emphasized sufficiently, such as “SDG2-Zero Hunger”, “SDG3-Good Health and Wellbeing”, “SDG6-Clean Water and Sanitation”, “SDG7-Affordable and Clean Energy”, “SDG10-Reduced inequalities”, and “SDG14- Life Below Water”. The reason for this could be related to the fact that they are being covered in the other programs.

Geography Curriculum

Geography has four units with the same name for each grade: “Natural Systems,” “Human Systems,” “Global Environment: Regions and Countries,” and “Environment and Society.” The number of NLOs is 22 for Grade 9 and 34 for Grade 10. For Grade 11 and 12, there are two options. Some of the schools might have two hours of the geography program, and the others might organize four hours of the geography program with respect to the specific study fields of the students. The number of NLOs for each grade is as follows: Grade 11 has a two-hour weekly program (n= 29); Grade 11 has a four-hour weekly program (n=40); Grade 12 has a two-hour weekly program (n=24);

and Grade 12 has a four-hour weekly program (n=34).

In the Geography Curriculum designed for Grades 9-12, 45 NLOs appeared that were linked to the ESD learning objectives (explicit f=34, implicit f=11). The two most prominent SDGs were SDG 11, with references to 11 the NLOs (explicit f=9, implicit f=2), and SDG 15 with references to 10 NLOs (explicit f=8, implicit f=2). The other SDGs that were referenced in the NLOs were as follows: SDG 12 (f=5), SDG 9 (f=4), SDG 1 (f=3), SDG 7 (f=3), SDG 14 (f=3), SDG 13 (f=2), SDG 17 (f=2), SDG 3 (f=1), SDG 5 (f=1), SDG 6 (f=1), SDG 8 (f=1). In the geography curriculum, all of the NLOs represented the cognitive domain (see Table 14). As for Geography, the NLOs clustered around “SDG11-Sustainable Cities and Communities”, “SDG15- Life on Land”, “SDG12-Responsible Consumption and Production”, and “SDG9-Industry, Innovation, and Infrastructure”, which is quite in parallel with the nature of the program. One of the strengths of this program is that there is a variety in the learning outcomes that are linked to the SDGs. There are only four SDGs that are not emphasized in this program, and they are “SDG1-No Poverty”, “SDG2-Zero Hunger”, “SDG4-Quality Education,” and “SDG10-Reduced Inequalities”. Except for “SDG10-Reduced Inequalities”, the others have already been mentioned in the other programs.

The Social and Life Studies Curriculum seems to be designed to emphasize the basics of the ESD because almost all of the specific learning objectives of ESD are reflected through the NLOs of the curriculum. Although not each and every SDG is not emphasized in each program, the NLOs that are linked to the seventeen SDGs seem to be distributed across different grades and covered at the end of Grade 12. For instance, “SDG2-Zero Hunger” and “SDG3-Good Health and Well-being” are indicated in the Life Studies curriculum in Grades 1-3, but they are not indicated in the Social Studies curriculum in Grades 4-7. Instead, in the Social Studies curriculum, “SDG11-Sustainable Cities and Communities” and “SDG16- Peace,

Justice, and Strong Institutions” are indicated most frequently. This could be related to the learner’s cognitive and social development as it might be easier for them to understand more complex terms in higher grades. However, there are only a few NLOs that are linked to “SDG4-Quality Education,” “SDG5- Gender Equality,” “SDG6- Clean Water and Sanitation,” “SDG8-Decent Work and Economic Growth,” “SDG9-Industry, Innovation, and Infrastructure,” and “SDG13-Climate Action.”

Even though these previously listed SDGs only have a few NLOs that are linked to them, these SDGs are the most highlighted ones globally. For that reason, this is a weakness of the program. The program does not emphasize those significant aims. This is interesting when there are so many people who cannot access quality education, who are not treated equally because of their genders, who cannot access clean water, and who do not have job opportunities. Also, there is a need to also discuss sustainable industry and climate problems. Thus, it would be recommended to have more references to these SDGs. In addition, although there are some references to inclusiveness, the reference to “SDG10-Reduced Inequalities” could not be detected sufficiently. It would be better to emphasize this goal mostly in this curriculum as it is mostly linked to social and life studies. On the other hand, the NLOs seem to have mostly represented the cognitive competencies of SDGs. It would be better to have more outcomes in the other domains, as well.

In relation to the number of NLOs that are linked to SDGs in the Social and Life Studies curriculum, it is seen that Social Studies has the highest number of SDG-related NLOs. This is followed by Geography, Life Studies and Health, and Traffic Culture, respectively. The least number of NLOs related to SDGs is in Traffic Safety. Finally, it could be concluded that the Social and Life Studies curriculum has an overall link to the 2030 Education Agenda. Although almost all of the SDGs are reflected in the curriculum, there is still a need for some of them to be emphasized more in order to make them equally distributed. What is more,

the NLOs could be linked to the seventeen SDGs much more explicitly than they are, in particular by emphasizing global values in addition to the local ones.

Findings in relation to History Education

The History Curriculum is divided into three sections: History (Grade 9-11) and History of Turkish Revolution and Principles of Kemal Atatürk for both Grade 8 and Grade 12.

The History Curriculum for grades 9 to 11 involves various specific aims such as gaining knowledge about the concepts, events, phenomena, people, and institutions:

- to understand different periods in the history of humanity and the world together with the history of Turks and Anatolia;
- to interpret events happening in the present and generate projections for the future through acknowledging awareness about how their society, country, and the world have come to the present day;
- to create awareness that a historical event or concept has local, national, and international dimensions and interactions.

The grade 9-11 curriculum aims at achieving the following competencies about history: chronological thinking, historical comprehension, establishing a cause-and-effect relationship, perceiving the change and continuity, research skills based on historical interrogation, historical analysis and interpretation, historical problem analysis and decision-making, and historical empathy (“MEB Tarih Dersi,” 2018).

The specific aims of History of Turkish Revolution and Principles of Kemal Atatürk for grade 8 underline especially the importance of the hardship and perseverance experienced through the Turkish War of Independence, understanding the value of Atatürk’s revolution, comprehending the meaning and importance of human rights, national sovereignty, total independence, nationalism, democ-

racy, secularity and republic and raising citizens accordingly and being sensitive to issues that are related to our country and the world as well. No specific learning domain or skill was mentioned at this grade (“MEB T.C. İnkılap Tarihi”, 2018a).

The specific aims for grade 12 are similar to those of grades 9 to 11. Some other specific aims of grade 12 are as follows: understanding Atatürk’s outstanding military and governance skills and his revolutions, understanding the meaning of human rights, national sovereignty, nationalism, democracy, modernity, and secularism, and their importance for the Turkish nation. The grade 12 curriculum indicates the same historical competencies as in grades 9 to 11 (“MEB T.C. İnkılap Tarihi”, 2018b).

The number of NLOs included in the History Curriculum for each grade is as follows: Grade 8 (n=39), Grade 9 (n=28), Grade 10 (n=33), Grade 11 (n=20), and Grade 12 (n=33). For all grades from 8 to 12, a four-hour weekly program is suggested reaching to a total of 72 hours in 18 weeks (“MEB T.C. İnkılap Tarihi”, 2018a; “MEB Tarih Dersi”, 2018; “MEB T.C. İnkılap Tarihi”, 2018b).

The total number of NLOs matched with the SDGs in the History Curriculum is 88 (explicit f=10, implicit f=78). However, it should be noted that due to the nature of the history lesson having multiple aspects on an issue and involving different sub-goals, quite a few outcomes were overlapping with more than one SDG. Almost all of the NLOs represented the cognitive domain focusing on knowing or understanding the concepts and events.

For the 8th grade, 16 NLOs were identified (explicit f=2, implicit f=14). Most of them were related to SDG 1 (f=5), stressing the economic aspect of war and the poverty it causes, and SDG 16 (f=4), focusing on how countries found themselves in a war and forming justice and unity among citizens after a war. Few other outcomes were matched with other SDGs: SDG 5 (f=2) focusing on women’s rights, SDG 8 (f=2) involving economic developments throughout wars, SDG 3 (f=1), SDG 4 (f=1), and SDG 17 (f=1). Most of the

outcomes were in the cognitive domain, and very few of them were in the behavioral domain (see Table 15).

For grades 9 to 11, 45 NLOs were matched with the SDGs (explicit f=3, implicit f=42). Most of them referred to the following SDGs: SDG 1 (f=20), emphasizing various wars and their economic effect on the public, and how poverty or the economy propels migration; SDG 10 (f=6), focusing on immigration of different nations during the Ottoman Empire and its military, economic and social spheres; SDG 11 (f=4) involving the modernization of the society and the cities in the 19th century; and SDG 12 (f=4) focusing on industrialization and its effects on the society. The other SDGs that had a reference to the NLOs were SDG 4 (f=1), SDG 8 (f=2), SDG 9 (f=3), SDG 13 (f=1), SDG 15 (f=1), and SDG 16 (f=3). All of them were in the cognitive domain (see Table 15).

For grade 12, 27 NLOs were detected (explicit f=5, implicit f=22). Most of them were matched with two specific SDGs: SDG 16 (f=11), which involves issues like war and peace treaties, immigration, and the fight against terrorism; and SDG 1 (f=6), which involves economic movements in the 20th century during WW1, WW2 and beyond. The other NLOs were matched to SDG 4 (f=2), SDG 5 (f=2), SDG 10 (f=2), SDG 12 (f=1), SDG 17 (f=2), and SDG 15 (f=1). Likewise, all of the outcomes were in the cognitive domain (see Table 15).

Regarding History Education, most of the NLOs were implicitly related to SDGs. The underlying reason behind this might be the belief that knowledge of history, such as the development of human civilizations, what circumstances caused wars around the world, and how they impacted humans socially and economically, could form the basic background for the SDGs that students need the most. It could help them understand the present situation of the world by looking into the past. Yet, national outcomes that are directly related to ESD are so few. In terms of History Education, there is a limited focus on education that is indirectly related to quality

education. Grade 8 (f= 1), grade 9-11 (f=1), and grade 12 (f=2), all of which are in the cognitive domain and implicitly matched with SDG 4. All of the outcomes are about the revolutions during and after the Turkish War of Independence and the importance of Atatürk. There could be more emphasis on the relationship between the past and present while underlining the issue of sustainability and how education can be used as a tool to tackle the challenges of the present world.

When the overall aims of each lesson are examined, it can be said that all curricula are supposed to be taught in a 'teach across the curriculum fashion' where all lessons are considered as complementary to one another and should be related to each other as well. However, when examined closely, it can be understood that the outcomes focus on covering their own content and letting the teacher be responsible for relating the content to other lessons. If a teacher has adequate training and interest, they could be able to draw links between the lessons and dwell on issues related to the SDGs. All in all, it can be said that all lessons address SDGs that are related to their own coverage, for instance, sports lessons related to health issues or history lessons related to war and its consequences etc. Yet, there is not ample direct relationship between the SDGs and these lessons.

Findings in relation to Morals, Values, and Civics Education

This section of the report focuses on the analysis of the courses of *Culture of Religion, Human Rights, Civics and Democracy*, and *Philosophy*. Those three courses are considered to be directly connected to the morals, values, and beliefs in the Turkish National Curriculum.

The Culture of Religion and Morals is a course designed in a holistic way for grades 4 to 8 in the elementary and middle school programs and for grades 9 to 12 in the high school program. There are 125 NLOs in total and 25 units in grade 4 to

8 and 89 NLOs in total 20 units in grade 9 to 12 (“MEB Din Kültürü, 2018a ve 2018b”). The time allocated to teach this course is 72 hours in an academic year at all grades. *Human Rights, Civics, and Democracy* is designed as a single course for Grade 4 and includes 29 NLOs and six units. The time allocated is one hour per week (“MEB İnsan Hakları”, 2018”). The *Philosophy Curriculum* is designed for grades 10 and 11. It includes 18 NLOs and four units for grade 10 and 21 NLOs and five units for grade 11. For the Philosophy course, seventy-two-hour of teaching time is allocated (“MEB Felsefe Dersi”, 2018).

The number of the NLOs matched with SDGs within the curriculum of the *Culture of Religion and Morals* were 16 in total, including the explicit (f=10) and implicit (f=6) references. 11 of them were for grades 4-8, and five of them were for grades 9-12. The SDGs that the NLOs were linked to were as follows: SDG 1, SDG 3, SDG 8, SDG 10, SDG 11, SDG 16, and SDG 17. On the other hand, there were no NLOs identified to be related to SDG 2, SDG 4, SDG 5, SDG 6, SDG 7, SDG 9, SDG 12, SDG 13, SDG 14, and SDG 15. The NLOs linked to SDG 3 indicated the highest frequency (f=6). Four of them represented the cognitive domain, and the other two represented the socio-emotional and behavioral domains. The second most frequent SDG that included references from the NLOs was SDG 10 (f=4), which was followed by SDG 16 (f=2). The other SDGs had the lowest frequency (see Table 16).

Regarding the curriculum of *Human Rights, Civics and Democracy*, the number of the NLOs that had a reference to the SDGs were identified as 28 in total. 13 of them were explicit, and the rest (f=15) were implicit. Since this course is only for grade 4, all the findings were from this level. In this context, SDG 1, SDG 2, SDG 4, SDG 5, SDG 10, SDG 16, and SDG 17 were related to NLOs in the curriculum. On the other hand, SDG 3, SDG 6, SDG 7, SDG 8, SDG 9, SDG 11, SDG 12, SDG 13, SDG 14, and SDG 15 did not receive any references from the NLOs. The frequency of the NLOs by domain was in the following order: the behavioral

(f=12), cognitive (f=11), and socio-emotional (f=5) domains (see Table 17).

Philosophy was the course that had the fewest NLOs identified (f=5), and they were all stated implicitly. SDG 5, SDG 10, SDG 11, and SDG 16 were the ones that reflected a reference from the NLOs in Philosophy Curriculum. All of them were related to the cognitive domain, and there were no NLOs identified in the social-emotional or behavioral domains (see Table 17).

When the findings were evaluated, SDG 10, SDG 16, SDG 3, SDG 5, and SDG 17 were the prominent goals receiving a considerable number of references in *Morals, Values, and Civics Education*. This is, in fact, what is expected since all the courses in this subject area try to provide a ground for equal and fair treatment for all human beings. As for the *Culture of Religion, Morals and Human Rights*, and *Civics and Democracy*, SDG 10, SDG 1, and SDG 17 were more common goals. Regarding the content of these two courses, ending poverty and strengthening the implementation and promotion of global partnership for sustainable development were directly related to morals and values fostering humanity. When the findings of *Human Rights, Civics and Democracy*, and *Philosophy* are considered, gender equality was the prominent SDG represented. This was a highly expected result since these two courses are concerned with establishing equality between men and women in society. Thus, they are the initiatives for gender equality. In relation to the *Culture of Religion and Morals*, and *Philosophy*, SDG 11 was identified in both. In the former one, maintaining environmental protection and sustaining ecological balance was emphasized in grade 4, whereas in the latter course, analyzing the ecology of cities and towns through the lens of philosophy and art was emphasized in grade 10.

In brief, even though these three courses directly focus on values and morals, it could be concluded that there is not a sufficient link to ESD in the NLOs of *Culture of Religion and Morals* as well

as *Philosophy*. However, *Human Rights, Civics, and Democracy* had more focuses on ESD at the NLO level. To provide more details, it is recommended to examine the coursebooks employed by the teachers at schools. Moreover, it would be desirable to observe teachers within the classroom context to take into consideration how the courses are implemented.

Findings in relation to Pre-School Education

ESD in the pre-school period is meant to inspire children to become well-educated individuals who can make the right decisions for themselves as well as for others. Children are citizens with rights and social learners with many skills, so it is highly important to invest the necessary time, energy, and money on the holistic development of the child.

ESD aims to construct a framework that pays attention to the physical, social, emotional, spiritual, and mental health of the youngest children all around the world. Building on this vision, this section of the report:

- presents the key features and principles of pre-school education;
- provides an answer to how the pre-school curriculum matches with 21st-century skills;
- highlights possible gaps within the pre-school curriculum in terms of sustainability issues.

The general objectives of pre-school education in Turkey, in accordance with the basic principles of national education, is to:

- support children's physical, mental, and emotional development and help them build good habits;
- prepare them for primary school;
- create a common learning environment for the children coming from disadvantaged

- families and having unfavorable conditions;
- ensure children speak Turkish fluently and appropriately.

The pre-school curriculum is featured as child-centered, flexible, spiral, eclectic, balanced, and game-based. With these features, children's learning by discovery and improving their creativity are prioritized. It also encourages the use of daily life experiences occurring within the close circle of the children with the help of certain themes and topics, which are not supposed to be the targets but the means. Cultural and universal values are duly considered in the learning objectives, and parental participation in children's education is highly supported. Learning centers and guidance services are underlined as essential platforms for children to understand the social world, develop communication skills, and build relationships.

Along with its diverse assessment processes as well as differentiation and adaptation initiatives for the children with special needs, the curriculum supports the holistic development of the children. With this holistic and developmental approach, the curriculum pays attention to cognitive, linguistic, socio-emotional, motor, and self-care skills. The curriculum is mainly based on the children's developmental needs and characteristics, which are analyzed and arranged according to three different age groups: (a) 36 to 48-month-olds; (b) 48 to 60-month-olds; and (c) 60 to 72-month-olds.

The main components of the curriculum are 'learning outcomes' and 'behavioral indicators.' The indicators are formed on the basis of the learning outcomes and exist as the observable measures of the learning outcomes. They reflect an order from simple to complex and from concrete to abstract, and they guide teachers when they create activities related to a particular learning outcome.

The pre-school curriculum was constructed on five major domains of skills: cognitive, linguistics, socio-emotional, motor, and self-care, each of

which has 5 to 20 learning outcomes and numerous behavioral indicators. The general findings indicated that nearly 73% of the NLOs within pre-school education were directly or indirectly related to UNESCO's (2017) key competencies, as there are a total of 63 pre-school NLOs and each NLO has at least a few behavioral indicators clearly stated in the curriculum. In total, 24 of the NLOs included an explicit reference, and 22 of them reflected an implicit reference to key competencies (see Table 18).

Specifically, it is observed that the most frequent references were given to self-awareness and normative competencies. Accordingly, 13 references were noted on the learner's ability to reflect on one's own role in the community, to continually evaluate and further motivate one's actions, and to deal with one's feelings and desires. Also, 15 references were noted on the learner's ability to understand and reflect on the norms and values that underlie their actions. On the other hand, the two competencies which received the minimum number of references were anticipatory competency, which requires the abilities to understand and evaluate multiple futures and to create one's own visions for the future, as well as critical thinking, which is about the ability to question norms, practices, and opinions. These two dimensions did not receive enough emphasis among pre-school NLOs. Since they might require more abstract and higher-order thinking, the curriculum designers might have found it not realistic to include critical thinking and anticipatory objectives into the curriculum.

As displayed in Table 18, the learning domain including the most references to UNESCO's (2017) key competencies was the socio-emotional domain (f=19), which includes the child's experience, expression, and management of emotions as well as their positive relationship with others. The two other domains which received a considerable number of references were the cognitive and self-care domains (f=11 in each). On the other hand, the linguistic domain was limited in number, and the motor

skills domain did not reflect any reference to key competencies.

As for the main gap in relation to sustainability issues in the pre-school curriculum, there do not appear to be explicit references to specific SDGs or general sustainability issues. As children are naturally inclined to discover and learn, their learning process starts at the very first moment when they are born, long before they start school, and continues throughout their life. They have great enthusiasm to discover their surroundings, learn to communicate, and start creating new ideas about what they see in their environment. Considering this fact, it is highly crucial to introduce sustainability issues and solutions into the curriculum at an early age. During pre-school education, emotions and attitudes of children such as love, sensitivity, respect, cooperation, responsibility, tolerance, solidarity, and shared values are developed. Therefore, a pre-school curriculum in which children can grasp the vision of sustainable development would be a valuable way of promoting ESD to young girls and boys.

Conclusion and Recommendations

The general findings obtained from the policy analysis done on 476 pages of documents revealed that the concepts of sustainable development and 21st-century skills seem to have more places in the policy documents, whereas global citizenship as a concept does not get enough significance in the same documents. As a second point, most of the key competencies suggested as crucial in the 21st century by UNESCO are significantly reflected in Turkish educational policies even though they are mostly implicit. Considering the number of references given to key competencies, we could conclude that they have an adequate place in the local educational policies in Turkey. More specifically, competencies like collaboration, critical thinking, self-awareness, strategic competency, and anticipatory competency have more direct references than the other competencies.

Regarding the curriculum analysis done on 1,253 pages of documents, the top three SDGs that received the highest number of references from the national learning outcomes are SDG 11: Sustainable Cities and Communities (f=144); SDG 3: Good Health and Well-being (f=106); and SDG 12: Responsible Consumption and Production (f=106). When only the explicit references are considered, SDG 11 (f=56), SDG 12 (f=55), and SDG 3 (f=79) have the highest number of references (see Table 19 and Figure 1 for more details). This finding could imply that the compulsory parts of the Turkish National K-12 Curriculum attach great importance to the following issues through national learning outcomes:

- healthy lives and promoting well-being for all at all ages;
- cities and human settlements that are inclusive, safe, resilient, and sustainable; and
- sustainable and responsible consumption

and production patterns.

In other words, those three areas of sustainable development seem to take a lot of space in the curriculum as a major strength.

On the other hand, the lowest number of references are detected concerning SDG14: Life Below Water (f=9); SDG4: Quality Education (f=10); and SDG6: Clean Water and Sanitation (f=11). As depicted in Table 19 and Figure 1, this finding could mean that the curriculum should give more spaces to the issues like:

- conserving and using the oceans, seas, and marine resources sustainably;
- ensuring inclusive and equitable education and promoting lifelong learning opportunities for all; and
- ensuring availability and sustainable management of water and sanitation for all.

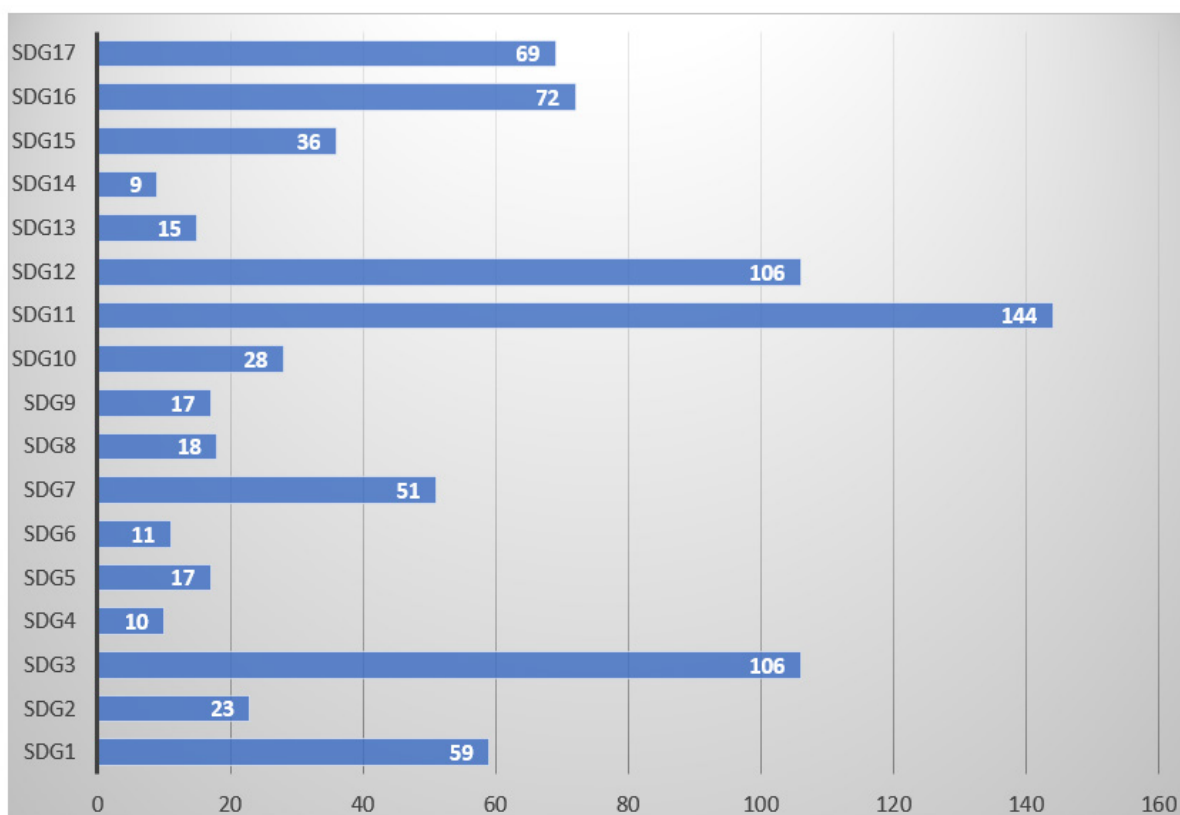


FIGURE 1: Number of References to SDGs from NLOs

Those three points seem to be the major weaknesses of the curriculum that might fail in promoting the comprehensive vision of ESD. Apart from those points, when the references are compared in terms of their being explicit or implicit, there appear other SDGs that receive fewer numbers of explicit references. They are SDG 8: *Decent Work and Economic Growth*; SDG 5: *Gender Equality*; SDG 9: *Industry, Innovation, and Infrastructure*; SDG 13: *Climate Action*; and SDG 2: *Zero Hunger*. Bearing in mind that the curriculum has the power to disseminate and promote global visions and perspectives, the biggest gap in the curriculum could be related to those issues, in particular to Climate Action and Gender Equality, both of which are prioritized in the education agenda of many nations and international organizations.

To answer the question of what specific subject(s) put more emphasis on SDGs through national learning outcomes, the Science Curriculum

with a total of 188 references to SDGs (explicit f=140) happens to be, by far, the number one subject-specific curriculum. It is followed by the Social Studies and the Geography Curriculum with a total of 168 references (explicit f=84). Table 20 and Figure 2 display that 44% of the references to SDGs are from Science, Mathematics, and Technology subjects and 25% are from Social and Life Studies subjects. However, the lowest number of references to the SDGs are from the Morals, Values, and Civics Education (5%) curricula. This finding indicates another gap related to Values Education, which is expected to enhance the ideals and morals that a society deems as important and aims to help learners not only to understand universal values, but also helps them reflect these values in their attitudes and behaviors. With the help of such ideals, the learners are expected to contribute to the society through good citizenship and ethics, which is another central pillar of ESD.

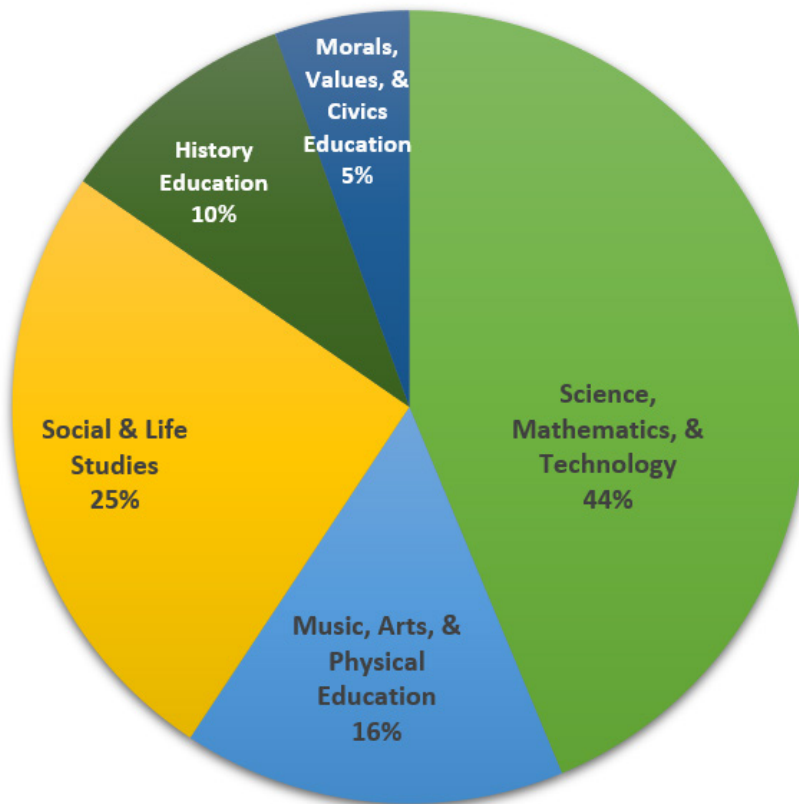


FIGURE 2: Number of References to SDGs by Subject Areas

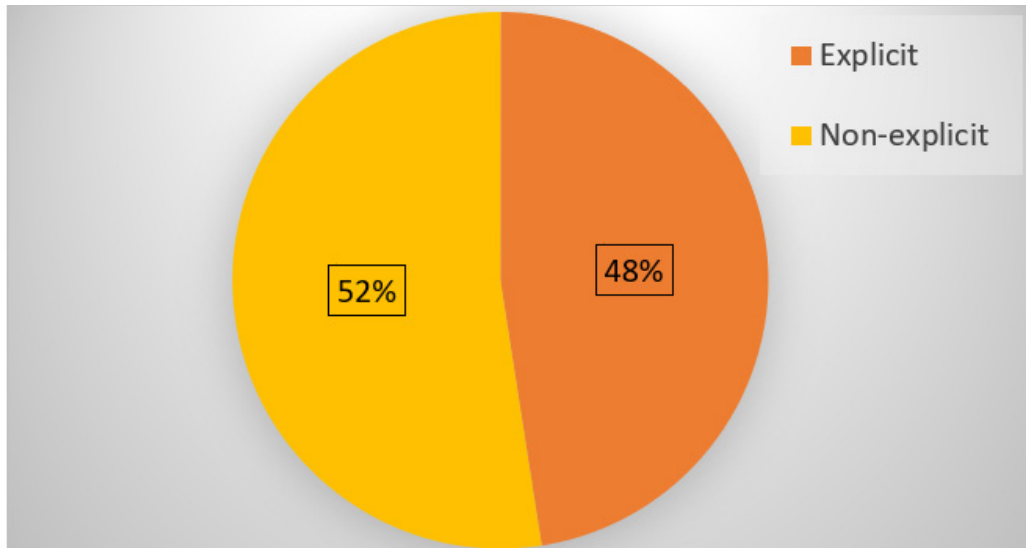


FIGURE 3: Explicit vs Implicit References

As for the comparison of explicit and implicit references, they are almost equal in number as 51% of the references to SDGs are explicitly stated while the rest (48%) are implied in the national learning outcomes (see Figure 3).

In terms of the domains of ESD (cognitive, socio-emotional, and behavioral), over 70% of NLOs represent the cognitive domain, 20% represent the behavioral domain, and 10% represent the socio-emotional domain (see Figure 4). Considering that societal transformations are usually ensured through changes in attitudes and

behaviors, NLOs focusing mostly on the cognitive domain and not paying sufficient attention to socio-emotional and behavioral domains. This could be interpreted as another gap of the curriculum in relation to the SDGs.

Finally, when the educational levels are compared in terms of the references to the SDGs, the highest number of references are from the NLOs at the middle school level, which is followed by the high school and elementary school levels (see Figure 5).



FIGURE 4: Number of References to SDGs by Learning Domains

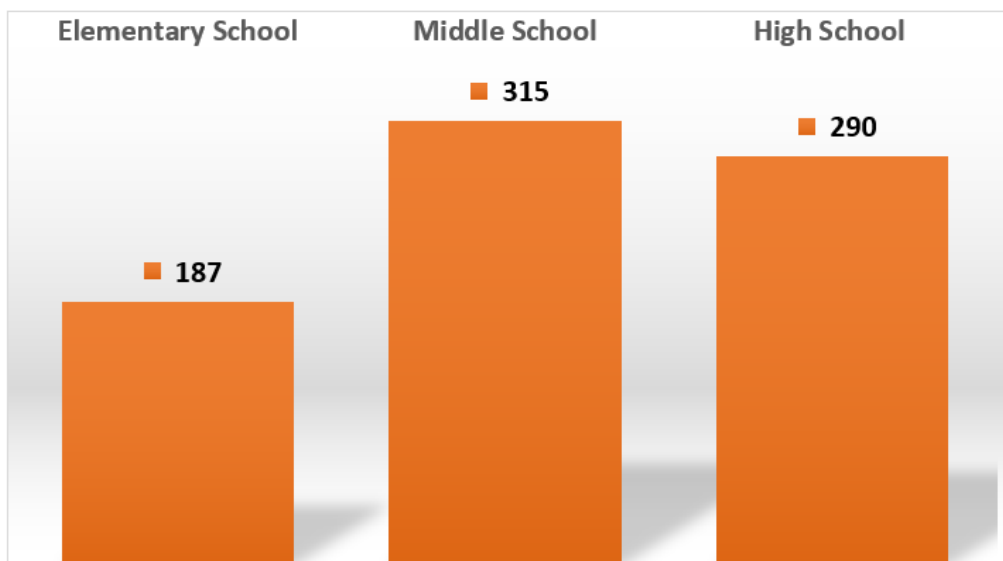


FIGURE 5: Number References to SDGs by Level

Phase 3: Committee Formation

In this phase, three different national committees were formed by the country chair in order to perform the planned activities within the scope of the project:

- Research Committee consisting of five researchers who are responsible for curriculum mapping and one research manager who is leading all research activities.
- Advisory Committee consisting of twenty-two members with diverse backgrounds as academics, educational experts, ministry officials, NGO representatives, school

counselors, school principals, teachers, and parents.

- Executive Committee consisting of twenty-five practicing teachers who are ESD-competent educators having completed a certified training on ESD previously.

All of the members in each committee were invited to work for this project on a voluntary basis; however, not all of them were able to work as planned because of the school closures caused by Covid-19 lockdowns and measures.

Phase 4: Adaptation and Localization

Considering the limitations placed upon by time, energy, and budget issues, it was not possible to create and construct completely new lesson plans in the Turkish language. Instead, a more practical and convenient way was adopted at this phase and the existing lesson plans (n=60) of the Global Schools Program were adapted into Turkish. Since all of the phases were carried out on a voluntary basis without any funding or

grants and through the commitment of individual scholars and teachers, it was not feasible to develop completely new lesson plans in terms of both human and financial resources. Therefore, the Turkish translations of the existing lesson plans were reviewed and evaluated by various practicing teachers.

Phase 5: Testing and Evaluation

Background

In this phase, the sixty lesson plans of the Global Schools Program were reviewed and evaluated based on a checklist (*Global Schools Program Piloting Project Lesson Plan Evaluation Checklist*), which was designed only for this purpose. The reviews and evaluations were performed by ESD-competent teachers (n=25) from diverse educational settings. Due to the school closures caused by Covid-19 lockdowns and measures, which resulted in over one year of disruption in face-to-face education in Turkey, learners were not included in the evaluation phase; only teachers, who are considered as one of the most influential stakeholders in promoting the vision of Global Schools, were consulted for their opinions.

Objectives

The main objective of this phase was to review and evaluate the lesson plans of the Global Schools Program by ESD-competent teachers from diverse educational settings and decide whether they fit into the national curriculum and conform with the general educational goals of the Turkish Ministry of National Education.

Methodology

In order to ensure the reviews and evaluations were carried out by the ESD-competent teachers, 25 practicing teachers at the K-12 levels from various school contexts across the country were included in the process. All of the teachers included in this phase had previously completed certified training on ESD. The teachers were selected purposefully to ensure that each level of education would have the same number of teachers (8 teachers from each level - elementary, middle, and high school levels).

Each teacher was sent an evaluation checklist (*Global Schools Program Piloting Project Lesson*

Plan Evaluation Checklist) along with 5 to 10 lesson plans designed specifically for the grade level that they are currently or were previously teaching. Teachers were required to go through each lesson plan, respond to the items provided in the evaluation checklist, and provide their opinions as practicing teachers. After a careful examination of each lesson plan, the teachers were asked to specify the option that indicates their opinion on the lesson plan concerning specific dimensions on a scale from 1 (one) to 5 (five). The dimensions included in the checklist were as follows:

- whether the name of the lesson plan reflects its content;
- suitability of the suggested duration of the lesson plan;
- relevancy of the subject(s)/theme(s) that are associated with the lesson plan;
- relevancy of the SDGs that are associated with the lesson plan;
- educational objectives and learning outcomes specified in the lesson plan;
- assessment/evaluation method specified the lesson plan;
- implementation form/pattern suggested in the lesson plan;
- relevancy of the lesson plan for the students in the suggested age group;
- conformity of the lesson plan to the curriculum of the suggested grade level;
- conformity of the lesson plan to the general educational goals of the Ministry.
-

As an overall evaluation, the teachers were asked the following open-ended item:

"In line with the ratings you have given, indicate how appropriate the lesson plan you have examined is for in-class or out-of-class implementations by checking one of the boxes below and providing your reasons briefly."

- A. *The lesson plan could be implemented in its current form. Why?*
- B. *I do not think this lesson plan is suitable for implementation. Why?*
- C. *I recommend the lesson plan be modified/improved to make it more local. Please indicate briefly what improvements and revisions are needed.*

1. item-based evaluation
2. grade-specific evaluation
3. overall evaluation

In this way, all of the lesson plans (n=60) were reviewed, and each lesson plan was examined by at least three to five different teachers of different subjects.

Results

In this section there are three dimensions of evaluation:

The item-based evaluation performed across all lesson plans in the program indicated that the average value that each item received for all those sixty lesson plans was truly high, because an average value over 4,5 was given to each item in the checklist except for one particular item, which received an average value of 3,91. That specific item was about the suggested duration of the lesson plans in the program, and it was the only point that the practicing teachers found less than sufficient regarding the lesson plans (see Figure 6). Apart from that point, it was seen that the teachers were highly-satisfied with the lesson plans in terms of: relevancy of the SDGs

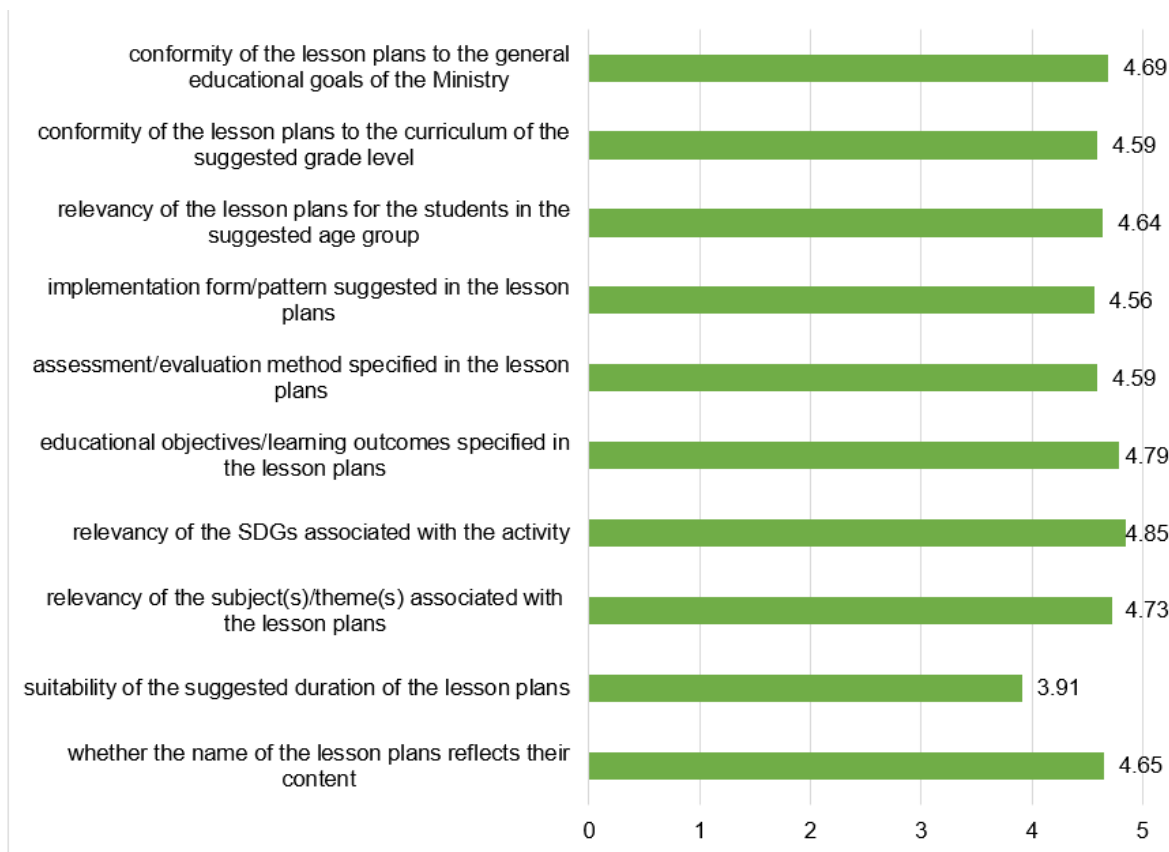


FIGURE 6: Item-based Evaluation

associated with the lesson plans (M=4,85); educational objectives/learning outcomes specified in the lesson plans (M=4,79); relevancy of the subject(s)/theme(s) associated with the lesson plans (M=4,73); conformity of the lesson plan to the general educational goals of the Ministry (M=4,69); whether the name of the lesson plans reflects its content (M=4,65); relevancy of the lesson plans for the students in the suggested age group (M=4,64); assessment/evaluation method specified in the lesson plans (M=4,59); conformity of the lesson plans to the curriculum of the suggested grade level (M=4,59); and implementation form/pattern suggested in the lesson plans (M=4,56).

Regarding the grade-specific evaluation, the average value calculated out of the ratings given to the five lesson plans designed specifically for each grade level revealed different ratings for different grades. Accordingly, the teachers seemed to be less satisfied with the lesson plans designed for the 6th (M=3,31) and 5th (M=3,71)

grades compared to the ones of other grades. On the other hand, the lesson plans designed for the 1st (M=4,92), 9th (M=4,89), 2nd (M=4,74), and 11th (M=4,74) grades were found to be highly sufficient by the teachers (See Figure 7 for the ratings of other grades).

As a final point, the teachers' overall evaluation of the sixty lesson plans of the Global Schools Program was highly positive, because they reported that 61.2% of the Global Schools Program lessons could be adopted and implemented in their current form whereas the rest 38.8% should be modified or improved to make the lesson plans more local (See Figure 8). Even though they reported that there are certain lesson plans to be improved on for Turkish schools, none of the lesson plans were reported as unsuitable or inappropriate for implementation in Turkish schools, which is a very remarkable point in terms of the suitability of the Global Schools Program for different regions across the world.

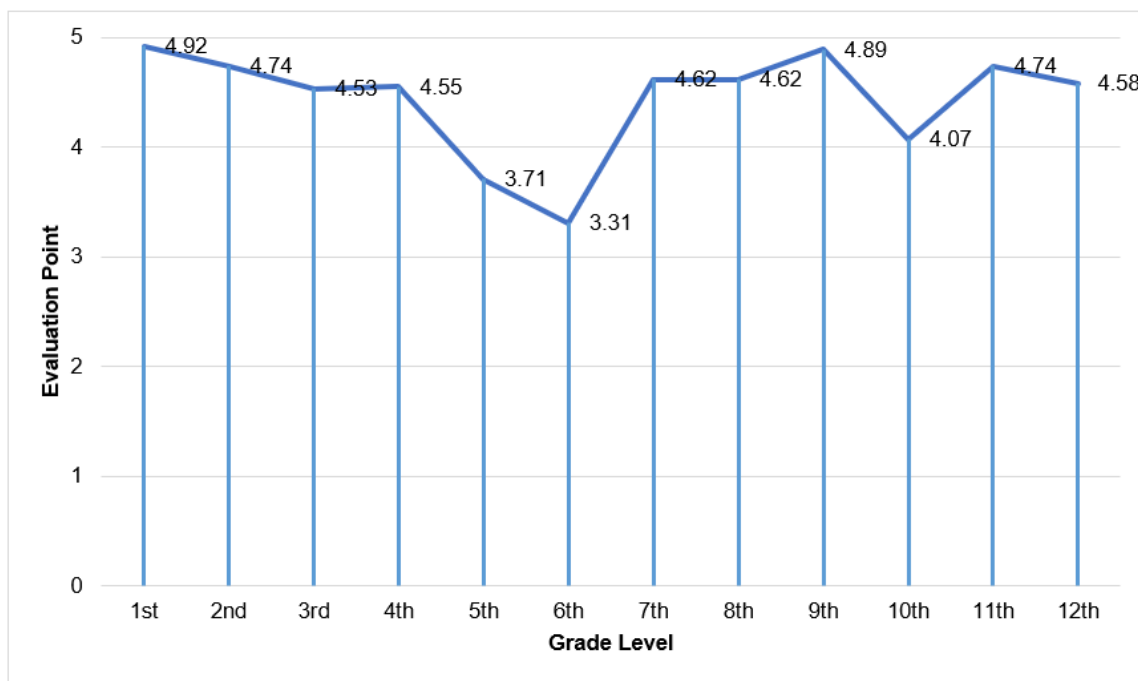


FIGURE 7: Grade-specific Evaluation

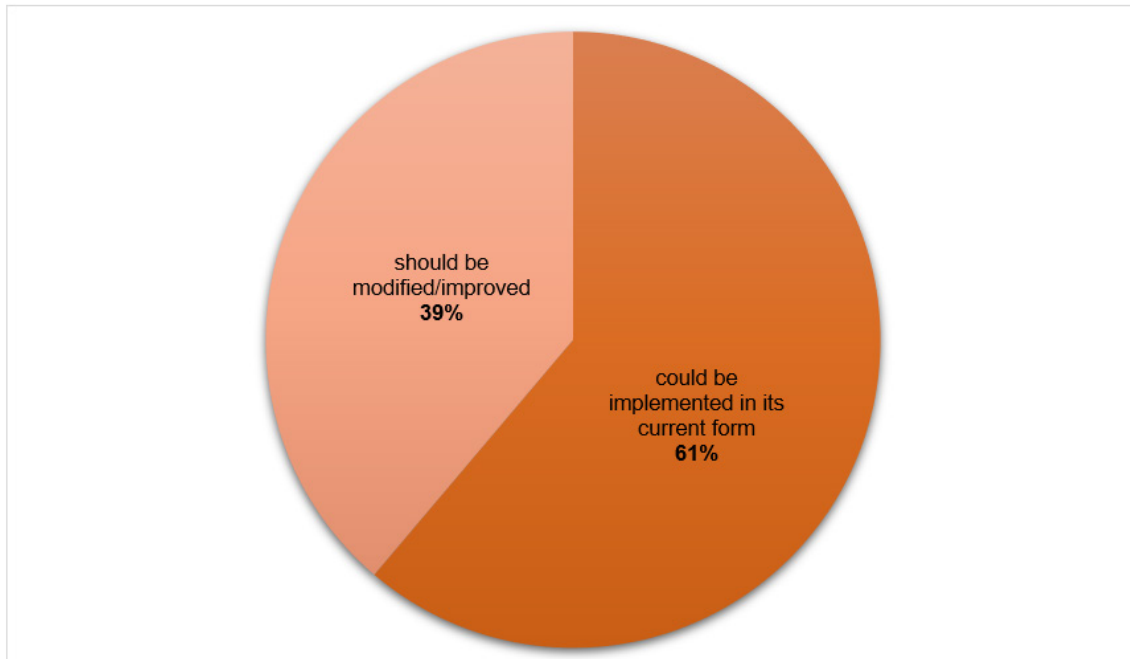


FIGURE 8: Overall Evaluation

Looking into the specific lesson plans that received relatively fewer ratings, as compared to the others, the following list was suggested to be modified or improved by the teachers in order to make them more suitable for Turkish schools.

- My Place in the Community, 6th Grade, Lesson Plan II (M=3.00)
- Balancing Voices in Global Issues, 10th Grade, Lesson Plan III (M=3.40)
- Nations and Resources, 4th Grade, Lesson Plan III (M=3.50)
- Personal Identity, Privilege, and Inequality, 6th Grade, Lesson Plan I (M=3.60)
- Global Conversations About Gender, 11th Grade, Lesson Plan III (M=3.60)
- Tying it All Together, 4th Grade, Lesson Plan V (M=3.60)
- How have other people solved these problems?, 7th Grade, Lesson Plan II (M=3.70)

Conclusion

Although this evaluation was conducted on the lesson plans as documents, the perspectives

of the teachers as evaluators were considerably meaningful because they were competent practicing teachers who have gone through a systematic training on ESD. In this context, their overall evaluation of the Global Schools Program was highly positive. From their perspectives, 61% of the Global Schools Program could be directly adopted and implemented in Turkish schools, which is a very remarkable point in terms of future directions.

Challenges and Opportunities

Reflecting an adequate level of emphasis on ESD and GCE, both the Turkish National Curriculum and Turkish Educational Policies have the potential to generate a national movement for change. This is a remarkable opportunity to lead the country's outstanding change-agents and to encourage educators to embrace ESD more fully. Considering the complexity of change processes and the underlying dynamics of such transformations, this opportunity could create a form of ESD leadership that would support and promote

sustainability values through a strong commitment to participation and collaboration.

Regarding the national education policies, the main difficulty is to determine to what extent the sustainability concepts and competencies included in the policies are put into practice. Any decisions or regulations that look great on policy papers sometimes cannot be put into practice as planned. For this reason, it is extremely important that policy practitioners as well as policy makers internalize and embrace ESD at the same rate. Only in this way could an ESD vision evolve in the desired direction and become widespread.

As for the curriculum sphere, the main obstacle could be the awareness of the people who design the curriculum. As seen in the curriculum documents, curriculum developers seem to pay sufficient attention to global issues, but if they had more awareness and sensitivity about certain issues like climate change, gender equality, circular economy, peace, or poverty, they would most likely incorporate these issues more into the curriculum. On the other hand, it also depends on how proactive a teacher is about covering sustainability issues in class. At this point, teachers' awareness of, sensitivity to, and ownership of sustainability issues come into play. Moreover, how competent teachers are in ESD becomes another significant challenge. Teachers are normally expected to go through a professional development process to be able to address a critical subject or theme of the curriculum sufficiently in the classroom. Therefore, it is highly crucial to focus on whether every learning outcome set in the curriculum document would be fulfilled by teachers in the same proportion or direction, with a similar level of ownership or commitment, and through a desired competence and capacity. While the initial steps of ESD lie in the initiatives for educational policy and curriculum, each competent teacher has an invaluable role in meeting the current challenges of sustainability.

All in all, perhaps one of the biggest challenges

of ESD for the education sector is not just to teach concrete facts and wicked problems of the earth and the humanity, but rather to create a transformative learning environments and enhance active participation processes that could allow sustainability values to be adopted, experienced, and practiced more widely. ESD is a holistic approach in which the learning process is as important as what is learned, because ESD intends to go beyond the surface learning, which is usually through transmissive methods, and reach a deeper learning process, which could be ensured through transformative methods. Therefore, it is essential to promote an educational culture that openly and enthusiastically supports the development and dissemination of ESD at schools.

Recommendations and Next Steps

The policy sphere and program sphere have already been reviewed so far, and the practicing teachers have also reflected a positive disposition towards the Global Schools Program. Whenever the pandemic allows, the next step could be putting this program into practice across diverse educational settings of the country and getting feedback on the effectiveness of the program from both educators as well as students.

Considering the centralized structure of the education system in Turkey, it would be more practical to present this program as a suggested and supplementary program to schools. It would never be appropriate to launch it as an independent program; instead; it would be embedded into the relevant themes of the existing curriculum. In this way, it could be appreciated as an opportunity to diversify classroom practices, motivate students about global issues, and most importantly to collaborate with other institutions and organizations implementing this program around the world. Since teachers' in-class and out-of-class engagement with ESD is a conscious way of promoting a sustainable world, the Global Schools Program could be a valuable program to fuel all teachers onward in achieving the 2030 Education Agenda.

Looking from a broader perspective beyond curriculum and policy, the following issues should be considered with precision for further steps:

- *ESD as a pedagogy.* Being central to the sustainable development of the societies, ESD is a desirable pedagogy at all levels and in all form of education. Seeing ESD as a pedagogy rather than a pure content would ease this transformation.
- *Educators' perception and understanding of ESD.* Increasing awareness of ESD and building teaching capacity among educators is a precondition for an effective reorientation.
- *Linking personal and professional engagement with ESD.* Reflecting this vision on one's professional sphere could only begin with the individual's internalization that is apparent in the personal sphere and social life.
- *Barriers to enhancing ESD practices in class.* Systemic and individual barriers should be eliminated in order to enhance engagement with ESD in all spheres.
- *Cross-sectoral cooperation* and an interdisciplinary approach. ESD could be facilitated better with an interdisciplinary approach through cross-sectoral cooperation, which would bring multiple stakeholders outside the education sector together for a more sustainable future.
- *Dissemination of ESD* with community participation. Community participation and responsibility sharing could make ESD reach its targets both within and beyond formal education.

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Tables

Table 1
List of Policy Documents

Name of Document	Type of Document	Date of Document	Significance	Pages
Basic Law of National Education	Law	1973 to 2019	all matters of education	17
National Education Quality Framework	Quality Manual	2014	basic values, key competencies, knowledge, skills, attitudes, and learning outcomes	36
Turkey's Education Vision 2023	Vision Document	2018	vision for contemporary and future education	140
Strategic Plan for 2019-2023	Strategy Document	2019	five-year measures on major goals, objectives, and performance indicators	135
Performance Program for 2020	Strategy Document	2019	one-year program on policy measures and performance	148

Table 2
Concepts/Sub-concepts by Policy Documents

Concepts/Sub-concepts	Turkey's Education Vision 2023	National Education Quality Framework	Strategic Plan for 2019-2023	Basic Law of National Education	Performance Program for 2020
Sustainable Development	X1	X1	X1	N1	N1
Economic Aspect	X1	X1	X1	X1	X1
Social Aspect	X1	X1	X1	X1	X1
Ecological Aspect	N1	N1	N1	-	-
Cultural Aspect	X1	X1	X1	X1	X1
Current Generations' Needs	N1	N1	N1	N1	N1
Future Generations' Needs	N1	-	-	-	-
Global Citizenship	-	-	-	-	-
Global Goals	N1	N1	-	-	N1
National/Local Goals	X1	N2	N1	N1	X1
Global Citizens	-	-	-	-	-
Our (Turkish) Citizens	X1	X1	X1	X1	X1
Cultural Diversity	-	X1	-	-	-
Social/Moral Responsibility	N1	X1	N1	X1	-
Human Rights	N1	X1	X1	X1	X1
Concerns for Planet Earth	-	-	N2	-	-
21st Century Skills	X1	-	-	-	N1
Today's Competencies	X1	N1	N1	-	N1
Tomorrow's Competencies	X1	-	N1	-	N1
Contemporary Education	X1	-	N2	X1	N2
Skill-based Education	X1	X1	X1	N1	X1

Table 3
Key Competencies by Policy Documents

Skills/Competencies	Turkey's Education Vision 2023	National Education Quality Framework	Strategic Plan for 2019-2023	Basic Law of National Education	Performance Program for 2020
Systems Thinking	-	-	-	-	-
systemic approach to education	N2	N2	X2	N2	N2
holistic perspective in education	X2	N2	N2	N2	N2
learning as an ecosystem (cause-effect/mutual relationships/links)	X2	-	-	-	-
uncertainties/complexities	X2	X1	N2	N2	N2
Anticipatory	N1	N1	N2	-	-
Anticipatory	-	X1	-	-	N2
future vision	X2	X1	X2	-	N2
prediction of future possibilities/scenarios	N2	X1	-	-	-
awareness/identification of risks/changes	N2	X1	X2	-	-
envisioning consequences of actions/decisions	X2	X1	-	-	-
Normative	-	-	-	-	-
global/universal norms/values	N1	N1	N1	N1	N1
national/local values	X1	X1	X1	X1	X1
moral/ethical/spiritual values	X1	X1	N1	X1	X1
shared/humanitarian values	X1	N1	X1	X1	X1
social/cultural values	X1	X1	X1	X1	-
Strategic	-	-	X2	-	X2
collective actions	X1	-	-	X1	-
strategic objectives/practices	X2	X1	X2	-	X2
strategic designs/resources	X2	X2	-	-	-
innovative designs/resources	X2	X1	-	-	-
innovative solutions/practices	X1	X1	X1	X2	X2
Collaboration	X2	-	X2	X2	X2
cooperation/partnership of different actors	X2	X1	X1	X2	X1
teamwork/group work	X1	-	X2	-	N1
participation of different actors	X2	X1	X2	-	N2
participation of children/students	X1	X1	X1	-	X1
pluralism and inclusiveness	X1	X1	X1	N1	X1
Critical Thinking	X1	X1	N1	-	-
reasoning	X1	X1	-	N1	-
questioning	X1	X1	N1	-	-
interpretation	X1	X1	-	-	-

Self-awareness	X1	X1	-	-	1
self-recognition/self-knowledge	X1	X1	-	X1	-
self-esteem/self-confidence/self-efficacy	X1	X1	X1	X1	X1
self-development	X1	X1	-	-	-
self-revelation/self-reflection	X1	X1	-	-	-
community awareness	X2	X1	X2	X1	X1
Integrated Problem-solving	-	-	-	-	-
problem solving	X1	X1	X1	N1	X1
environmental problems	N1	X1	-	-	-
social problems	N1	X1	X1	X1	X1
cultural problems	N1	N1	N1	X1	N1
economic problems	N1	N1	N1	N1	N1

Table 4
Subjects across K-12 Grades

Subject Area	Specific Subject	Grades											
		1	2	3	4	5	6	7	8	9	10	11	12
(1) Language Studies	Turkish Language	X	X	X	X	X	X	X	X				
	Turkish Language and Literature									X	X	X	X
	English Language		X	X	X	X	X	X	X	X	X	X	X
	Science			X	X	X	X	X	X				
(2) Science, Mathematics, and Technology	Biology									X	X	X	X
	Chemistry									X	X	X	X
	Physics									X	X	X	X
	Mathematics	X	X	X	X	X	X	X	X	X	X	X	X
	ICT & Software					X	X						
	Technology and Design								X	X			
(3) Music, Arts, and Physical Education	Music	X	X	X	X	X	X	X	X	X	X	X	X
	Visual Arts	X	X	X	X	X	X	X	X	X	X	X	X
	Physical Education and Game Sports	X	X	X	X	X	X	X	X	X	X	X	X
	Life Studies	X	X	X									
(4) Social and Life Studies	Traffic Safety				X								
	Health and Traffic Culture									X			
	Social Studies				X	X	X	X					
	Geography									X	X	X	X
(5) History Education	History									X	X	X	
	History of Turkish Revolution and Principles of Atatürk								X				X
(6) Morals, Values, and Civics Education	Philosophy										X	X	
	Human Rights, Civics and Democracy				X								
	Culture of Religion and Morals				X	X	X	X	X	X	X	X	X
(7) Pre-school Education	Basic Skills/Competencies												

Table 5
Turkish Language Curriculum: Themes and Topics related to SDGs

Themes and Topics	Certain Subtopics	Related SDGs
Values and Virtues	Ethics, philanthropy, friendship, cooperation, love and respect, honesty, generosity, kindness	SDG 17-Partnerships for the Goals
Individual and the Society	Individual differences, multi culturalism, multi linguisticism, cooperation, solidarity, disabled groups, empathy, equality, respect for differences, law, friendship, city culture, cultural differences, social inclusion, socio-cultural awareness	SDG 16- Peace, Justice and Strong Institutions
Communication	Effective communication, communication skills, intercultural communication, mass media, media literacy, student mobility, communication with other people, interaction with the environment	SDG 17- Partnerships for the Goals, Peace SDG 16- Justice and Strong Institutions
Rights and Freedoms	Individual rights, children rights, right to education, rights of the disabled, the right of privacy, right to life, animal rights, freedom of religion and conscience, freedom of thought, freedom of communication, freedom of speech, freedom of travel, basic human rights and freedoms, equality, gender equality	SDG 5- Gender equality SDG 4- Quality education SDG 10- Reduced inequalities SDG 17- Partnerships for the Goals SDG 16- Peace, Justice and Strong Institutions
Personal Development	Conflict management, empathy, entrepreneurship, learning to learn	SDG 16- Peace, Justice and Strong Institutions SDG4- Quality Education
Science and Technology	Innovation, discovery, inventions, copyrights, patent, communication, transportation, information technology, science, scientists	SDG 9- Industry, Innovation and Infrastructure
Health and Sports	Physical fitness, nutrition, balanced diet, mental health, healthy lifestyle, hygiene, sports culture, sportsmanship, physical education, preventing diseases	SDG 3- Good Health and Well-being
Time and Space	Our environment, our city, countries, past and future, our house, our school	SDG 11- Sustainable Cities and Communities
Nature and Universe	Plants, animals, environment, protection of the environment, nature, natural disasters, world, universe, planets, stars, climate, seasons, snow, rain	SDG 11- Sustainable Cities and Communities SDG 13- Climate Action SDG 14- Life below Water SDG 15- Life on Land
Citizenship	Justice, rule of law, labor, work life, hard work, equality, immigration, refugees, cooperation, sharing, freedom, sense of responsibility, production, tax ethics,	SDG 1- No Poverty SDG 8- Decent Work and Economic Growth SDG 10- Reduced inequalities SDG 12-Responsible Consumption and Production SDG 16- Peace, Justice and Strong Institutions

Source: 1-8 Grades Turkish Curricula, MoNE.

Table 6
Foreign Language Curriculum: Learning Outcomes related to SDGs

Grade	Themes	Learning Outcomes	Domains	Related SDGs
6	Unit 9. Saving the Planet	E6.9.L1. To recognize appropriate attitudes to save energy and to protect the environment.	Cognitive	SDG 15- life on Land SDG 14- Life below Water SDG 13- Climate Action SDG 11- Sustainable Cities and Communities SDG 7-Affordable and Clean Energy SDG 6- Clean Water and Sanitation
		E6.9.L2. To understand suggestions related to the protection of the environment in simple oral texts.	Cognitive	
		E6.9.SI1. To give each other suggestions about the protection of the environment.	Behavioral	
		E6.9.SP1. To talk to people about the protection of the environment.	Behavioral	
		E6.9.R1. To understand the texts about the protection of the environment.	Behavioral	
7	Unit 9 Environment	E7.9.R1. To identify specific information in various texts about environment.	Cognitive	SDG 11- Sustainable Cities and Communities SDG 15- Life on Land SDG 13- Climate Action
		E7.9.W1. To write short, simple messages about environment.	Behavioral	
8	Unit 10 National Forces	E8.10.SI1. To talk about predictions concerning future of the Earth.	Behavioral	SDG 9-Industry, Innovation and Infrastructure SDG 15- Life on Land SDG 13- Climate Action SDG 11- Sustainable Cities and Communities SDG 6- Clean Water and Sanitation
		E8.10.SI2. To negotiate reasons and results to support their predictions about natural forces and disasters.	Socio-emotional	
		E8.10.SP1. To express predictions concerning future of the Earth.	Socio-emotional	
		E8.10.SP2. To give reasons and results to support their predictions about natural forces and disasters.	Socio-emotional	
		E8.10.R1. To identify specific information in simple texts about natural forces and disasters.	Cognitive	
		E8.10.W1. To write a short and simple paragraph about reasons and results of natural forces and disasters.	Behavioral	
9	Unit 4. Human in Nature	E9.4.W2. To write a short paragraph about love for nature	Behavioral	SDG 13- Climate Action
9	Unit 8. Emergency and Health Problems	E9.8.S1. To ask for help from the emergency services in areas of immediate need.	Behavioral	SDG 3- Good Health and Well-being
		E9.8.S2. To ask for and give advice about health problems.	Behavioral	
		E9.8.S3. To express obligations, responsibilities and prohibitions in social life.	Socio-emotional	
		E9.8.W1. To prepare posters leaflet, or brochures about safety and health at work.	Behavioral	
10	Unit 8 Digital Era	E10.8.S1. To make comments on innovations by stating causes and effects.	Socio-emotional	SDG 9- Industry, Innovation and Infrastructure
		E10.8.R1. To scan a text about the evolution of technology for specific information.	Cognitive	
10	Unit 10. Shopping	E10.10.W2. To write an informative paragraph about prices and characteristics of a type of a product in order to compare their preferences.	Behavioral	SDG 12- Responsible Consumption and Production

11	Unit 10. Values and Norms	E11.10.S1. To exchange ideas about values and practices. E11.10.S2. To make comments about moral values and norms in different cultures. E11.10.W1. To write an essay about the importance and effects of values and norms in society. E11.10.W2. To write slogans about spiritual, moral and social values.	Socio-emotional Socio-emotional Behavioral Behavioral	SDG 16- Peace, Justice and Strong Institutions SDG 17- Partnerships for the Goals
12	Unit 3. Human Rights	E12.3.L1. To guess the meaning of lexis and jargon about human rights in a recorded text/video. E12.3.L2. To distinguish the positive and negative expressions about human rights in a recorded text/video. E12.3.S1. To make suggestions about improving human rights. E12.3.S2. To discuss the problems/difficulties of the disadvantaged people in the world. E12.3.R1. To find the supporting ideas in a text about good practices on human rights around the world. E12.3.W1. To write mottos/slogans about human rights. E12.3.W2. To write an argumentative essay including solutions for disadvantaged people's problems.	Cognitive Socio-emotional Socio-emotional Socio-emotional Cognitive Behavioral Behavioral	SDG 16- Peace, Justice and Strong Institutions SDG 17- Partnerships for the Goals
12	Unit 8. Alternative Energy	E12.8.L1. To note down the solutions to the problems of excessive energy consumption around the world in a recorded text. E12.8.S1. To make complaints and offer solutions to environmental /energy problems. E12.8.S2. To participate in an informal debate about alternative energy in the future. E12.8.R1. To summarize a reading passage about alternative energy. E12.8.R2. To analyze a reading passage to find out solutions to environmental problems. E12.8.W1. To write an email/a letter of complaint to a local authority about an environmental problem to suggest solutions. E12.8.W2. To write their opinions about the usage of alternative energy.	Socio-emotional Socio-emotional Socio-emotional Cognitive Cognitive Behavioral Behavioral	SDG 7- Affordable and Clean Energy SDG 11- Sustainable Cities and Communities SDG 13- Climate Action SDG 15- Life on Land

Source: 2-12 Grades English Curricula, MoNE.

Table 7*Science Curriculum: Science 3-8; Physics 9-12; Chemistry 9-12; Biology 9-12*

SDG #	Domains of Learning	f						TOTAL	
		Grades 1 to 4		Grades 5 to 8		Grades 9 to 12		Exp.	Imp.
		Exp.	Imp.	Exp.	Imp.	Exp.	Imp.		
1	Cognitive	-	-	-	3	1	1	1	4
	Socio-emotional	-	-	-	-	-	-	-	-
	Behavioral	-	-	-	-	1	-	1	-
2	Cognitive	1	-	-	-	1	2	2	2
	Socio-emotional	-	-	-	-	-	-	-	-
	Behavioral	3	-	-	-	-	-	3	-
3	Cognitive	1	-	3	-	18	2	22	2
	Socio-emotional	1	-	1	-	-	-	2	-
	Behavioral	1	-	4	-	-	-	5	-
6	Cognitive	-	-	2	-	4	-	6	-
	Socio-emotional	-	-	1	-	-	-	1	-
	Behavioral	-	-	-	-	1	-	1	-
7	Cognitive	-	3	5	2	5	3	10	8
	Socio-emotional	1	-	1	1	-	-	2	1
	Behavioral	2	1	8	1	3	-	13	2
8	Cognitive	-	-	-	-	2	-	2	-
	Socio-emotional	-	-	-	-	-	-	-	-
	Behavioral	-	-	-	-	-	-	-	-
9	Cognitive	-	-	-	1	1	-	1	1
	Socio-emotional	-	-	-	-	-	-	-	-
	Behavioral	-	-	-	1	-	-	-	1
11	Cognitive	2	-	1	-	8	2	11	2
	Socio-emotional	1	-	-	-	-	-	1	-
	Behavioral	3	-	2	1	-	-	5	1
12	Cognitive	-	-	2	1	6	3	8	4
	Socio-emotional	2	-	2	-	-	-	4	-
	Behavioral	2	-	4	1	2	1	8	2
13	Cognitive	-	1	1	5	1	-	2	6
	Socio-emotional	-	-	-	-	-	-	-	-
	Behavioral	-	-	1	-	1	-	2	-
14	Cognitive	1	-	1	-	2	-	4	-
	Socio-emotional	1	-	-	-	-	-	1	-
	Behavioral	-	-	1	-	-	-	1	-
15	Cognitive	4	-	-	-	8	1	12	1
	Socio-emotional	-	-	-	-	-	-	-	-
	Behavioral	1	-	-	-	-	-	1	-
16	Cognitive	-	-	-	-	-	1	-	1
	Socio-emotional	-	-	-	-	-	-	-	-
	Behavioral	-	-	-	-	-	-	-	-
17	Cognitive	-	-	1	-	4	9	5	9
	Socio-emotional	-	-	-	-	-	-	-	-
	Behavioral	-	-	2	-	1	1	3	1
TOTAL		27	5	43	17	70	26	140	48

*Only SDGs receiving references from NLOs are included in this and the following tables (Tables 7 to 17).

Table 8
Mathematics Curriculum

SDG #	Domains of Learning	<i>f</i>							
		Grades 1 to 4		Grades 5 to 8		Grades 9 to 12		TOTAL	
		Exp.	Imp.	Exp.	Imp.	Exp.	Imp.	Exp.	Imp.
1	Cognitive	-	-	-	-	-	2	-	2
	Socio-emotional	-	-	-	-	-	-	-	-
	Behavioral	-	-	-	-	-	1	-	1
2	Cognitive	-	-	-	-	-	1	-	1
	Socio-emotional	-	-	-	-	-	-	-	-
	Behavioral	-	1	-	-	-	-	-	1
5	Cognitive	-	-	-	4	-	-	-	4
	Socio-emotional	-	-	-	-	-	-	-	-
	Behavioral	-	-	-	-	-	-	-	-
6	Cognitive	-	-	-	-	-	1	-	1
	Socio-emotional	-	1	-	-	-	-	-	1
	Behavioral	-	-	-	-	-	-	-	-
11	Cognitive	-	1	-	1	-	-	-	2
	Socio-emotional	-	-	-	-	-	-	-	-
	Behavioral	-	-	-	-	-	-	-	-
12	Cognitive	-	-	-	-	-	1	-	1
	Socio-emotional	-	-	-	-	-	-	-	-
	Behavioral	-	-	-	-	-	2	-	2
TOTAL		-	3	-	5	-	8	0	16

Table 9*Technology Curriculum: Information Technologies and Software 5-6; Technology and Design 7-8*

SDG #	Domains of Learning	<i>f</i>	
		Grades 5 to 8	
		Exp.	Imp.
3	Cognitive	3	5
	Socio-emotional	-	-
	Behavioral	-	-
7	Cognitive	2	2
	Socio-emotional	-	-
	Behavioral	1	1
8	Cognitive	-	2
	Socio-emotional	-	-
	Behavioral	-	-
9	Cognitive	-	-
	Socio-emotional	-	-
	Behavioral	1	-
10	Cognitive	4	-
	Socio-emotional	-	-
	Behavioral	-	-
11	Cognitive	6	1
	Socio-emotional	-	-
	Behavioral	-	-
12	Cognitive	3	25
	Socio-emotional	-	-
	Behavioral	4	3
15	Cognitive	1	1
	Socio-emotional	-	-
	Behavioral	-	1
16	Cognitive	5	1
	Socio-emotional	-	-
	Behavioral	-	-
17	Cognitive	-	13
	Socio-emotional	-	-
	Behavioral	-	1
	TOTAL	30	56

Table 10*Music Curriculum*

SDG #	Domains of Learning	<i>f</i>					
		Grades 1 to 8		Grades 9 to 12		TOTAL	
		Exp.	Imp.	Exp.	Imp.	Exp.	Imp.
10	Cognitive	-	1	-	-	-	1
	Socio-emotional	-	-	-	-	-	-
	Behavioral	-	-	-	-	-	-
11	Cognitive	-	-	-	1	-	1
	Socio-emotional	-	-	-	-	-	-
	Behavioral	-	-	-	-	-	-
16	Cognitive	-	-	-	2	-	2
	Socio-emotional	-	-	-	-	-	-
	Behavioral	-	-	-	-	-	-
	TOTAL	-	1	-	3	0	4

Table 11
Visual Arts Curriculum

SDG #	Domains of Learning	<i>f</i>					
		Grades 1 to 8		Grades 9 to 12		TOTAL	
		Exp.	Imp.	Exp.	Imp.	Exp.	Imp.
1	Cognitive	-	-	-	1	-	1
	Socio-emotional	-	-	-	-	-	-
	Behavioral	-	6	1	-	1	6
5	Cognitive	-	-	-	-	-	-
	Socio-emotional	-	-	-	-	-	-
	Behavioral	-	1	-	-	-	1
7	Cognitive	-	1	-	1	-	2
	Socio-emotional	-	-	-	-	-	-
	Behavioral	1	-	-	-	1	-
8	Cognitive	-	-	-	-	-	-
	Socio-emotional	-	-	-	-	-	-
	Behavioral	1	4	-	-	1	4
9	Cognitive	-	-	-	-	-	-
	Socio-emotional	-	-	-	-	-	-
	Behavioral	1	1	-	-	1	1
10	Cognitive	-	-	-	-	-	-
	Socio-emotional	-	-	-	-	-	-
	Behavioral	-	4	-	-	-	4
11	Cognitive	-	-	2	-	2	-
	Socio-emotional	7	5	1	3	8	8
	Behavioral	-	1	-	1	-	2
12	Cognitive	-	1	-	-	-	1
	Socio-emotional	1	-	-	-	1	-
	Behavioral	1	-	1	1	2	1
16	Cognitive	-	-	1	-	1	-
	Socio-emotional	1	-	-	-	1	-
	Behavioral	-	2	-	-	-	2
17	Cognitive	-	-	-	-	-	-
	Socio-emotional	-	-	-	-	-	-
	Behavioral	-	1	-	-	-	1
TOTAL		13	27	6	7	19	34

Table 12
Physical Education Curriculum

SDG #	Domains of Learning	<i>f</i>							
		Grades 1 to 4		Grades 5 to 8		Grades 9 to 12		TOTAL	
		Exp.	Imp.	Exp.	Imp.	Exp.	Imp.	Exp.	Imp.
2	Cognitive	-	2	-	2	-	3	-	7
	Socio-emotional	-	-	-	-	-	-	-	-
	Behavioral	-	3	-	2	-	-	-	5
3	Cognitive	4	-	7	2	11	-	22	2
	Socio-emotional	-	-	-	-	2	-	2	-
	Behavioral	2	1	1	6	-	-	3	7
7	Cognitive	-	-	-	-	-	-	-	-
	Socio-emotional	-	1	-	-	-	-	-	1
	Behavioral	-	-	-	-	-	-	-	-
9	Cognitive	-	-	-	-	-	-	-	-
	Socio-emotional	-	2	-	-	-	-	-	2
	Behavioral	-	-	-	-	-	-	-	-
11	Cognitive	-	-	-	-	-	5	-	5
	Socio-emotional	-	11	-	-	-	-	-	11
	Behavioral	-	1	-	-	-	-	-	1
12	Cognitive	-	-	-	-	-	-	-	-
	Socio-emotional	-	-	-	-	-	-	-	-
	Behavioral	-	-	1	-	-	-	1	-
16	Cognitive	-	-	-	1	-	-	-	1
	Socio-emotional	-	-	4	-	-	-	4	-
	Behavioral	-	-	-	-	-	-	-	-
17	Cognitive	-	-	-	-	-	8	-	8
	Socio-emotional	-	-	-	-	-	-	-	-
	Behavioral	-	-	-	-	-	-	-	-
TOTAL		6	21	13	13	13	16	32	50

Table 13*Life Studies Curriculum: Life Studies 1-3; Traffic Safety 4; Health and Traffic Culture 9*

SDG #	Domains of Learning	<i>f</i>						TOTAL	
		Life Studies Grades 1 to 3		Traffic Safety Grade 4		Health & Traffic Culture Grade 9		Exp.	Imp.
		Exp.	Imp.	Exp.	Imp.	Exp.	Imp.		
1	Cognitive	-	-	-	-	-	-	-	-
	Socio-emotional	1	-	-	-	-	-	1	-
	Behavioral	-	-	-	-	-	-	-	-
2	Cognitive	-	1	-	-	1	-	1	1
	Socio-emotional	-	-	-	-	-	-	-	-
	Behavioral	-	1	-	-	-	-	-	1
3	Cognitive	3	1	-	-	5	7	8	8
	Socio-emotional	-	-	-	-	-	-	-	-
	Behavioral	5	2	-	-	-	-	5	2
4	Cognitive	1	-	-	-	-	-	1	-
	Socio-emotional	-	-	-	-	-	-	-	-
	Behavioral	-	-	-	-	-	-	-	-
7	Cognitive	-	-	-	-	-	-	-	-
	Socio-emotional	-	-	-	-	-	-	-	-
	Behavioral	-	-	-	-	-	-	2	-
8	Cognitive	2	-	-	-	-	-	-	-
	Socio-emotional	-	-	-	-	-	-	-	-
	Behavioral	-	-	-	-	-	-	-	-
11	Cognitive	-	1	-	2	-	1	-	4
	Socio-emotional	-	-	-	-	-	-	-	-
	Behavioral	-	-	-	-	-	-	-	-
12	Cognitive	2	-	-	-	-	-	2	-
	Socio-emotional	-	1	-	-	-	-	-	1
	Behavioral	7	1	-	-	-	-	7	1
13	Cognitive	-	-	-	-	-	-	-	-
	Socio-emotional	1	-	-	-	-	-	1	-
	Behavioral	-	-	-	-	-	-	-	-
15	Cognitive	4	-	-	-	-	-	4	-
	Socio-emotional	2	-	-	-	-	-	2	-
	Behavioral	-	-	-	-	-	-	-	-
16	Cognitive	2	1	-	-	-	-	2	1
	Socio-emotional	2	-	-	-	-	-	2	-
	Behavioral	-	-	-	-	-	-	-	-
17	Cognitive	-	1	-	-	-	-	-	1
	Socio-emotional	-	-	-	-	-	-	-	-
	Behavioral	-	-	-	-	-	-	-	-
TOTAL		32	10	0	2	6	8	38	20

Table 14
Social Studies Curriculum: Social Studies 4-7; Geography 9-12

SDG #	Domains of Learning	<i>f</i>					
		Social Studies Grades 4-7		Geography Grades 9 to 12		TOTAL	
		Exp.	Imp.	Exp.	Imp.	Exp.	Imp.
1	Cognitive	1	-	-	-	1	-
	Socio-emotional	1	-	-	-	1	-
	Behavioral	1	-	-	-	1	-
3	Cognitive	-	-	1	-	1	-
	Socio-emotional	-	-	-	-	-	-
	Behavioral	-	-	-	-	-	-
4	Cognitive	-	3	-	-	-	3
	Socio-emotional	-	-	-	-	-	-
	Behavioral	-	-	-	-	-	-
5	Cognitive	1	-	-	1	1	1
	Socio-emotional	-	-	-	-	-	-
	Behavioral	-	-	-	-	-	-
6	Cognitive	-	-	1	-	1	-
	Socio-emotional	-	-	-	-	-	-
	Behavioral	-	-	-	-	-	-
7	Cognitive	-	-	1	2	1	2
	Socio-emotional	-	-	-	-	-	-
	Behavioral	-	-	-	-	-	-
8	Cognitive	2	1	1	-	3	1
	Socio-emotional	-	-	-	-	-	-
	Behavioral	-	-	-	-	-	-
9	Cognitive	-	-	4	-	4	-
	Socio-emotional	-	-	-	-	-	-
	Behavioral	1	-	-	-	1	-
11	Cognitive	12	34	9	2	21	36
	Socio-emotional	1	1	-	-	1	1
	Behavioral	1	7	-	-	1	7
12	Cognitive	10	3	4	1	14	4
	Socio-emotional	-	1	-	-	-	1
	Behavioral	-	-	-	-	-	-
13	Cognitive	-	-	2	-	2	-
	Socio-emotional	1	-	-	-	1	-
	Behavioral	-	-	-	-	-	-
14	Cognitive	-	-	1	2	1	2
	Socio-emotional	-	-	-	-	-	-
	Behavioral	-	-	-	-	-	-
15	Cognitive	1	-	8	2	9	2
	Socio-emotional	-	-	-	-	-	-
	Behavioral	-	1	-	-	-	1
16	Cognitive	2	15	-	1	2	16
	Socio-emotional	2	2	-	-	2	2
	Behavioral	1	1	-	-	1	1
17	Cognitive	12	3	2	-	14	3
	Socio-emotional	-	-	-	-	-	-
	Behavioral	-	1	-	-	-	1
TOTAL		50	73	34	11	84	84

Table 15
History Curriculum

SDG #	Domains of Learning	<i>f</i>							
		Grade 8		Grades 9 to 11		Grade 12		TOTAL	
		Exp.	Imp.	Exp.	Imp.	Exp.	Imp.	Exp.	Imp.
1	Cognitive	-	6	-	19	-	6	-	31
	Socio-emotional	-	-	1	-	-	-	1	-
	Behavioral	-	-	-	-	-	-	-	-
3	Cognitive	-	1	-	-	-	-	-	1
	Socio-emotional	-	-	-	-	-	-	-	-
	Behavioral	-	-	-	-	-	-	-	-
4	Cognitive	-	-	-	-	-	2	-	2
	Socio-emotional	-	-	-	-	-	-	-	-
	Behavioral	-	-	-	-	-	-	-	-
5	Cognitive	2	-	-	-	2	-	4	-
	Socio-emotional	-	-	-	-	-	-	-	-
	Behavioral	-	-	-	-	-	-	-	-
8	Cognitive	-	2	1	1	-	-	1	3
	Socio-emotional	-	-	-	-	-	-	-	-
	Behavioral	-	-	-	-	-	-	-	-
9	Cognitive	-	-	-	4	-	-	-	4
	Socio-emotional	-	-	-	-	-	-	-	-
	Behavioral	-	-	-	-	-	-	-	-
10	Cognitive	-	-	-	5	-	2	-	7
	Socio-emotional	-	-	-	-	-	-	-	-
	Behavioral	-	-	-	-	-	-	-	-
11	Cognitive	-	-	-	4	-	-	-	4
	Socio-emotional	-	-	-	-	-	-	-	-
	Behavioral	-	-	-	-	-	-	-	-
12	Cognitive	-	1	1	3	-	1	1	5
	Socio-emotional	-	-	-	-	-	-	-	-
	Behavioral	-	-	-	-	-	-	-	-
13	Cognitive	-	-	-	1	-	-	-	1
	Socio-emotional	-	-	-	-	-	-	-	-
	Behavioral	-	-	-	-	-	-	-	-
15	Cognitive	-	-	-	1	-	1	-	2
	Socio-emotional	-	-	-	-	-	-	-	-
	Behavioral	-	-	-	-	-	-	-	-
16	Cognitive	-	-	-	4	3	8	3	12
	Socio-emotional	-	-	-	-	-	-	-	-
	Behavioral	-	3	-	-	-	-	-	3
17	Cognitive	-	1	-	-	-	2	-	3
	Socio-emotional	-	-	-	-	-	-	-	-
	Behavioral	-	-	-	-	-	-	-	-
TOTAL		2	14	3	42	5	22	10	78

Table 16
Culture of Religion and Morals Curriculum

SDG #	Domains of Learning	<i>f</i>					
		Grades 4-8		Grades 9 to 12		TOTAL	
		Exp.	Imp.	Exp.	Imp.	Exp.	Imp.
1	Cognitive	1	-	-	-	1	-
	Socio-emotional	-	-	-	-	-	-
	Behavioral	-	-	-	-	-	-
3	Cognitive	2	-	2	-	4	-
	Socio-emotional	1	-	-	-	1	-
	Behavioral	1	-	-	-	1	-
8	Cognitive	-	1	-	-	-	1
	Socio-emotional	-	-	-	-	-	-
	Behavioral	-	-	-	-	-	-
10	Cognitive	1	1	1	-	2	1
	Socio-emotional	-	-	-	-	-	-
	Behavioral	-	1	-	-	-	1
11	Cognitive	-	-	-	-	-	-
	Socio-emotional	-	-	-	-	-	-
	Behavioral	-	1	-	-	-	1
16	Cognitive	-	-	1	1	1	1
	Socio-emotional	-	-	-	-	-	-
	Behavioral	-	-	-	-	-	-
17	Cognitive	-	1	-	-	-	1
	Socio-emotional	-	-	-	-	-	-
	Behavioral	-	-	-	-	-	-
TOTAL		6	5	4	1	10	6

Table 17
Human Rights, Civics and Democracy 4; Philosophy 10-11

SDG #	Domains of Learning	<i>f</i>			
		Human Rights Grade 4		Philosophy Grades 10 to 11	
		Exp.	Imp.	Exp.	Imp.
1	Cognitive	1	-	-	-
	Socio-emotional	-	-	-	-
	Behavioral	2	-	-	-
2	Cognitive	-	-	-	-
	Socio-emotional	-	-	-	-
	Behavioral	-	1	-	-
4	Cognitive	2	-	-	-
	Socio-emotional	1	-	-	-
	Behavioral	-	1	-	-
5	Cognitive	-	-	-	1
	Socio-emotional	1	-	-	-
	Behavioral	1	3	-	-
10	Cognitive	3	1	-	1
	Socio-emotional	2	1	-	-
	Behavioral	-	-	-	-
11	Cognitive	-	-	-	1
	Socio-emotional	-	-	-	-
	Behavioral	-	-	-	-
16	Cognitive	-	2	-	2
	Socio-emotional	-	-	-	-
	Behavioral	-	1	-	-
17	Cognitive	-	2	-	-
	Socio-emotional	-	-	-	-
	Behavioral	-	3	-	-
TOTAL		13	15	-	5

Table 18
Pre-school Learning Outcomes by Key Competencies

21 st century skills	<i>f</i>											
	Cognitive		Linguistic		Socio-emotional		Motor		Self-care		Total	
	Exp	Imp.	Exp	Imp.	Exp	Imp.	Exp	Imp.	Exp	Imp.	Exp	Imp.
Systems Thinking	2	3	-	-	-	-	-	-	-	-	2	3
Anticipatory	1	-	-	-	-	-	-	-	-	-	1	-
Normative	-	1	-	3	5	1	-	-	-	3	5	8
Strategic	-	1	-	-	1	-	-	-	2	1	3	2
Collaboration	-	-	-	-	1	1	-	-	-	-	1	1
Critical Thinking	-	-	1	-	-	-	-	-	-	-	1	-
Self-awareness	-	-	-	1	6	3	-	-	3	2	9	6
Problem Solving	2	1	-	-	-	1	-	-	-	-	2	2
TOTAL	5	6	1	4	13	6	0	0	5	6	24	22

Table 19
Frequency of References to SDGs by Learning Domain vs. SDG

SDG #	Domains of Learning							
	Cognitive (f=557)		Socio-emotional (f=74)		Behavioral (f=160)		Total	
	Exp.	Imp.	Exp.	Imp.	Exp.	Imp.	Exp.	Imp.
SDG1 (f= 59)	4	39	3	-	5	8	12	47
SDG2 (f=23)	3	10	-	-	3	7	6	17
SDG3 (f=106)	60	18	5	-	14	9	79	27
SDG4 (f=10)	3	5	1	-	-	1	4	6
SDG5 (f=17)	5	6	1	-	1	4	7	10
SDG6 (f=11)	7	1	1	1	1	-	9	2
SDG7 (f=519)	13	14	2	2	17	3	32	19
SDG8 (f=18)	6	7	-	-	1	4	7	11
SDG9 (f=17)	5	5	-	2	3	2	8	9
SDG10 (f=28)	9	11	2	1	-	5	11	17
SDG11 (f=144)	40	56	10	20	6	12	56	88
SDG12 (f=106)	28	40	5	2	22	9	55	51
SDG13 (f=15)	4	7	2	-	2	-	8	7
SDG14 (f=9)	5	2	1	-	1	-	7	2
SDG15 (f=36)	26	6	2	-	1	1	29	7
SDG16 (f=72)	14	39	9	2	1	7	24	48
SDG17 (f=69)	19	40	-	-	3	7	22	47
TOTAL	251	306	44	30	81	79	376	415

Table 20
Frequency of References to SDGs by Subject vs. Grade Level

Subject Area	Specific Subject	f							
		Grades 1 to 4 (f=187)		Grades 5 to 8 (f=315)		Grades 9 to 12 (f=290)		Total	
		Exp.	Imp.	Exp.	Imp.	Exp.	Imp.	Exp.	Imp.
Science, Mathematics, & Technology (f=390)	Science	27	5	43	17	70	26	140	48
	Mathematics	0	3	0	5	0	8	0	16
	Technology	N/A	N/A	30	56	N/A	N/A	30	56
Music, Arts, & Physical Education (f=139)	Music	0	1	0	0	0	3	0	4
	Visual Arts	6	7	7	20	6	7	19	34
	PE & Sports	6	21	13	13	13	16	32	50
Social & Life Studies (f=226)	Life Studies	32	12	N/A	N/A	6	8	38	20
	Social S. & Geography	13	25	37	48	34	11	84	84
History Education (f=88)	History	N/A	N/A	2	14	8	64	10	78
Morals, Values, & Civics Education (f=49)	Philosophy	N/A	N/A	N/A	N/A	0	5	0	5
	Human Rights & Civics	13	15	N/A	N/A	N/A	N/A	13	15
	Religion & Morals	0	1	6	4	4	1	10	6
TOTAL		97	90	138	177	141	149	376	415

